

ATTACHMENT BOOKLET 2

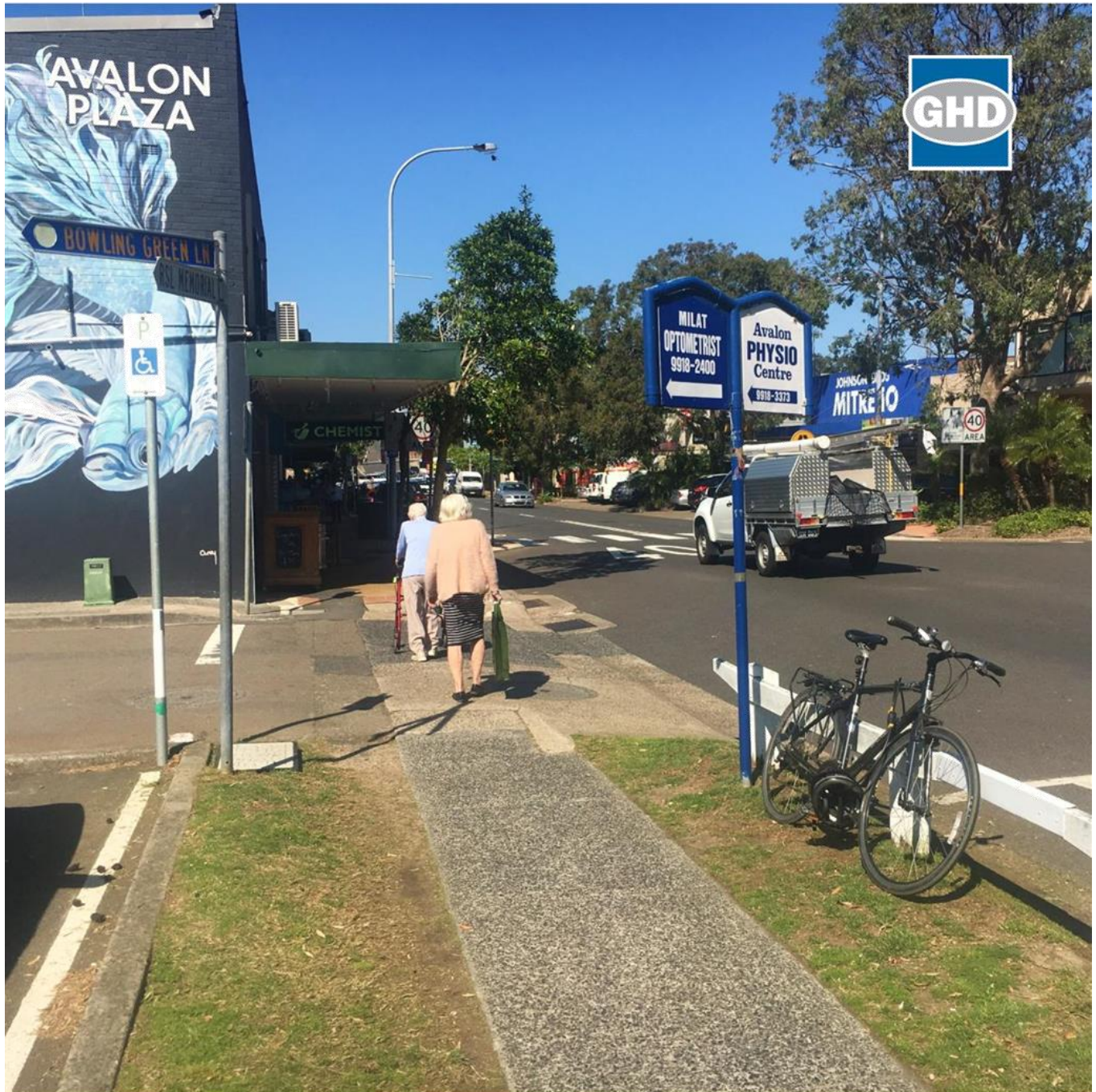
ENVIRONMENT & INFRASTRUCTURE DIVISION

ORDINARY COUNCIL MEETING

WEDNESDAY 26 APRIL 2017

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Northern Beaches Council

Walk Avalon

Avalon Pedestrian Access and Mobility Plan (PAMP)

13 April 2017

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Executive summary

Purpose and Scope

The purpose of *Walk Avalon* is to review the current pedestrian needs in the Avalon Beach area to provide facilities for pedestrians.

Walk Avalon provides a list of prioritised pedestrian infrastructure improvements for safer, more attractive transport choices for residents and visitors; to increase pedestrian activity, and to improve the amenity for all in the Avalon Beach area. The specific objectives of *Walk Avalon* are to:

- increase use of the pedestrian network for short trips (1.5 - 2 km)
- reduce the number of missing links within the pedestrian network
- reduce the number of pedestrian accidents
- improve pedestrian connectivity with other transport modes, primarily train, bus, bicycle and car
- provide pedestrian facilities which cater for the needs of all pedestrians, including people with disabilities, commuters, children, seniors and recreational walkers
- complement existing and planned pedestrian and bicycle facilities

Walk Avalon has been prepared in accordance with the Roads and Maritime guidance document "*How to Prepare a Pedestrian Access and Mobility Plan*" (Roads and Maritime, March 2002).

Existing Conditions

Avalon (Avalon Beach) is located approximately 30 kilometres north-east of Sydney CBD, and has an estimated resident population of approximately 10,500 people. During the weekends in the summer and school holidays, a high number of visitors is attracted to the area.

The commercial centre of Avalon, located along Avalon Parade to the west of Barrenjoey Road, generally has the highest pedestrian activity within *Walk Avalon* study area. There are a number of issues for pedestrians within this commercial centre, including poor footpath quality and poor pedestrian crossing facilities, including the Avalon Parade / Old Barrenjoey Road intersection. This intersection is located at the centre of the commercial area and has long and non-standard zebra crossings across each approach.

Another key pedestrian attractor is Avalon Beach, which is located to the east of Barrenjoey Road. Barrenjoey Road is a State Road, which runs between Avalon beach and the commercial centre. Traffic signal controlled pedestrian crossings across Barrenjoey Road are provided at the intersection with Avalon Parade. However, pedestrians regularly cross Barrenjoey Road at an informal crossing location to the north this intersection in order to access the beach from Avalon centre. A review of crash data involving pedestrians found that there were two incidents at this location over a five-year period.

Outside of the centre of Avalon, existing issues include generally include poor footpath quality or lack of footpaths and kerb ramps.

Ensuring a high quality walking environment

Walk Avalon, is a Pedestrian Access and Mobility Plan (PAMP), which has been prepared for Northern Beaches Council (NBC) to provide a framework for existing pedestrian needs, future management, use and enhancement for pedestrians of all ages and mobility.

Walk Avalon is a strategic document that identifies the pedestrian network hierarchy and associated action plan for management. The strategic, high-level, objectives of *Walk Avalon* are based around:

- Integrating walking into the transport system as a legitimate form of transport to encourage it more;
- Providing appropriate pedestrian facilities where required, enhancing accessibility and mobility;
- Identify clusters and patterns of pedestrian accidents, to address safety issues; and
- Development and integration of pedestrian concentration routes that complement 'Safer Routes to Schools' projects and Local Area Traffic Management schemes.

A review of previous relevant planning policies was conducted:

- To ensure that *Walk Avalon* aligns with National, State Government and Local Council policy directions in relation to the development of not only pedestrian access and mobility plans, but also the wider context of transport and urban planning.
- To identify any deficiencies within the current network and strategy that will guide the importance of the proposed measures to improve the access, amenity and safety for pedestrians.

Recommendations

The Study found that there are many locations within the Walk Avalon study area which require improved pedestrian infrastructure. This includes upgrades to existing infrastructure that is either of poor quality/damaged or has non-standard design, additional pedestrian crossing facilities and new footpath connections.

Major projects

Three locations were identified as requiring a major upgrade to improve amenity and safety for pedestrians and drivers. These three locations play a significant role in the local community. These were:

- Avalon Parade / Old Barrenjoey Road intersection:
 - This location is at the centre of the Avalon Town Centre and is confusing to pedestrians and drivers. The high number of buses and wide roads make for an uninviting area. This has previously been identified as requiring an urban design approach to improve amenity.
 - The Intersection is an issue for both pedestrians and drivers as part of the community consultation process and through the site audits.
 - Issues include the long zebra crossings at all four approaches to the intersection, which cross more than two traffic lanes in the same direction. The kerb ramps do not align with pedestrian crossing.
- Barrenjoey Rd / Old Barrenjoey Rd / Plateau Rd intersection

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- There are multiple issues for pedestrians, including missing or poor quality refuge /splitter islands and kerb ramps, crossing at bus slip lane, poor pedestrian fencing / rails and steep grades.
- The road environment makes crossing the road for pedestrians, which drivers focused on negotiating the roundabout and approaching at relatively high speeds.
- Avalon Parade / Ruskin Rowe
 - The traffic slow point at intersection makes it difficult to cross Avalon Parade at this location

Pedestrian Routes

A hierarchy of pedestrian routes has been established, based on observed pedestrian demand and proximity to pedestrian attractors, such as town centre land uses and schools, and key walking routes. This walking route hierarchy was used as part of the scoring method to determine the priority for implanting proposed pedestrian infrastructure upgrades.

Footpath Works

Identified locations for new footpath connections at 14 locations as shown in Figure 1-1.

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Figure 1-1 Location of Proposed Footpaths and Pedestrian Crossings



Pedestrian Crossing facilities

The ability to cross roads was identified as a significant issue in the area around Avalon. The study has identified that more and better opportunities to cross the road are required. These are outlined in Figure 1-1.

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Particularly significant crossing points are listed below.

- **New or additional traffic Signal controlled pedestrian crossings are required at:**
- Barrenjoey Road, north of Avalon Parade intersection:
 - High number of pedestrians observed crossing at a mid-block location at Barrenjoey Road, north of Avalon Parade. Walking desire line between Avalon Beach / Surf Club with Avalon centre / Woolwoths car park.
 - Crash data indicates safety issue for pedestrians at this location.
 - Requires further investigation for a mid-block traffic signal controlled pedestrian crossing, with footpath connection.
- Avalon Parade / Barrenjoey Road intersection:
 - No traffic signal controlled pedestrian crossing on the eastern approach to the intersection.
 - Requires TGSI's and kerb ramp upgrades
- Central Rd / Barrenjoey Rd intersection
 - No traffic signal controlled pedestrian crossing on the eastern approach to the intersection.
 - Requires TGSI's and kerb ramp upgrades

Cost

Where possible, unit rates provided by Northern Beaches Council have been used directly. For items where costs were not available previous studies, estimation and professional judgement have been used. These costs are indicative and are subject to change and make no allowances for contingencies or actual site design and installation.

The total costs for the proposed upgrades for Walk Avalon is in the order of \$2,428,500, including:

- \$1,400,000 for footpath reconstruction and improvements; and
- \$1,100,000 for PAMP works.

Additional studies would be required for intersection re-design projects. The costs for these projects is not included in the above costs.

Priorities

The *How to Prepare a Pedestrian Access and Mobility Plan* (Roads and Maritime, 2002) provides guidance on what is important in providing footpaths. This method was used to determine the prioritisation of the proposed improvements.

Scores were derived for each of the recommended pedestrian improvements for the purpose of prioritising projects. The Weighted Criteria Scoring System from the Roads and Maritime was used to prioritise each proposed improvement.

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Appendix A – Consultation Report

Appendix B – Site Audit and Weighted PAMP Scoring

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1. Introduction

1.1 Background

Walking is a fundamental and direct means of access to most places and to the goods, services and information available at those places. Those creating public and private space or facilities must give priority to 'walk in' access which is attractive, safe, convenient and accessible for everyone. All responsible agencies should respect the pedestrians' inalienable right-of-way on footpaths and recognise the importance of constructing and maintaining them for transport, health, safety, leisure and social purposes.

Walk Avalon, is a Pedestrian Access and Mobility Plan (PAMP), which has been prepared for Northern Beaches Council (NBC) to provide a framework for existing pedestrian needs, future management, use and enhancement for pedestrians of all ages and mobility.

Walk Avalon is a strategic document that identifies the pedestrian network hierarchy and associated action plan for management. The strategic, high-level, objectives of *Walk Avalon* are based around:

- Integrating walking into the transport system as a legitimate form of transport to encourage it more;
- Providing appropriate pedestrian facilities where required, enhancing accessibility and mobility;
- Identify clusters and patterns of pedestrian accidents, to address safety issues; and
- Development and integration of pedestrian concentration routes that complement 'Safer Routes to Schools' projects and Local Area Traffic Management schemes.

An important function of *Walk Avalon* is to identify pedestrian needs and clearly indicate, to both NBC and the community, Council's direction with respect to the management and improvement of pedestrian needs within the Avalon Beach study area.

Different land uses require pedestrian facilities for a range of users. Pedestrians, including commuters and recreational walkers, need to be catered for as well as the elderly, the mobility and visually impaired, residents, school children and tourists.

Roads and Maritime Services (Roads and Maritime) guidance document *How to Prepare a Pedestrian Access and Mobility Plan*" (Roads and Maritime, March 2002) states that:

A PAMP is a strategic plan to develop pedestrian policies and build pedestrian facilities. A PAMPs aim is to co-ordinate investment in safe, convenient and connected pedestrian routes. A PAMP provides a framework for developing pedestrian routes or areas identified by the community as important for enhanced, sustainability, convenience and mobility.

1.1.1 Definition of Pedestrian

A Pedestrian is (for the purposes of *Walk Avalon*):

- A person driving a motorised wheelchair that cannot travel over 10 km/h on ground level;
- 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 toy.

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1.2 Purpose and Scope

The purpose of *Walk Avalon* is to review the current pedestrian needs in the Avalon Beach area to provide facilities for pedestrians.

Walk Avalon provides a list of prioritised pedestrian infrastructure improvements for safer, more attractive transport choices for residents and visitors, to increase pedestrian activity and to improve the amenity for all local residents and visitors to the Avalon Beach area. The specific objectives of *Walk Avalon* are to:

- Increase use of the pedestrian network for short trips (1.5 - 2 km)
- Reduce the number of missing links within the pedestrian network
- Reduce the number of pedestrian accidents
- Improve pedestrian connectivity with other transport modes, primarily train, bus, bicycle and car
- Provide pedestrian facilities which cater for the needs of all pedestrians, including people with disabilities, commuters, children, seniors and recreational walkers
- Complement existing and planned pedestrian and bicycle facilities

Walk Avalon has been prepared in accordance with the Roads and Maritime guidance document "*How to Prepare a Pedestrian Access and Mobility Plan*" (Roads and Maritime, March 2002).

This study has focused upon reviewing the existing and proposed pedestrian network with the aim of extending and improving the existing network of pedestrian facilities. As part of this report it is recommended that NBC develop a program for the maintenance of existing facilities. This study therefore aims to add greatest value to Council's strategies and works program by identifying the gaps in existing networks and extending the networks where appropriate.

1.2.1 Objectives

The objectives of this PAMP are:

- To facilitate improvements in level of pedestrian access and priority, particularly in areas of pedestrian concentration;
- To reduce pedestrian access severance and enhance safe and convenient crossing opportunities on major roads;
- To identify and resolve pedestrian crash clusters;
- To facilitate improvements in the level of personal mobility and safety for pedestrians with disabilities and older persons through the provision of pedestrian infrastructure and facilities which cater to the needs of all pedestrians;
- To provide links with other transport services to achieve an integrated land use and transport network of facilities that comply with best technical standards;
- To ensure pedestrian facilities are employed in a consistent and appropriate manner throughout NSW;
- To link existing vulnerable road users plans in a co-ordinated manner, such as bike plans, maintenance programs and accessible public transport;
- To ensure that pedestrian facilities remain appropriate and relevant to the surrounding land use and pedestrian user groups;
- To accommodate special event needs of pedestrians; and

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- To meet obligations under the Commonwealth Disability Discrimination Act (1992)

1.2.2 Study Area

Avalon (Avalon Beach) is located approximately 30 kilometres north-east of Sydney CBD, and has an estimated resident population of approximately 10,500 people, based on preliminary information from the Australian Bureau of Statistics. During the weekends in the summer and school holidays, a high number of visitors is attracted to the area.

The study area for *Walk Avalon* includes:

- Detailed pedestrian facilities audit within a 400 m catchment from Avalon Town Centre, including Avalon Public School, Mater Regina Catholic Primary School, retirement villages and beach access.
- Considerations of key pedestrian links within a 2 km catchment of town centre for access and linkage.

The approximate 400 m and 2 km study areas for *Walk Avalon* are shown at Figure 1-1.

1.3 Purpose of this report

Walk Avalon is the review of current pedestrian needs in the study area, in order to provide a consistent standard of facilities for pedestrians. *Walk Avalon* provides a list of prioritised pedestrian infrastructure improvements for safer, more attractive transport choices for residents and visitors. This comes with the aim to increase pedestrian activity and to improve the amenity for all local residents and visitors to the study area.

1.4 Study Limitations

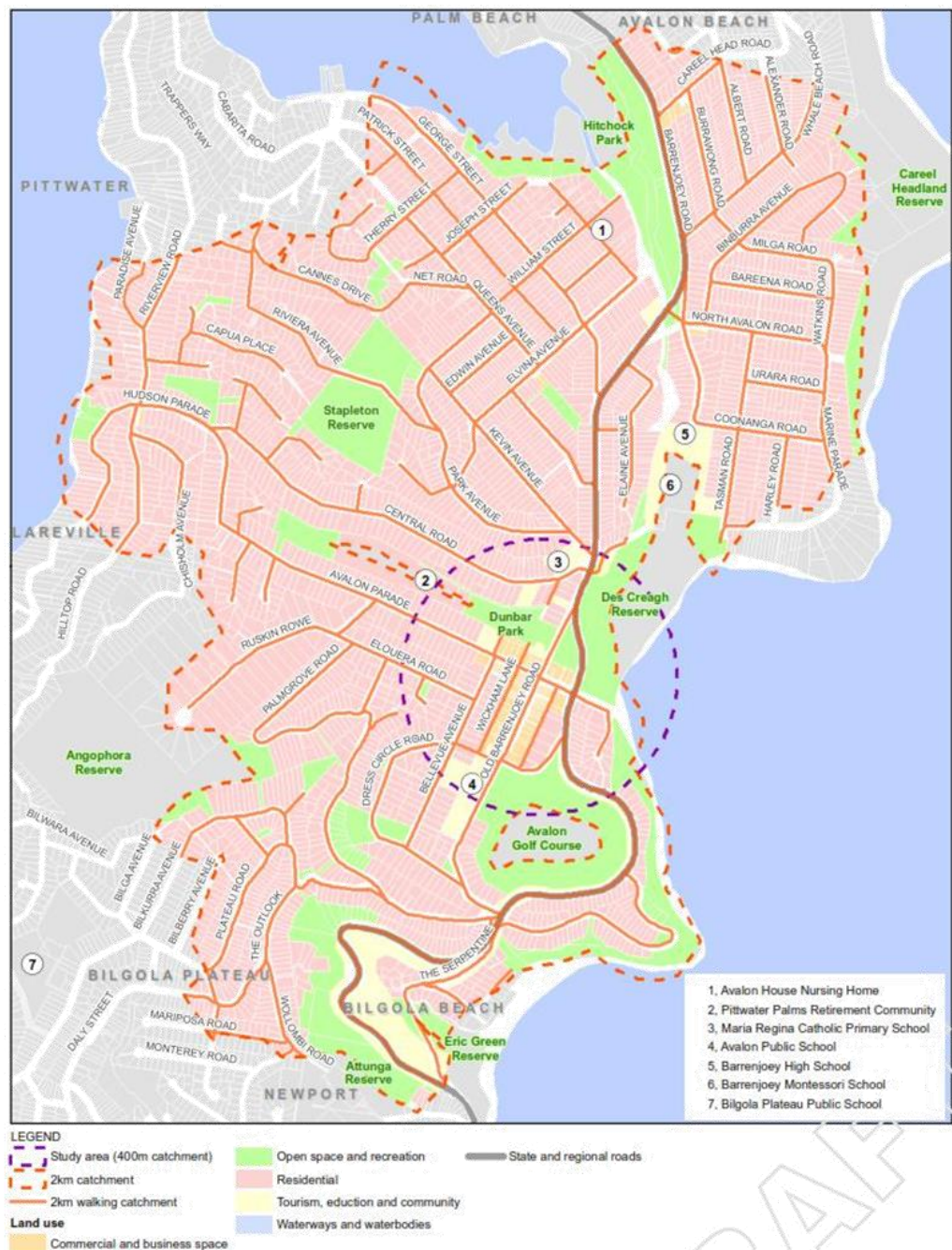
The study has been limited by the following:

- Crash data sourced from the Transport for NSW Centre for Road Safety website http://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats/lga_stats.html?tablg_a=4
- Traffic and pedestrian count data provided by NBC, undertaken for previous traffic studies
- Consultation included the following:
 - Community surveys for both school children and the general public, which were accessible online through Council's website between 14 October to 30 November 2016.
 - The *Walk Avalon* Footpath Pop-up Session, which was held on 24 October 2016, outside the Avalon Recreation Centre and Library at Old Barrenjoey Road, Avalon.
 - Additional feedback sent from members of the community by email to NBC.
- Cost estimates for proposed infrastructure are strategic only, and were based on unit rates provided by NBC (where available).

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Figure 1-1 400 m and 2 km Study Area



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1.5 Report Structure

The remaining sections of this report are structured as follows:

- **Section 2 – Background Review:** provides a summary of the previous pedestrian planning and related policies from the Council and the various State Government agencies;
- **Section 3 – Existing Pedestrian and Mobility Audit:** provides a detailed list of the issues, constraints and opportunities for pedestrian access and movement;
- **Section 4 – Planning for Pedestrians:** provides an overview of best practice standards that apply to the treatment of pedestrian facilities;
- **Section 5 – Proposed Pedestrian Improvements:** a list of potential pedestrian improvements is given with the different types of infrastructure to improve safety, amenity and access for pedestrians;
- **Section 6 – Priorities for Pedestrian Improvements:** an assessment of the pedestrian requirements was conducted and is provided with short, medium and long term infrastructure projects. An indicative cost and level of difficulty to implement them is included; and
- **Section 7 – Conclusions and Recommendations:** provides the key findings in the PAMP, with a list of recommendations and priorities in the PAMP for the pedestrian access and mobility improvements.

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2. Background Review

This section includes a review of existing relevant State and Federal Government planning documents, Council's disability and access policies and reports and other relevant Council policies including the Local Environmental Plans (LEP), and Development Control Plans (DCPs).

A summary of the demographic, transport and pedestrian crash statistics and the existing land use and transport infrastructure for the Avalon Beach area was also used to show the strategic context, relevance and importance for *Walk Avalon*.

2.1 Planning Review

The review of previous relevant planning policies was conducted:

- To ensure that *Walk Avalon* aligns with National, State Government and Local Council policy directions in relation to the development of not only pedestrian access and mobility plans, but also the wider context of transport and urban planning.
- To identify any deficiencies within the current network and strategy that will guide the importance of the proposed measures to improve the access, amenity and safety for pedestrians.

These policies provide a strategic framework to improve the pedestrian network so that it encourages and supports walking within, to and from the study area.

2.2 National

2.2.1 Australian Transport Assessment and Planning Guidelines

The Australian Transport Assessment and Planning (ATAP) Guidelines (the Guidelines) provide a comprehensive framework for planning, assessing and developing transport systems and related initiatives.

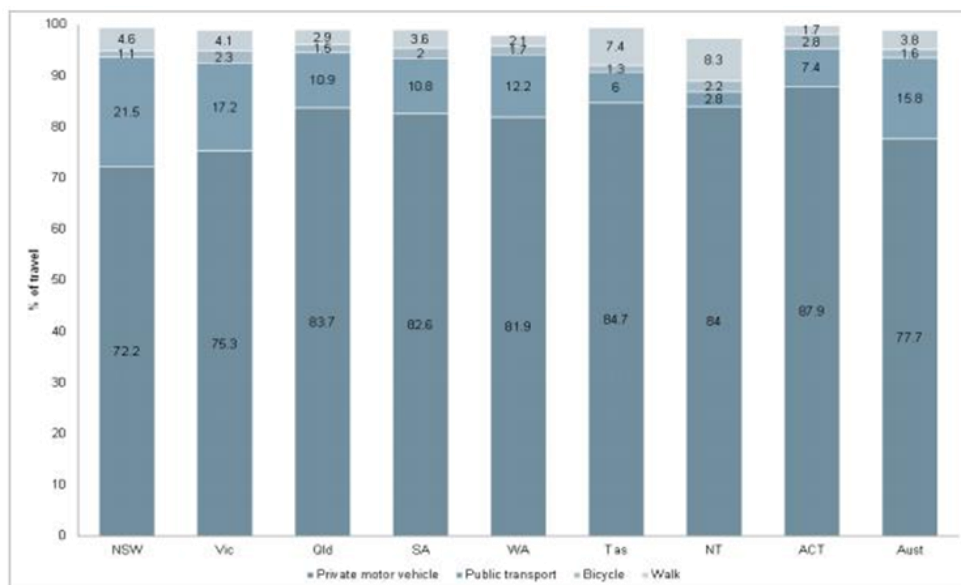
ATAP identifies that walking is probably the most common form of travel as it is involved to some degree in all trips undertaken by all other modes. However, only about 4 percent of work or study trips in Australia rely solely on walking - making it the third most common mode, as indicated at Figure 1-1.

ATAP also identifies number of factors that are likely to determine the propensity for people to choose walking and cycling over other modes, including:

- **Infrastructure:** Good quality, appropriately designed active travel infrastructure with meaningful network connectivity will maximise levels of active travel and improve safety given the underlying demand for walking and cycling.
- **Land use:** some land uses tend to have a higher incidence of walk trips, for example, outdoor recreation facilities, indoor sports facilities, schools, public transport interchanges.
- **Complementary uses/facilities:** propensity for active travel can be enhanced by the proximity of complementary land uses and facilities such as a public transport interchange located close to a regional shopping centre or university.
- **Scale and proximity:** the propensity for active travel would be expected to increase with the scale of development, while active travel would be expected to increase with proximity of related uses.

- *Safety*: such as trip hazards, inadequate path width, location of power/light poles and paths not navigable by wheelchairs, prams and the elderly.
- *Security*: personal security can be a major factor in limiting walking and cycling.
- *Topography and climate*.
- *Ancillary infrastructure*: including seating, drink fountains, shade planting, and directional signage.
- *Awareness*: potential active travel users might be unaware of the availability and advantages of active travel networks.
- *End of trip facilities*.

Figure 2-1 Main Mode of Travel to Work



Source: http://atap.gov.au/mode-specific-guidance/active-travel/files/m4_active_travel.pdf

2.2.2 Australian Model Code of Residential Development

Australian Model Code of Residential Development (Commonwealth of Australia, 1997) was produced to advance the planning, design, assessment and implementation of residential development. It is for use by designers, builders, developers and government officers responsible for housing development. It states that:

In the planning of residential areas there must be a careful balance between transport needs and protection of the environment. There should be accessibility, choice in mode of transport (private vehicle transport, public transport, walking and cycling) .

The urban village concept, the guide identifies that a well-defined community should feature design principles including reduced travel to local employment and activities (e.g. interconnected street networks and local activity centres within walking distance).

One of the key performance criteria in relation to travel mode choice is that street networks facilitate walking and cycling within the neighbourhood and to local activity centres.

Source: <http://www.creationcorporation.com.au/AMCORD/AMCORD/AMCORD.PDF>

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2.3 State

Sydney's Walking Future, released in 2013 is the strategic transport document for walking in NSW. It aims to promote and improve the safe, convenient and efficient movement of walking in Sydney. *Sydney's Walking Future* is a subset document of the NSW *Long Term Transport Master Plan*. NSW 2021 sets out State Government's objectives for increasing walking to achieve improved environmental outcomes, health benefits and to reduce traffic congestion.

The State Government has also prepared two State-wide strategies for road safety and transport that have implications for pedestrian planning and strategies for the NBC.

NSW 2021 State Plan

NSW 2021 State Plan is that NSW Government's ten-year plan to guide policy and budget decision making and to deliver on community priorities. It sets long term goals and targets, and outlines actions that will help achieve these goals.

The key objectives for transport outlined in NSW 2021 are to:

- Reduce travel times
- Grow patronage on public transport by making it a more attractive choice
- Improve customer experience with transport services
- Improve road safety

The NSW 2021 Plan identifies increasing walking and cycling as active modes of transport that will help reduce road congestion and also promote healthy lifestyles.

The targets for walking set out in the NSW 2021 Plan is to increase the mode share of walking trips made in the Greater Sydney region, at a local and district level, to 25% by 2016. In order to achieve this targets for increasing walking and cycling the Plan States that the State Government will develop and implement a NSW Walking Strategy to encourage and promote walking for travel and recreation, and to enhance walking environments in NSW.

A Plan for Growing Sydney

A Plan for Growing Sydney, released in December 2014, is the NSW Government's plan for the future of the Sydney Metropolitan Area over the next 20 years. The Plan provides key directions and actions to guide Sydney's productivity, environmental management, and liveability – including the delivery of housing, employment, infrastructure and open space.

The Plan identifies the Parramatta Road as an Urban Renewal Corridor, a location where the NSW Government will focus urban renewal activities to provide additional housing.

NSW Long Term Transport Master Plan, Transport for NSW

The NSW Long Term Transport Master Plan, released by Transport for NSW in December 2012 has objectives for increased walking particularly for short, local trips to achieve improved environmental outcomes, health benefits and to reduce traffic congestion.

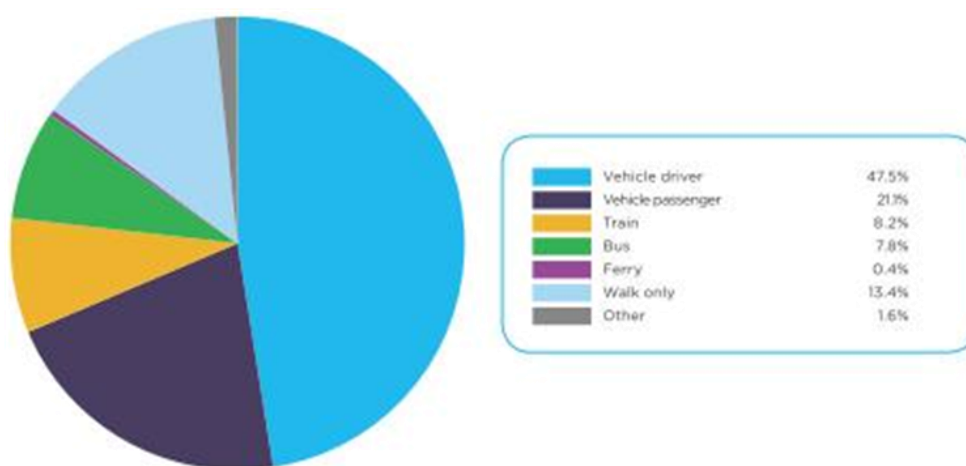
Since many transport journeys start and end with a walk trip, walking helps to reduce traffic congestion. When homes and jobs are within walking distance of each other and within easy walking distance of public transport, accessibility to jobs and services increases and commuting is easier. More people walking to catch the train, bus or ferry also means less pressure on town centre streets, busy bus services and commuter car parking.

When planning new developments, the surrounding transport infrastructure should have a network of pedestrian connections that consider:

- Personal safety and security, including adequate lighting and activated public spaces;
- Adequate footpath widths;
- Safe and convenient pedestrian crossings of roads at intersections and mid-block crossings;
- Convenient and legible access to public transport stations or bus stops; and
- Good signage and wayfinding to support efficient pedestrian movement.

Walking accounts for 13.4 percent of all daily trips in the greater Sydney area as shown in Figure 2-2. Across the city, mode share for walking is highest in inner Sydney (39 percent) and lowest in outer Sydney (10 percent in outer South West Sydney, 12 percent in the outer Western Sydney and 13 percent in Liverpool/Fairfield).

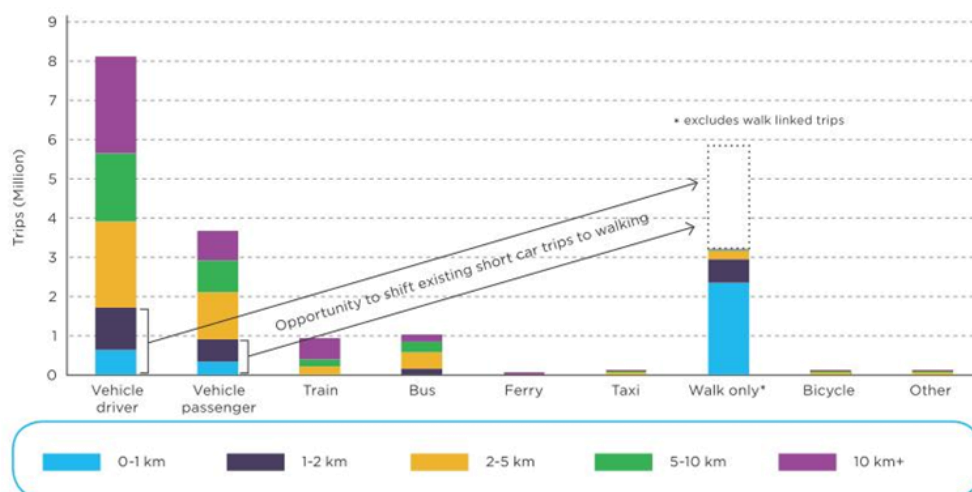
Figure 2-2 Walking as a Mode of Travel in Metropolitan Sydney



Source: TfNSW, 2012

With more than two million of the daily car trips less than two kilometres, which is generally considered a comfortable walking distance for most people, walking, instead of driving, could be significantly more popular as shown in Figure 2-3.

Figure 2-3 Opportunity for Growth in the Walk Mode Share in Sydney

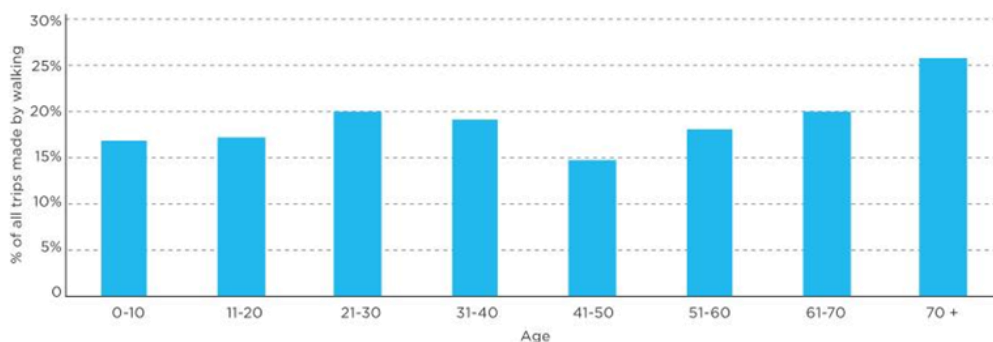


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Source: TfNSW, 2012 (statistics from 2010-2011)

Walking mode share by age group in Sydney is shown in Figure 2-4. These statistics show that walking is most popular with the over 60 age group which suggests that walking may increase as a result of the ageing population and with reduced reliance on private car travel. Therefore, it is even more important to provide safe and convenient facilities for elderly pedestrians. Other statistics show that fewer school children walking and cycling compared to 20 years ago.

Figure 2-4 Walking Mode Share by Age Group in Sydney



Source: TfNSW, 2012 (statistics from 2010-2011)

Sydney's Walking Future

The actions set out in Sydney's Walking Future aim to encourage people to walk by making walking a safer, more convenient and better connected mode of transport. The key objective of the walking strategy is for walking to be the primary transport choice for trips under 2 km and to improve pedestrian access and amenity at interchanges to encourage walking as part of the public transport journey.

Sydney's Walking Future aims to support the integration of walking into the transport system through three pillars of activity:

- Promote the benefits of walking and provide quality information to customers, which includes but is not limited to:
 - Increase walking trips to schools, workplaces and universities through programs that encourage more sustainable transport
 - Enhance online trip planner walking options and provide more information about walking at www.transportnsw.info
 - Improve the quality and consistency of wayfinding and signage for pedestrians.
 - Continue to support the Road Safety Education Program.
- Connect communities by delivering safe walking infrastructure and completing networks, which includes but is not limited to:
 - Help councils deliver missing links to connect local centres through the Walking Communities Program
 - Improve pedestrian access to and amenity around interchanges, particularly through the Transport Access Program
 - Provide walking links through bridges at key locations
- Engage with partners across the NSW Government, with local government, non-government organisations and the private sector to develop initiatives and policies, which includes but is not limited to:

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- Adopt a whole-of-government approach to increasing rates of walking across Sydney
- Develop policies to ensure places and major transport developments are designed around safe walking
- Support programs that promote walking from a health and community perspective

NSW Road Safety Strategy

Transport for NSW prepared the NSW Road Safety Strategy in 2012. The potential to address fatal and serious injury crashes on the road network exists through improved intersection design, eliminating or shielding road users from roadside objects or from opposing vehicles and by considering pedestrians, particularly in urban areas. Following the Safe System approach will bring positive road safety outcomes.

Pedestrians are considered at risk road users due to the lack of protection provided in the event of a crash, which results in more severe outcomes. Pedestrians account for 14 percent of the NSW road toll and are a significant group among road users killed in the Sydney Region. At least 33 percent of pedestrian fatalities between 2008 and 2010 were alcohol impaired and 40 percent of pedestrian fatalities were aged 60 years or more. A strong desire for pedestrian safety exists across the road network. This includes the provision of 40 km/h High Pedestrian Activity Areas which are being progressively rolled out at identified locations and 10 km/h Shared Use Zones, pedestrian fencing and other infrastructure treatments, along with safer vehicles which are pedestrian friendly. These will all contribute to the achievement of the targets of this strategy.

The key measures in the NSW Roads Strategy to improve pedestrian safety are:

- Improve pedestrian crossing safety, including reviewing signal phasing for pedestrians
- Work with local government to undertake road safety audits to address the maintenance and upgrade of pedestrian facilities
- Support the NSW Long Term Transport Master Plan and the walking investment program to address the infrastructure needs of pedestrians
- Trial innovative technology solutions to address pedestrian safety, including vehicle to person systems and vehicle based pedestrian detection systems
- Land use planning guidelines to consider pedestrian requirements, especially at transport hubs, new residential developments
- Research pedestrian distraction devices and the effects within the road environment
- Develop communications and awareness campaigns to promote safety with pedestrians and other road users
- Review the application of shared paths and safer interaction between pedestrians and bicycle riders

A strong need to maintain mobility and access for older road users is required with a large proportion living in suburban locations. Some of the proposed measures are to:

- Work with road authorities to provide facilities for older road users including improved pedestrian access, longer green light phasing and local education campaigns
- Deliver communication campaigns to target the safety of older pedestrians
- Utilise lower speed limit schemes for high pedestrian activity areas and roads with high volumes of on-road cyclists
- Improve the safety of pedestrians and bicycle riders through the utilisation of lower speed limit schemes, including 40 km/h high pedestrian activity areas and shared zones

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2020 Aging Strategy

In the NSW Ageing Strategy released in 2012, the fastest growing population group in NSW is the cohort of people aged over 65. In NSW, an estimated 2 million community transport trips are provided each year to help older people access recreation, shopping, medical care, community services and social activities. This travel demand will continue to grow with this population group forecast to double by 2050.

Older pedestrians are over represented in fatal crashes. This is due to frailty and a reduced tolerance from the force of a crash, rather than risk taking. Therefore, it is critically important to promote safe walking routes that are designed with consideration for the older aged groups.

2.4 Northern Beaches Council Planning

The following planning documents provide the planning context for the pedestrian access in Avalon. It is noted that in May 2016 the Northern Beaches Council was amalgamated from the previous Pittwater, Warringah and Manly Councils. The documents that are relevant to this study are from the former Pittwater Council.

Community Strategic Plan (2013)

The Pittwater Community Strategic Plan 2025 was prepared in 2013, as a 12-year plan to outline the community's aspirations and desires to shape Pittwater's future.

One of the five key directions in the Pittwater Community Strategic Plan is "supporting and connecting our community", incorporating a traffic and transport strategy. The Pittwater Community Strategic Plan states that the objectives include:

- Advancing an effective and efficient public transport system for the Pittwater community providing fast connections to village centres, local transport nodes and regional centres
- Creating an active transport network including roads, pathways and cycle ways
- Improving road and footpath safety to encourage use by community
- Promoting innovative and flexible transport systems
- Promoting regional access to and from Pittwater
- Reducing greenhouse gas emissions by an increased use of public transport
- Reducing the use of and reliance on private motor vehicles

Local Environmental Plan (2014)

The Pittwater Local Environmental Plan 2014 is the statutory planning tool that establishes what forms of development and land use are permissible and/or prohibited on all land within the former Pittwater Local Government Area. This is to help promote development in the former LGA.

The current zoning in the study area include general business and residential areas. Objectives of the various land use zones under the new LEP applicable to this study include:

- Local Centre (Zone B2)
 - To encourage employment opportunities in accessible locations;
 - To maximise public transport patronage and encourage walking and cycling; and
 - To provide healthy, attractive, vibrant and safe local centres.
- Mixed Use (Zone B4)

- To integrate suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling
- To provide an active day and evening economy
- To encourage retail vitality and provide a high level of amenity for pedestrians and bicycle riders

Pittwater Walks and Rides Strategy Masterplan Review (2012)

The Pittwater Walks and Rides Strategy Masterplan Review 2012 is a review of the original Strategy Masterplan 2005. The plan consolidates previously separate cycle and pedestrian plans into one document.

The objectives of the review include:

- Facilitating walking and bicycling as a viable transportation choice;
- Afford the public the opportunity to experience the Council's unique scenic and natural amenities;
- Provide access to healthy recreational and commuter activities;
- Linking major centres, schools, places of work, parks and open spaces with the former Pittwater neighbourhoods; and
- To augment on the work done in previous studies.

A number of footpath and shared path projects were identified and prioritised, focusing on completing missing links, and removing hazards and other deficiencies. It also notes that several streets in the former LGA do not have sealed footpaths.

Bike Pittwater Draft (2016)

The Bike Pittwater (draft) was developed by the former Pittwater Council with the aim of making bicycle riding a normal part of life and offering greater transport and recreational options to the community of the former Pittwater Council LGA. The draft report builds on the previous 1997 Bike Plan report, to increase bicycle riding in the and relieving motor vehicle congestion.

The report has five strategic actions:

- To improve and maintain bicycle riding infrastructure;
- To improve the awareness and safety of bicycle riders;
- To promote bicycle riding as a convenient and enjoyable travel option;
- To develop and maintain relationships with key organisations to promote and fund cycling projects; and
- To facilitate opportunities for recreational bicycle riding.

Potential bicycle paths identified in the Bike Pittwater draft report, as shown in the map at Figure 2-5, include:

- Avalon Parade - separated cycleway
- Old Barrenjoey Road - separated cycleway
- Central Road, between Barrenjoey Road and Patterson Lane – shared path
- Barrenjoey Road, between Surfside Parade and The Serpentine – shared path
- Kevin Avenue, between Barrenjoey Road and Park Avenue – shared path

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- Link from Avalon Parade near Gunjulla Place to shared path link to Bowling Green Lane – shared path
- Link from Central Road to shared path link to Bowling Green Lane – shared path

Figure 2-5 Bike Pittwater (Draft) Proposed Bicycle Routes - Avalon



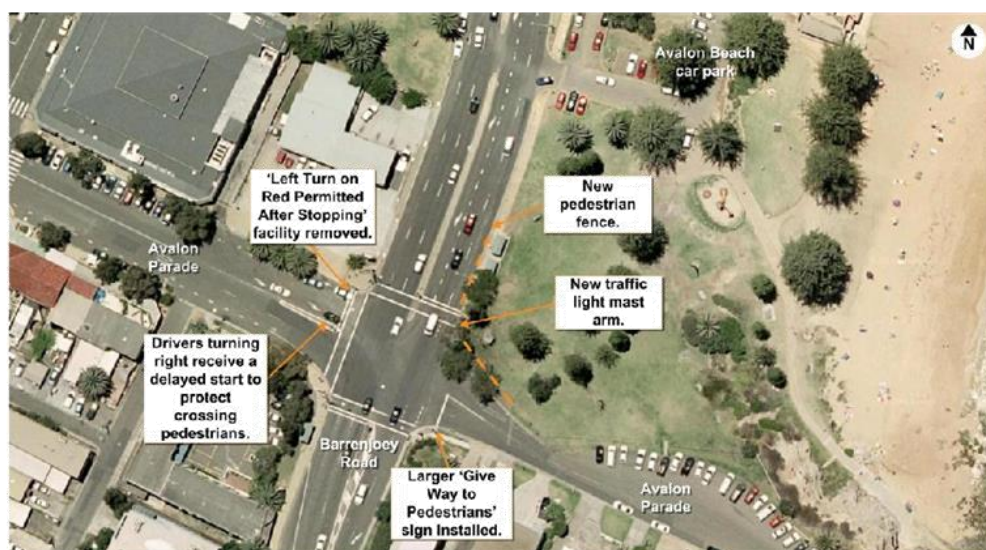
Source Bike Pittwater Draft (Pittwater Council, 2016)

Barrenjoey Road and Avalon Parade, Community Consultation Report (2016)

The *Barrenjoey Road and Avalon Parade, Avalon Beach Intersection Improvement Community Consultation* report was completed by Roads and Maritime in March 2016. The report summarises community and stakeholder consultation conducted for the proposed Barrenjoey Road and Avalon Parade intersection upgrade. This project is funded as part of the NSW Government's AUD 500 million Black Spot Program, which aims to make the state's roads safer by reducing the risk and severity of crashes on the road network.

The report identified that the majority of residents and local businesses were in favour of the proposal to upgrade the intersection, as shown at Figure 2-6.

Figure 2-6 Safety Improvements Barrenjoey Road / Avalon Parade Intersection



Source: Barrenjoey Road and Avalon Parade, Avalon Beach Intersection Improvement Community Consultation (Roads and Maritime, 2016)

Additional changes, above that of the proposal, were also identified to improve pedestrian safety, including:

- Adjusting the traffic light phasing so eastbound motorists on Avalon Parade turning right onto Barrenjoey Road will be held by a red arrow for five seconds to allow people to start crossing before vehicles turn;
- Removing the 'Left turn on red permitted after stopping' sign on the north west corner of the intersection, so that eastbound motorists on Avalon Parade turning left into Barrenjoey Road will have to wait for a green light to turn left;
- Upgrading all kerb ramps to provide pedestrians of all abilities with improved access;
- Installing a larger 'Give way to pedestrians' sign on the south east corner of the intersection; and
- Installing approximately 15 m of pedestrian fencing along the eastern side of Barrenjoey Road and around Avalon Parade East.

Avalon town centre strategy

The Avalon town centre strategy is currently under development by Northern Beaches Council and (if available) will be referenced in the final PAMP report.

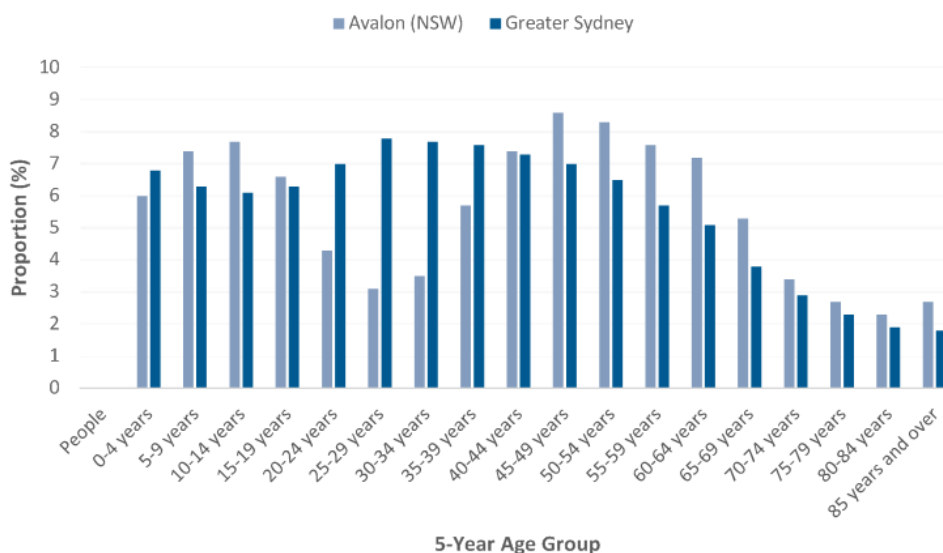
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2.5 Existing Travel Characteristics and Demographics

2.5.1 Demographics for Age Groups

The age group profile of Avalon and the average age profile for Greater Sydney is shown in Figure 2-7, which is based on 2011 census data.

Figure 2-7 Comparison of Age Profiles in Avalon and Greater Sydney (2011)



Source: Australian Bureau of Statistics, Census of Population and Housing 2011

These population statistics show:

- The proportion of age groups between 20 to 39 years old in Avalon is lower than compared to the Greater Sydney average, with this age group consisting of 17 percent of the population and 30 percent of the population in Greater Sydney;
- The proportion of people in Avalon aged between 5 and 19 is higher than that of Greater Sydney. This indicates that there is good potential for increasing travel mode share by walking for school children; and
- The proportion of people in Avalon aged between 40 to 85 years and over is higher than that of Greater Sydney. The proportion of people in Avalon within this age group is 55 percent, whereas the proportion in Greater Sydney is 44 percent.

2.5.2 Employment in Avalon

A comparison of employment rates for the population aged above 15 years old in Avalon and the Greater Sydney area is provided at Figure 2-8. According to the 2011 Australian Bureau of Statistics data for Avalon, Code SSC10073 (SSC), 5,368 people were identified as being in the labour force. Of these, 55 percent were employed full time, which is less than the 62.1 percent in Greater Sydney. 35.8 percent were employed part-time which is higher than the 26.7 percent in Greater Sydney. The level of unemployment in Avalon is less, where the proportion is 3.8 percent, compared to 5.7 in Greater Sydney.

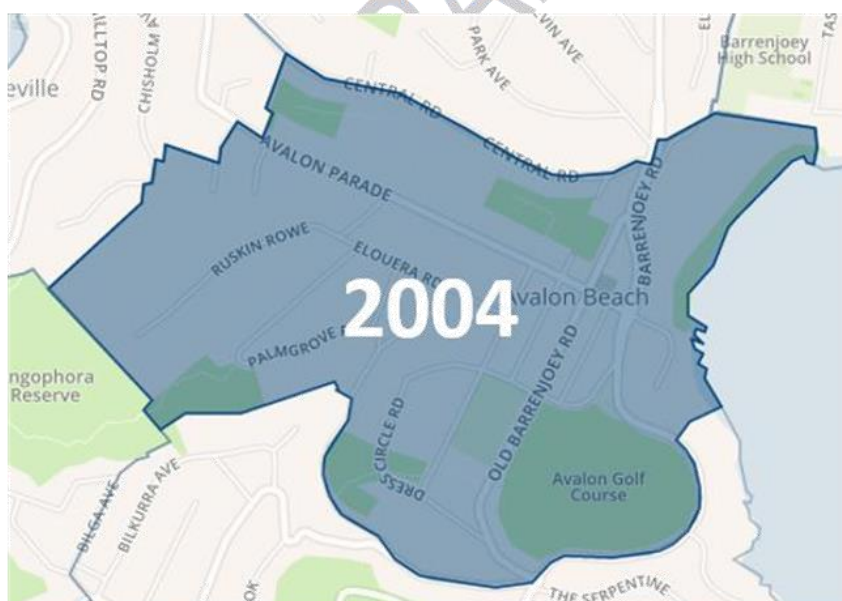
Figure 2-8 Employment Status for Workers Residing in Avalon



Source: Australian Bureau of Statistics, Census of Population and Housing 2011

Data from the Transport for NSW Performance and Analytics (TPA) was obtained and was assessed for the Avalon area. Travel Zone 2004 was used to estimate the demography in the Avalon study area as shown in Figure 2-9.

Figure 2-9 Location of Travel zone 2004



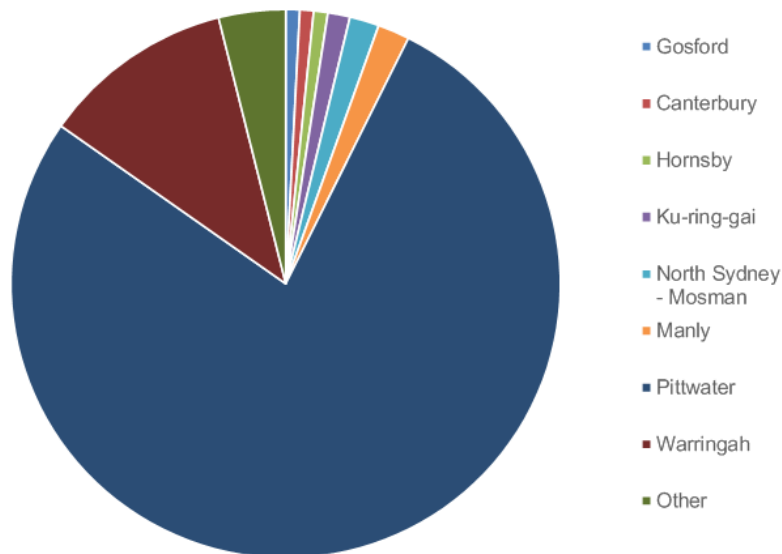
Source: <http://visual.bts.nsw.gov.au/twbasic/#2004>

According to the 2011 Australian Bureau of Statistics Journey to Work data, a total of 1,220 people work in the selected travel zone (2004). Of this total, the greatest proportion (77 percent) live in the former Pittwater Council area, as shown at Figure 2-10.

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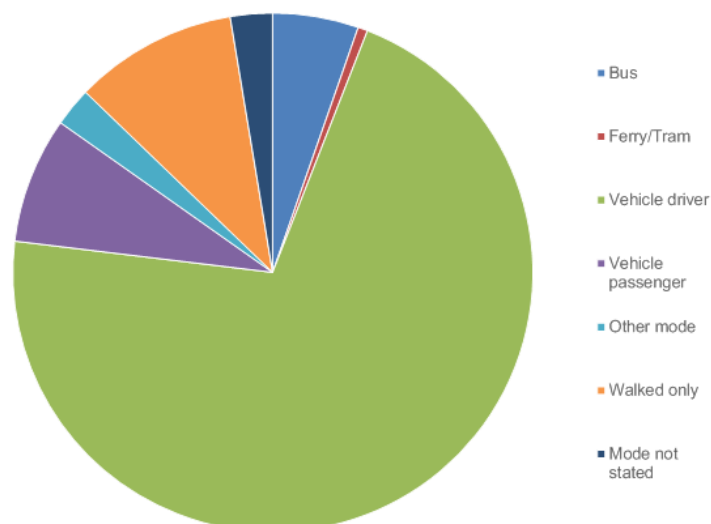
Figure 2-10 Resident locations of people employed in Travel Zone 2004



Source: <http://visual.bts.nsw.gov.au/twbasic/#2004>

Journey to work data of the 1,220 people working in the selected travel zones is also analysed and is shown at Figure 2-11. 227 people either worked at home or did not go to work. The most common form of transport is driving to work, with 58 percent of the proportion. The next most common form of transport was by walking only with 8 percent of the proportion. This further emphasises the need to create an efficient pedestrian network for the Avalon area.

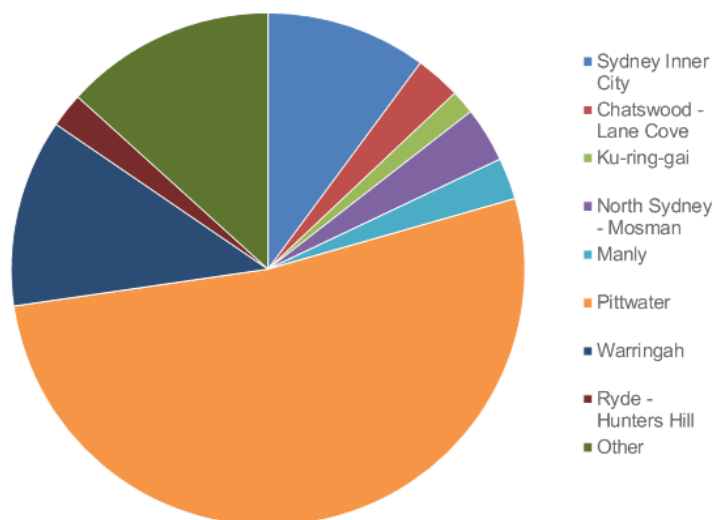
Figure 2-11 Journey to Work method of people employed in Travel Zone 2004



Source: <http://visual.bts.nsw.gov.au/twbasic/#2004>

A total of 919 residents living within the selected travel zones there are employed. As shown at Figure 2-12, the highest portion of employees worked in the former Pittwater Council area (52 percent).

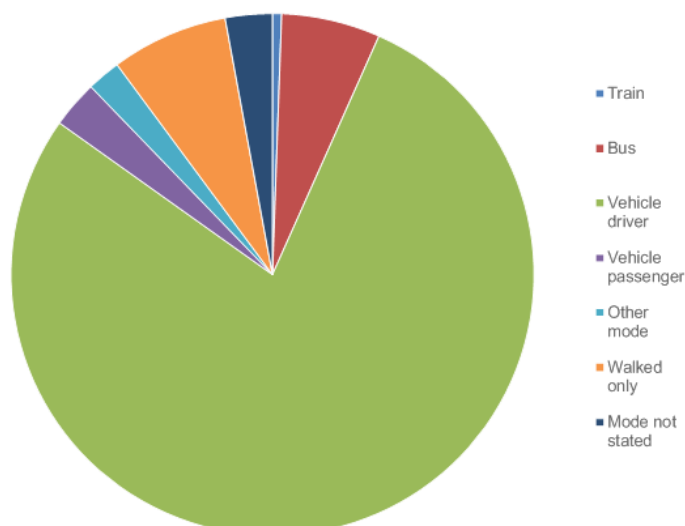
Figure 2-12 Work places of people living in Travel Zone 2004



Source: <http://visual.bts.nsw.gov.au/twbasic/#2004>

Journey to work mode share data for the 919 employed people living in the selected travel zone was analysed and is shown at Figure 2-13. The data indicates that there is a high mode share for private vehicles, with 78 percent of all journeys to work taking place by motor vehicle. Walking was the second highest mode which accounted for seven percent of the total mode share followed by bus, which accounts for six percent of the travel mode.

Figure 2-13 Journey to Work method of people living in Travel Zone 2004



Source: <http://visual.bts.nsw.gov.au/twbasic/#2004>

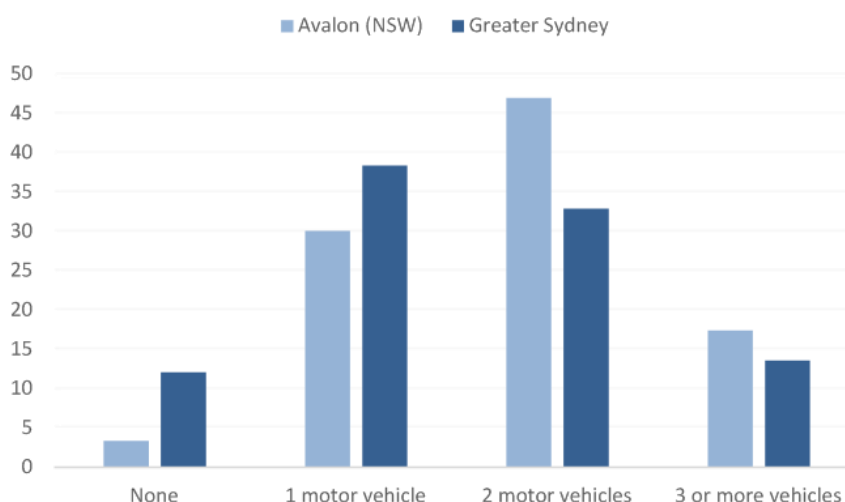
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2.5.3 Car ownership

Data for the number of motor vehicles parked at residential addresses in Avalon and Greater Sydney is summarised in Figure 2-14. This indicates the following:

- Three percent of households in Avalon do not have a motor vehicle, compared to 12 percent in Greater Sydney;
- 30 percent of households in Avalon have one vehicle, compared to 38 percent in Greater Sydney; and
- 64 percent of households in Avalon have two or more vehicles, compared to 50 percent in Greater Sydney.

Figure 2-14 Motor vehicle ownership

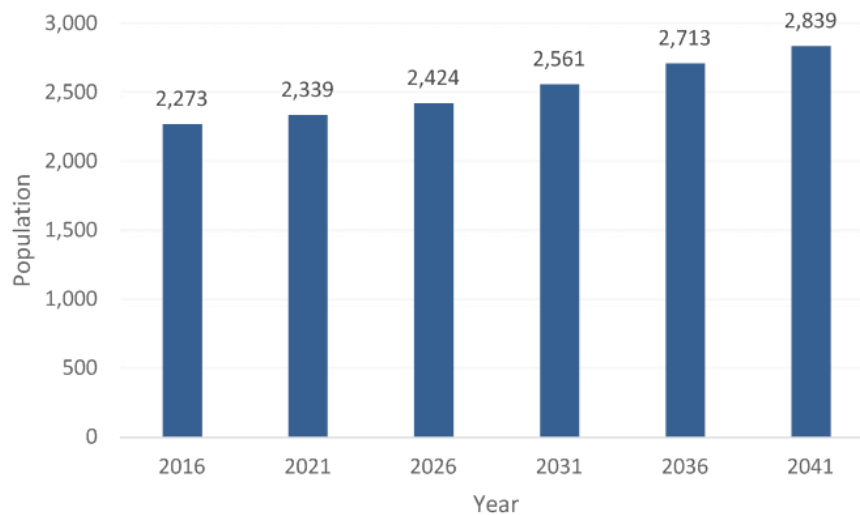


2.5.4 Future Population and Employment

Forecast Population

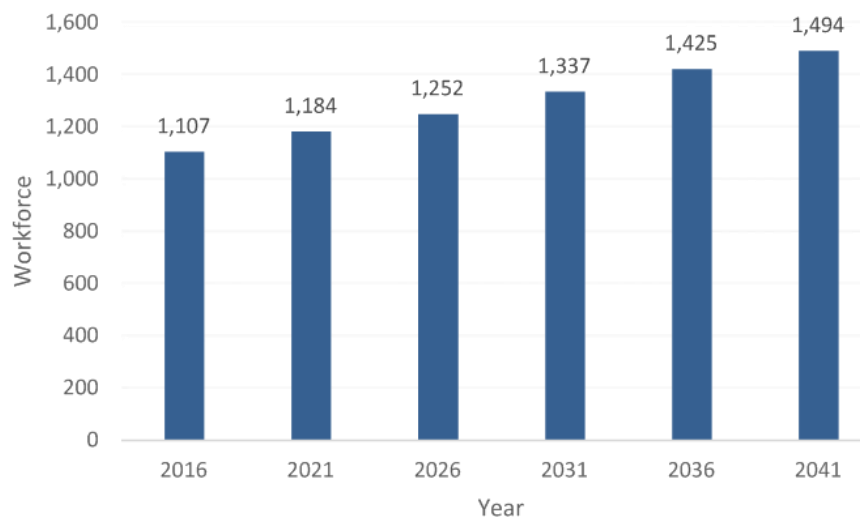
Approximately 2,300 people currently live within the travel zone for Avalon. This is forecast to grow to around 2,800 people by 2041, as shown in Figure 2-15. This is an increase of 22 percent from the current population.

Figure 2-15 Forecast population in Avalon Travel Zone



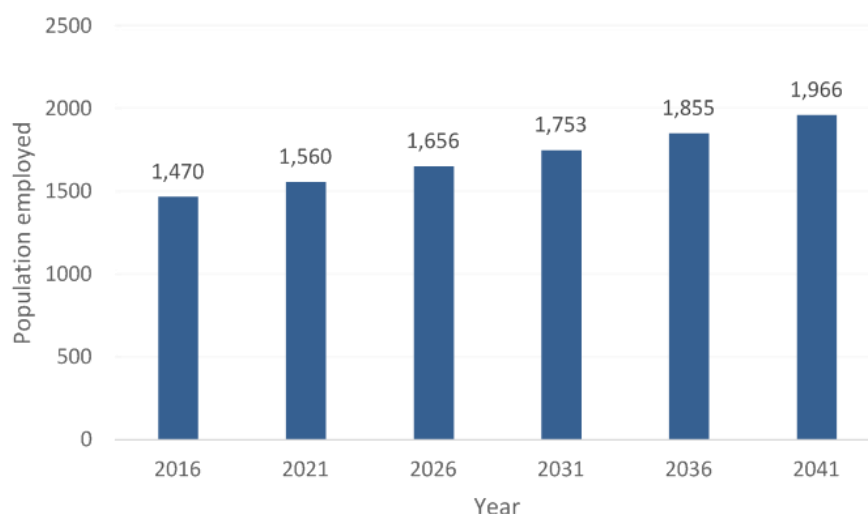
Source: [NSW](#) Bureau of Transport Statistics employment forecasts

Figure 2-16 Forecast workforce in Avalon



Source: [NSW](#) Bureau of Transport Statistics employment forecasts

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Figure 2-17 Forecast employment in Avalon

Source: [NSW Bureau of Transport Statistics](#) employment forecasts

2.6 Existing Land Use and Infrastructure

Land uses for the *Walk Avalon* study area shown at Figure 1-1. As shown, land uses within the study area are predominantly residential, retail (local centre) public recreation. Commercial uses are located within the Avalon town centre.

2.6.1 Transport Network

Road Hierarchy

State Roads perform a state function and are fully funded and managed by the RMS. Council maintains local and regional streets or roads.

The classification of roads within the existing road network can be used as an indication of the functional role each road plays with respect to the volume of traffic they should appropriately carry. Roads and Maritime have developed a set of functional road hierarchy classifications detailed in Table 2-1, which indicate typical nominal average annual daily traffic (AADT) volumes for various classes of roads.

Table 2-1 Functional Classification of Roads

Type of Road	Traffic Volume (vpd*)	Peak Hour Volume (vph*)
Motorways/Freeways	>15,000	>5,600
Arterial Road	>15,000	1,500 – 5,600
Sub-Arterial Road	5,000 – 20,000	500 – 2,000
Collector Road	2,000 – 10,000	200 – 1,000
Local Road	<2,000	0 – 200

Source: NSW Roads and Maritime Service (formerly NSW RTA), Road Design Guide and AMCORD

*Note vpd = vehicles per day, vph = vehicles per hour

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Roads in the study area have been reviewed based on the classification provided in Table 2-1. The outcomes of the AADT data assessment was limited to the availability of daily traffic volume datasets which were previously collected in November 2008.

Barrenjoey Road

Barrenjoey Road is a State Road under the management and control of Roads and Maritime Services. It has a two-way hourly traffic flow of approximately 1,600 vehicles per hour during weekday peak periods. It functions as an arterial road providing generally two traffic lanes in each direction north of Avalon Parade and one lane in each direction south of Avalon Parade.

On-street parking is available on the western side of Barrenjoey Road between Old Barrenjoey Road and The Crescent. Four bus stops are located along the study section of Barrenjoey Road, with services to route 188, 189, 190, 191, 192, E88, L88 and L90 operating from these stops.

Barrenjoey Road currently has a sign posted speed of 60 km/h within the *Walk Avalon* study area, with a 40 km/h school zone in operation between 8.00-9.30 am and 2.00-4.30 pm during school days.

Figure 2-18 Barrenjoey Road, viewed northwards from Avalon Parade



Avalon Parade

Avalon Parade functions as a collector road and provides two traffic lanes in each direction near Barrenjoey Road. Outside of the town centre it has one traffic lane and one parking lane. On-street parking spaces are available on both sides of the road particularly around the town centre with provision of parallel parking and 90° parking.

There are six bus stops located along Avalon Parade within the 400 m study area, with route bus routes 191, 192 and E89 operating from these stops.

Avalon Parade provides access to a mix of retail and residential land uses and has a sign posted speed limit of 50 km/h through the residential area and 40 km/h high pedestrian activity area speed limit within the town centre.

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Figure 2-19 Avalon Parade, viewed eastwards from Bellevue Avenue



Old Barrenjoey Road

Old Barrenjoey Road functions as a collector road and provides one traffic lanes in each direction and one parking lane. On-street parking spaces are available on both sides of the , with 90 degree angle parking, located to the south of Avalon Parade.

Bus stops are located along Old Barrenjoey Road, with bus routes 189, 191, 192 and E89 operating from these stops.

Within the study area, Old Barrenjoey Road mainly provides access to retail, residential and educational land uses, including Avalon Public School.

Old Barrenjoey Road has a signposted speed limit of 50 km/h, with a 40 km/h school zone in operation between 8.00-9.30 am and 2.00-4.30 pm during school days.

Figure 2-20 Old Barrenjoey Road viewed northwards from The Crescent



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2.7

2.7 Crash Statistics

2.7.1 Pedestrian crash data

Crash statistics for roads within the study area over a five-year period between 2011 and 2015 were obtained from TfNSW. The crash data has been used to determine the main factors contributing to crashes within the study area.

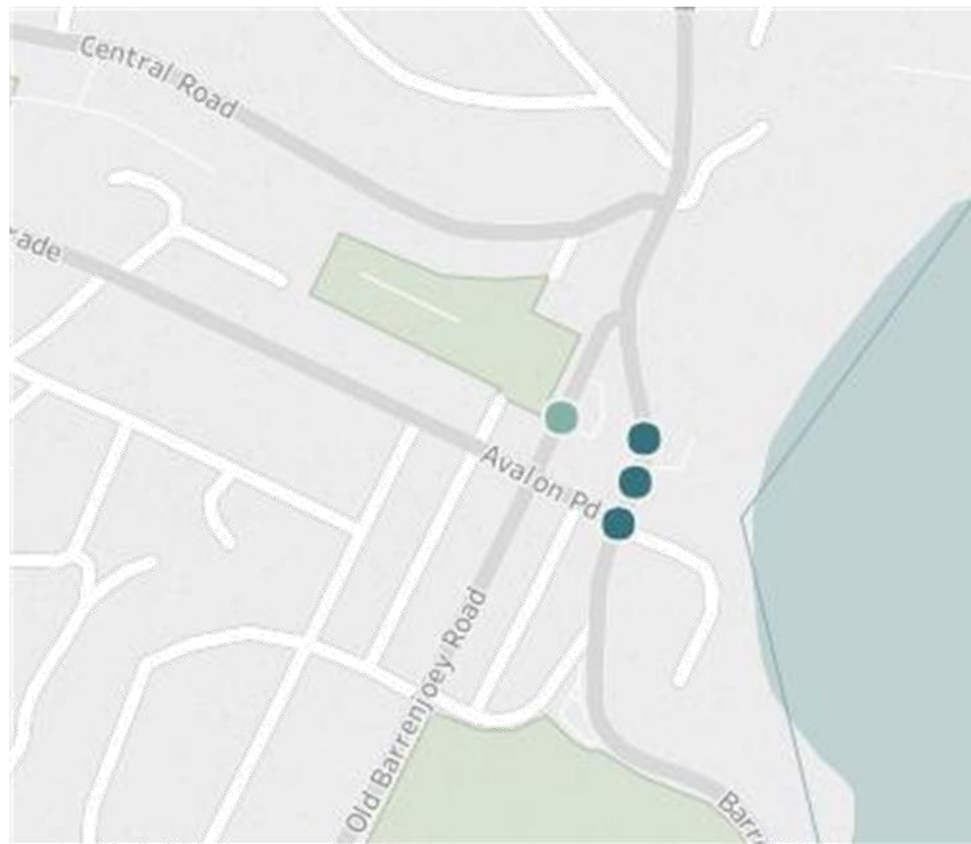
A summary of the recorded crashes along each street in the study area during this five year period is shown at Table 4-3, which summarises crashes by crash types and whether the incident occurred at an intersection or midblock street section.

The crash locations are shown at Figure 2-21.

Table 2-2 Recorded Crashes with Pedestrians in Avalon (2011 – 2015)

Street	Location	Location . Nearest Intersecting Street	Time of day	Type	Injuries	Severity
Old Barrenjoey Road	Midblock	Avalon Parade	Daylight	Pedestrian nearside	1	Moderate
Barrenjoey Road	Midblock	Avalon Parade	Daylight	Pedestrian nearside	1	Serious
Barrenjoey Road	Midblock	Avalon Parade	Daylight	Pedestrian nearside	1	Serious
Barrenjoey Road	Intersection	Avalon Parade	Daylight	Working on carriageway	2	Serious

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Figure 2-21 Crashes involving pedestrians between 2011 - 2015

Source: http://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats/lga_stats.html?tblga=4

Table 2-2 indicates that there were four crashes involving pedestrians over the five year period. All crashes occurred during the day.

The cluster of crashes on Barrenjoey Road highlights the lack of safer crossing points away from the intersection with Avalon Parade.

Barrenjoey Road

Three crashes were recorded on Barrenjoey Road and resulted in serious injuries. These incidents also occurred to the north of Avalon Parade, indicating that location this is a high risk zone for pedestrians. This is likely due to the number of pedestrians who cross at an informal crossing location, at the walking route between Avalon Beach and the town centre. Figure 2-22 shows a photograph of this location along Barrenjoey Road. As shown, there is a median strip dividing the road, which may encourage pedestrians cross Barrenjoey Road at this location.

Figure 2-22 Barrenjoey Road, viewed northwards from Avalon Parade



Old Barrenjoey Road

The other pedestrian related incident occurred on Old Barrenjoey Road. This incident occurred at a midblock location between the Avalon Recreation Centre and Woolworths carpark.

Old Barrenjoey Road can be seen below in Figure 2-23. It has one lane in each direction and provision of car parking spaces on both sides. This could also explain the higher crossing rates in this location. The image also shows a pedestrian walking diagonally across the street.

Figure 2-23 Old Barrenjoey Road, towards north



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2.7.2 Vehicle Crash Data Review

Crash statistics for roads within the study area over a five-year period between 2011 and 2015 were obtained from TfNSW. This crash data was used to determine the main factors contributing to crashes within the study area. A total of 42 crashes occurred during this time.

A summary of the recorded crash clusters in the study area during this five-year period is shown at Table 2-3, which summarises crashes by crash types and whether the incident occurred at an intersection or midblock street section. As shown in Figure 2-24, the majority of crashes occurred on Barrenjoey Road with Avalon Parade being the next highest road for crashes.

Summary of crashes below:

Five crashes were recorded along Avalon Parade including:

- One crash with a pedestrian emerging from a footpath
- One crash involved a vehicle emerging from a driveway, which could pose a risk to pedestrians.
- Three at the intersection with Ruskin Row, which all involved a collision with a parked vehicle or permanent object indicating speed was a factor.

32 crashes were recorded along Barrenjoey Road, with 15 of these recorded in the vicinity of the intersection with Avalon Parade, including:

- Seven crashes were rear end crashes, indicating lack of driver observation
- Three crashes were right / through crashes indicating an issue with the sight distance / intersection design. Any required improvements to the intersection design would provide an opportunity for pedestrian improvements.
- The rest of the incidents involved a collision with a parked vehicle, a vehicle emerging from a driveway, a pedestrian emerging from a footpath, a lane change collision.

Seven incidents occurred at the intersection with Old Barrenjoey Road:

- Five involved right turning vehicles, indicating a sight distance issue at the intersection.
- The other two incidents involved a left nearside crash and a collision with an object off the carriageway, indicating speed was a factor.

Table 2-3 Recorded Vehicle Crashes in Avalon (2011 – 2015)

Street	Location	Nearest Intersecting Street	Time of day	Type	Injuries	Severity
Barrenjoey Road	Intersection	Avalon Parade	Dawn	Rear end	1	Moderate
Barrenjoey Road	Intersection	Avalon Parade	Day	Rear end	1	Moderate
Barrenjoey Road	Intersection	Avalon Parade	Day	Off carriageway right on right bend into object/parked vehicle	-	Non-casualty
Barrenjoey Road	Intersection	Avalon Parade	Dusk	Right through	-	Non-casualty
Barrenjoey Road	Intersection	Avalon Parade	Night	Right through	-	Non-casualty
Barrenjoey Road	Intersection	Avalon Parade	Day	From footpath	1	Minor
Barrenjoey Road	Intersection	Avalon Parade	Day	Rear end	1	Moderate

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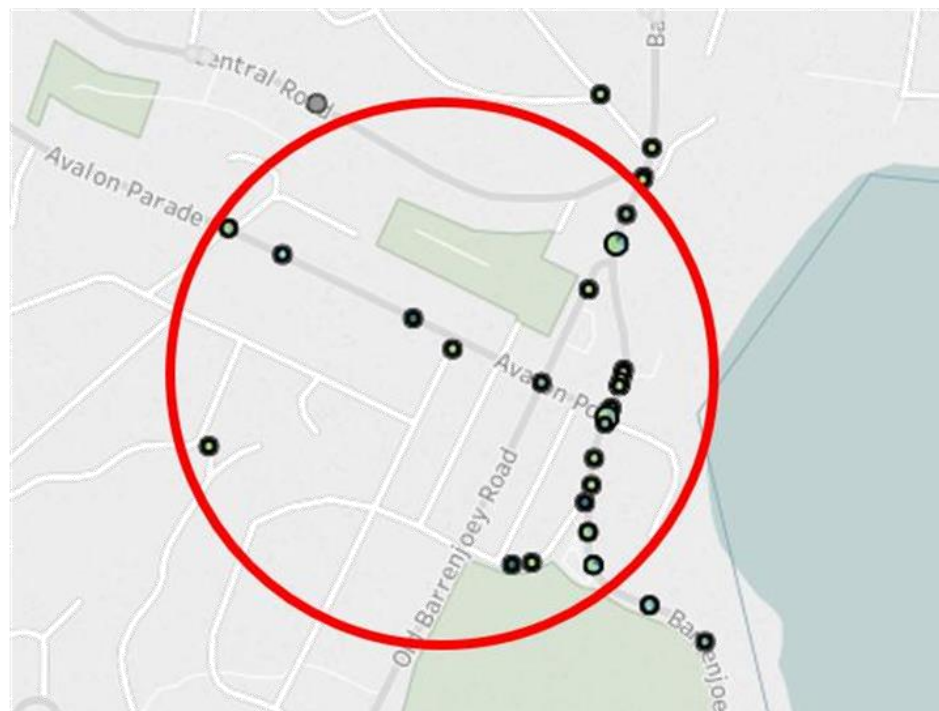
Street	Location	Nearest Intersecting Street	Time of day	Type	Injuries	Severity
Barrenjoey Road	Intersection	Avalon Parade	Day	Right through	1	Moderate
Barrenjoey Road	Divided road	Avalon Parade	Dawn	Lane change left	1	Moderate
Barrenjoey Road	Divided road	Avalon Parade	Day	Rear end	5	Minor
Barrenjoey Road	2-way undivided	Avalon Parade	Day	Emerging from driveway	-	Non-casualty
Barrenjoey Road	Divided road	Avalon Parade	Day	Rear end	-	Non-casualty
Barrenjoey Road	2-way undivided	Avalon Parade	Day	Right rear	-	Non-casualty
Barrenjoey Road	Divided road	Avalon Parade	Day	Leaving parking	-	Non-casualty
Barrenjoey Road	Divided road	Avalon Parade	Day	Rear end	1	Serious
Barrenjoey Road	Divided road	Kevin Avenue	Night	Parking vehicles	-	Non-casualty
Barrenjoey Road	Intersection	Central Road	Day	Rear end	-	Non-casualty
Barrenjoey Road	Intersection	Central Road	Day	Right through	-	Non-casualty
Barrenjoey Road	T-junction	Old Barrenjoey Road	Night	Right far	-	Non-casualty
Barrenjoey Road	T-junction	Old Barrenjoey Road	Day	Right near	2	Moderate
Barrenjoey Road	T-junction	Old Barrenjoey Road	Day	Right near	-	Non-casualty
Barrenjoey Road	Divided road	Old Barrenjoey Road	Day	Off carriageway right on right bend into object/parked vehicle	1	Moderate
Barrenjoey Road	T-junction	Old Barrenjoey Road	Dusk	Right near	1	Minor
Barrenjoey Road	Y-junction	Old Barrenjoey Road	Day	Right through	-	Non-casualty
Barrenjoey Road	T-junction	Old Barrenjoey Road	Day	Left near	2	Serious injury
Avalon Parade	T-junction	Ruskin Rowe	Day	Right off carriageway into object / parked vehicle	1	Moderate
Avalon Parade	T-junction	Ruskin Rowe	Night	Left off carriageway into object / parked vehicle	-	Non-casualty
Avalon Parade	Divided	Ruskin Rowe	Night	Permanent obstruction	1	Minor
Avalon Parade	2-way undivided	Bellevue Ave	Day	Emerging from drive	1	Serious injury
Bellevue Ave	2-way undivided	Avalon Parade	Day	Left off carriageway into object / parked vehicle	-	Non-casualty
Avalon Parade	Intersection	Avalon Parade	Day	From footpath	1	Moderate

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Street	Location	Nearest Intersecting Street	Time of day	Type	Injuries	Severity
Old Barrenjoey Road	2-way undivided	Avalon Parade	Day	Left off carriageway into object / parked vehicle	-	Non-casualty
Barrenjoey Road	2-way undivided	The Crescent	Day	Rear end	-	Non-casualty
Barrenjoey Road	T-junction	The Crescent	Day	Left rear	1	Serious injury
Barrenjoey Road	2-way undivided	The Crescent	Night	Head on	-	Non-casualty
Barrenjoey Road	2-way undivided	The Crescent	Dawn	Off carriageway left on right bend into object / parked vehicle	1	Minor
Barrenjoey Road	2-way undivided	The Crescent	Dusk	Out of control	1	Serious injury
Barrenjoey Road	2-way undivided	The Crescent	Day	Off carriageway left on right bend into object / parked vehicle	-	Non-casualty
Barrenjoey Road	2-way undivided	The Crescent	Night	Off carriageway left on left bend into object / parked vehicle	1	Moderate

Figure 2-24 Crashes involving pedestrians between 2011 - 2015



Source: http://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats/lga_stats.html?tblga=4

3. Existing Pedestrian and Mobility Audit

This section builds on the investigations undertaken in previous sections in order to define a set of user and functional requirements defined in terms of issues to be addressed through the improvements to pedestrian infrastructure. The outputs of this section constitute the brief for the development of pedestrian infrastructure improvement options. Existing traffic calming and pedestrian facilities in the study area is shown at Figure 3-1.

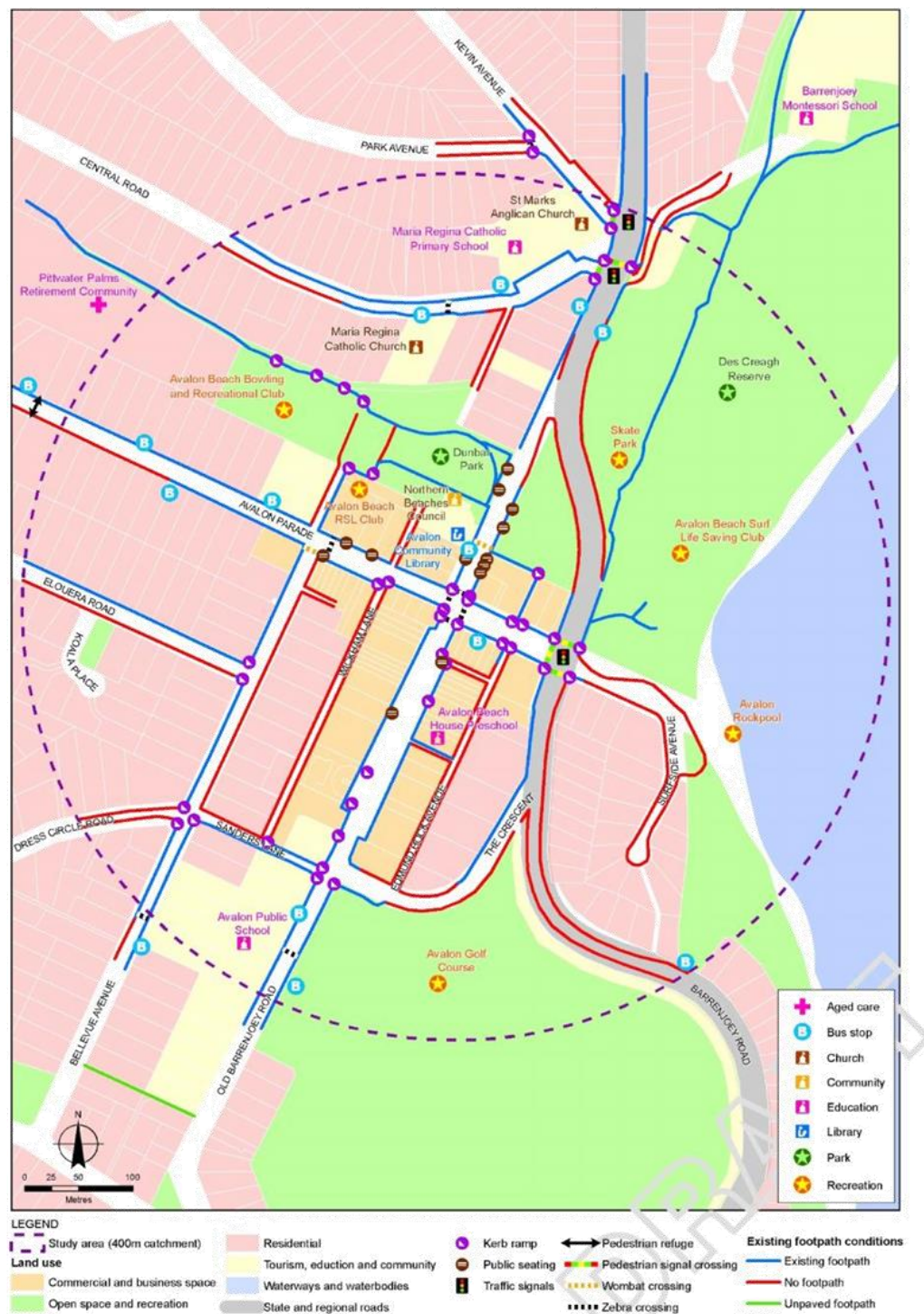
An audit of existing conditions was undertaken for each precinct in the study area. The audit focused on identifying existing facilities, land uses, any shortcomings in the pedestrian environment and potential safety issues. The audit has been developed through:

- Online community survey and a community pop-up session, as summarised in Section 3.1; and
- Site inspections, which were conducted on Tuesday 6 October 2016 and Monday 24 October 2016.

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Figure 3-1 Existing Pedestrian Infrastructure Map



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3.1 Summary of Findings of the Community Consultation

In October and November 2016, community engagement was undertaken to determine the community's views, concerns, and ideas relating to pedestrian facilities, including:

- Two surveys to allow the community to provide information about existing transport and walking behaviours and issues. A survey of the broader community received a total of 133 responses, and a survey of schools within the study area received a total of 23 online responses. The online walking surveys were promoted through the following:
 - Manly Daily Council Have Your Say website;
 - Direct emails to resident and community groups and Avalon Palm Beach Business Chamber;
 - Media releases to the Manly Daily;
 - Posters and flyers dropped to local businesses; and
 - Council's Facebook page.
- The Walk Avalon Footpath Pop-up Session, in which GHD held informal one-on-one discussions with members of the public, to identify existing issues in the pedestrian network in Avalon. Over 50 people attended the pop-up session.
- Ten people also chose to provide additional feedback by email.

3.1.1 Key results

The key results of community engagement included:

- The majority of general survey respondents (91%) have access to a motor vehicle. Driving was the most popular mode of transport.
- The most popular reason why general survey respondents do not walk more often was the road having no marked or dedicated footpath (54%). The most popular proposed change that would make survey respondents more likely to walk on a regular basis, was better availability of footpaths, roads and streets.
- The most popular reason why school survey respondents do not walk more often was a lack of safe pedestrian crossings at busy roads (57%). Over two-thirds of school respondents (39%) regularly cross Barrenjoey Road to get to school. The most popular proposed change was additional road/rail crossings for pedestrians (64%).
- In the surveys and pop-up session, some of the most commonly identified gaps in the Avalon walking network were:
 - Barrenjoey Road between Plateau Road roundabout and Avalon Parade, especially near the Serpentine;
 - Barrenjoey Road from Avalon to Palm Beach – improve safety, especially near the intersection with Carrel Head Road;
 - Traffic lights at the four-way intersection in the town centre;
 - Pedestrian crossings at the Barrenjoey Road/Avalon Parade intersection;
 - Making Old Barrenjoey Road pedestrianised north of Avalon Parade;
 - Upgrade to creek footpath from Catalina Crescent and North Avalon Road near the high school;
 - Riverview Road and Hilltop Road;
 - Hudson Parade footpath extension, from Clareville to Taylors Point; and

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- Riviera Avenue and Stapleton Reserve
- Cabarita Road
- Patrick Street
- Central Road
- Kevin Street
- Alleyway access on corner of Avalon Parade and Central Road should be re-opened

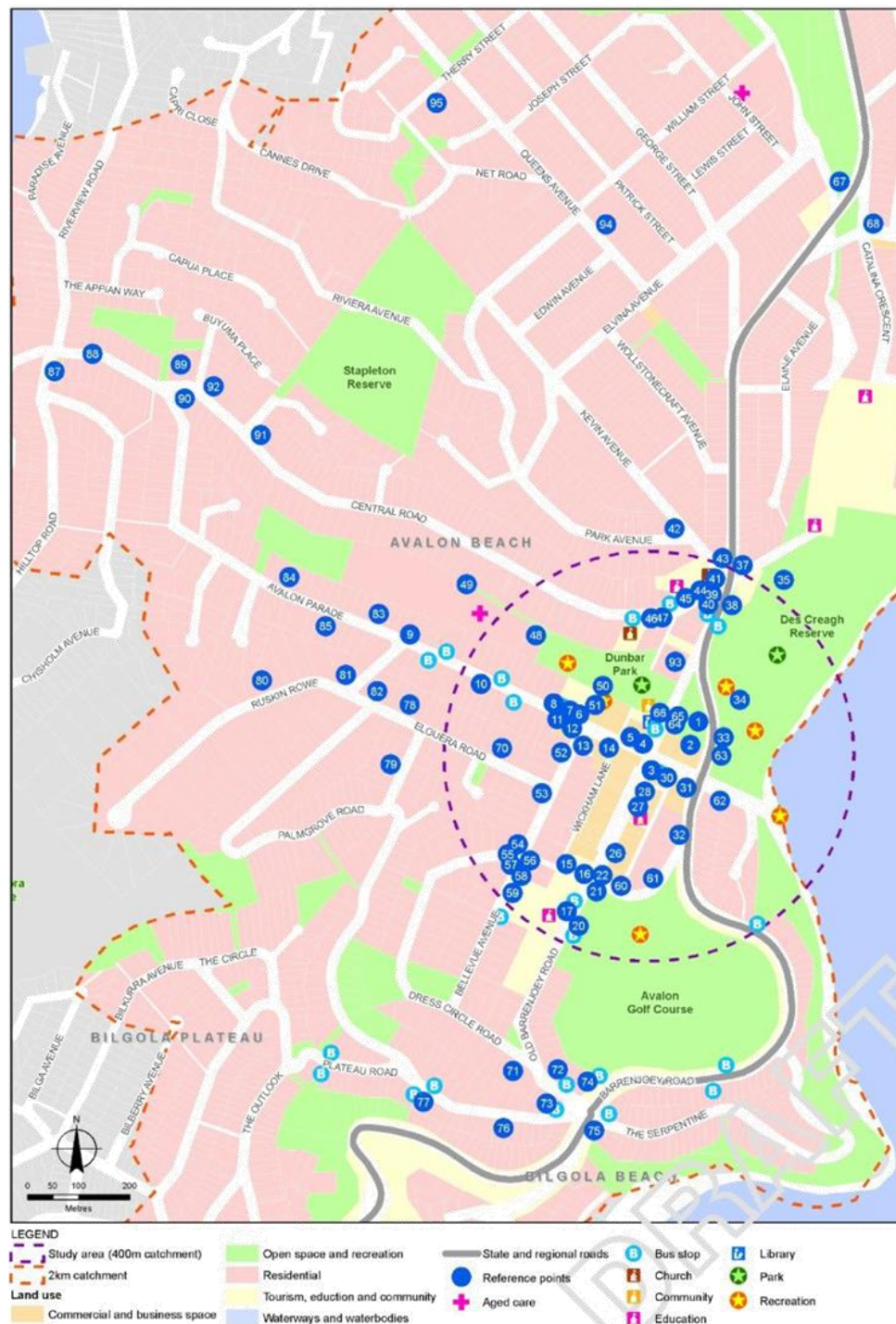
Further details of the consultation and findings undertaken for Walk Avalon is provided within the Walk Avalon Consultation report, provided at Appendix A.

3.2 Existing Issues and Constraints Audit

The issues and constraints for pedestrian access and mobility were determined in a field survey conducted on Tuesday 6th September 2016. A summary of the constraint locations are shown in Figure 3-2 and a description of the corresponding ID issues in Table 3-1.

A detailed list of these issues, together with photos of existing mobility issues, is provided at Appendix B.

Figure 3-2 Locations of Existing Issues and Constraints for Pedestrians



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Table 3-1 Summary of Issues Corresponding to IDs

Row Labels	PAMP ID Reference	Total Issue Locations
Footpath obstruction	41	1
Footpath width	44, 45, 53, 56, 72, 76	6
Intersection design	3, 9, 75	3
Kerb ramps	2, 13, 15, 21, 24, 26, 27, 28, 30, 50, 54, 58, 64, 68, 69, 71, 73, 82, 90, 91	20
Kerb ramps / Tactile Ground Surface Indicators	31, 40	2
Laneway	5, 29, 93	3
Missing link	1, 10, 32, 33, 34, 36, 37, 39, 47, 49, 55, 60, 62, 65, 78, 79, 80, 81, 85, 94, 95	21
No pedestrian crossing	23, 63	2
No shared zone	14	1
Non traffic signal controlled pedestrian crossing at traffic lights	38	1
Non-standard pedestrian fencing	43	1
Non-standard pedestrian refuge / kerb ramps	42, 83, 84, 88	4
Old pedestrian infrastructure	18, 19, 57, 59	4
Overgrown foliage	46, 74, 77	3
Poor quality footpath	4, 7, 8, 17, 22, 25, 35, 51, 52, 66, 70, 86, 87, 89, 92	15
Steps	11, 61	2
Trip hazard	6, 12, 20, 48, 67	5
Wide crossing	16	1

4. Planning for Pedestrians

Walking is the simplest form of transportation. It is available to most people, including those who use mobility aids; is free and has insignificant environmental cost. Furthermore, all trips involve some walking component, even if they are only from the car park to the shop. Therefore, planning for safe and convenient pedestrian access is very important in transportation planning.

This section provides some introductory guidance on planning for walking.

4.1 Creating a Safe and Attractive Environment for Walking

Pedestrians use every part of the public domain, including roads, footpaths, nature strips, shopping centres and other public spaces. Some planners and engineers incorrectly assume that planning for pedestrians will follow the same logic as traffic planning:

- Car → 'trips' → 'routes' → 'traffic network'

The planning scale for pedestrians is detailed to accommodate the local nature of the trips. Pedestrian movement can be better conceptualised in terms of:

- Pedestrian → 'activity' → 'areas of activity' → 'pedestrian environment'

Rather than conforming to traditional traffic engineering concepts like turning radii and design speeds, pedestrians are far more attuned to the environment in which they are moving. Therefore, planners need to consider the needs of pedestrians with regards to design, amenity, and personal security. Pedestrians are particularly vulnerable to cars and other motorised traffic.

Pedestrian Needs

The provision of pedestrian infrastructure should not only aim to fulfil the requirements of existing users or to comply with relevant standards, but should also promote walking for transport, recreation and health and increase the number of trips taken by foot. Such an outcome would result in fewer car trips, healthier residents and a more active (and safe) public domain. A number of elements are required in order to provide a high quality pedestrian environment:

Safety

Perceived and actual safety is very important to pedestrians. Road crossings present the greatest danger to pedestrians. Therefore, safe crossing locations should be provided at regular intervals along major streets or at the location where key desire lines cross major streets. Pedestrians will rarely walk along an indirect route to access safe crossing points, so frequent, direct crossing points should be provided.

Lighting and open space is important for security. Pedestrians of all ages and genders need to feel that it is safe to walk whenever they choose to do so.

Directness

Pedestrians do not like to walk out of their way to reach a destination. This is a natural response to avoid the extra effort involved in walking extra distance. Pedestrian facilities serving desire lines between major centres of activity need to be direct and legible in order to provide for and encourage walking trips.

Wherever possible, barriers should be overcome with additional crossing points such as grade separated or signalised crossings, although grade separation does not always provide the most direct access.

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Engineering solutions to direct pedestrians for safety reasons (such as fencing) should only be used when no other solution is possible.

Amenity

Pedestrians are particularly sensitive to the quality of the urban environment. Areas with high volumes of traffic, excessive noise, and poor pavements will discourage walking. Additionally, urban areas should be maintained at a human scale that provides an attractive walking environment.

While it would be extremely costly to improve the amenity of all pedestrian areas, targeted works can achieve a great improvement in areas of high pedestrian activity (such as shopping streets, areas around commercial, employment and public buildings, and recreation areas). Spot improvement programs can also target localised areas of high need.

Suitable for all users

Quality pedestrian environments must be available to all who choose to use them. This requires compliance with Austroads Guide to Traffic Management and Guide to Road Design and AS1428.1-2001 - Design for access and mobility. Paths must be of a suitable width to accommodate the number of pedestrians (and other users, such as mobility scooters) expected and be of an appropriate gradient, including ramps. The path should be continuous and free of obstructions such as signage and street furniture. The needs of hearing and vision-impaired users must be considered and provided for, especially where user safety is an issue.

Pedestrian Strategies

Council should support and encourage walking in the Avalon area through the following actions:

- Provide an environment where the personal, social and environmental benefits of walking are recognised as paramount and that the needs of pedestrians are considered as a primary element in any projects affecting the urban landscape;
- Ensure that all planning and redevelopment includes walking as a safe, healthy and accessible form of transport; and
- Incorporate the needs of people with a disability into all levels of planning and implementation of the transportation network and public domain improvements.

4.2 Best Practice Standards

This sub-section provides a brief overview of best practice standards that apply to the treatment of pedestrian facilities.

Minimum Footpath Widths

The Austroads Guide to Road Design Part 6A 2009 – Pedestrians and Cyclist Paths states that:

As a guide, the desirable minimum width of a footpath that has a very low demand is 1.2 m with an absolute minimum of 1.0 m. These widths should be increased at locations where:

- *high pedestrian volumes are anticipated*
- *a footpath is adjacent to a traffic or parking lane*
- *a footpath is combined with bicycle facilities*
- *the footpath is to cater for people with disabilities .*

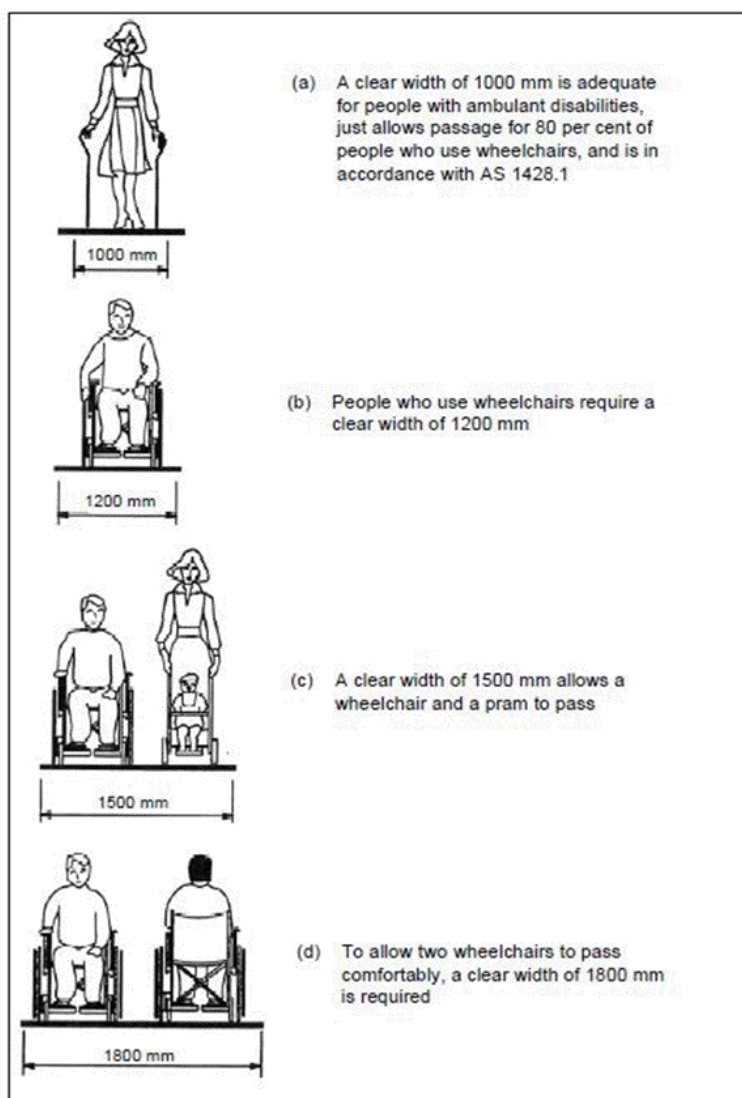
Figure 4-1 and Table 4-1 show the minimum widths for various types of footpath users.

Table 4-1 Minimum Footpath Widths

Situation	Desired width (m)	Comments
General low demand	1.2 to 1.0 (absolute minimum)	General minimum is 1.2 m for most roads and streets. Clear width required for one wheelchair. Not adequate for commercial or shopping environments.
High pedestrian volumes	2.4 m (or higher based on demand)	Generally commercial and shopping areas.
For wheelchairs to pass	1.8 to 1.5 (desired minimum)	Allow for two wheelchairs to pass (1.8 m comfortable, 1.5 m minimum) Narrower width (1.2 m) can be tolerated for short distances.
For people with other disabilities	1.8 to 1.0	

Source: Austroads Guide to Road Design Part 6A 2009 Pedestrians

Figure 4-1 Path Width Requirements for Various Users



Source: Austroads Guide to Road Design Part 6A 2009 Pedestrians

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Minimum Grades

Grades of footpaths and drop kerbs are important as they affect the usability and safety of pedestrian facilities. Long sections of high grade footpath can be extremely difficult for mobility impaired users to negotiate.

High grade kerb ramps can also cause safety issues for mobility impaired users. Users can become vulnerable to general traffic as they attempt leave the carriageway and proceed up steep ramps.

It is noted that AS 1428.1 – 1993, specifies that any footpath should not exceed a gradient of 1:8 as wheelchairs may tip backwards. This is considered as an absolute maximum ramp gradient and should only be used in extenuating circumstances.

Table 4-2 shows the maximum desirable grades for footpaths and kerb ramp treatments.

Table 4-2 Maximum Grades

Footpaths	Grade
Recommended maximum grade (footpaths)	1:10 (2.5% cross fall)
Absolute maximum grade (kerb ramps)	1:8

Source: *Austrroads Guide to Road Design Part 6A 2009 Pedestrians*.

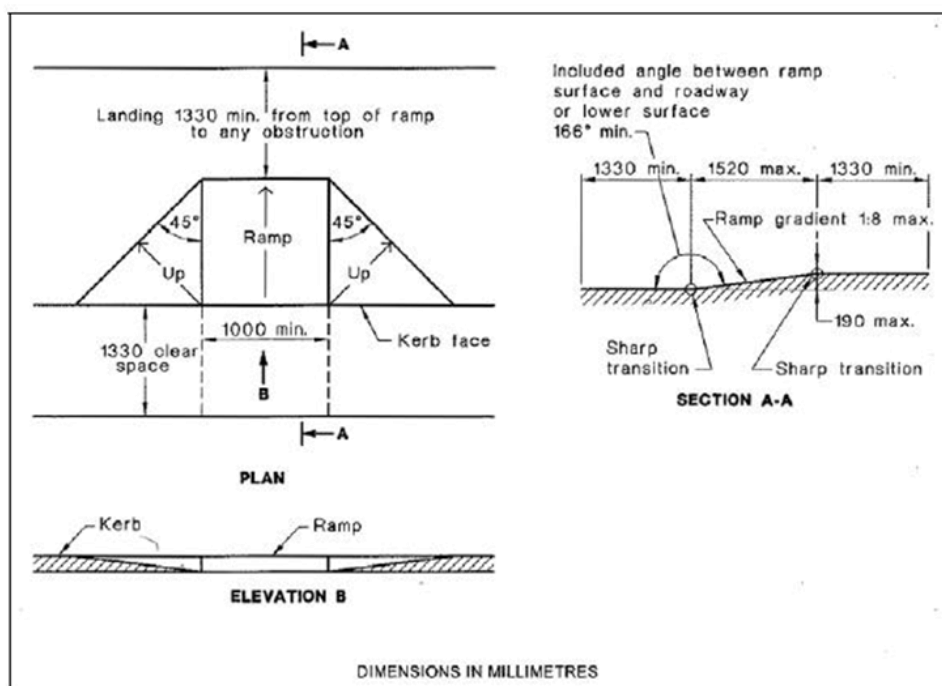
In hilly areas such as Avalon, these gradients are not always achievable and where possible consideration to alternative routes should be made.

Kerb ramps

The difference in the level between the footpath and the roadway is a common situation that poses difficulties for pedestrians, particularly with mobility and vision impairments. A drop kerb or kerb ramp provides a smooth change in the level between the footpath and the roadway (maximum grade of 1:8).

The general dimensions of a drop kerb are illustrated in Figure 4-2. The *Austrroads Guide to Road Design Part 4 – Intersections and Crossings* states that: "A minimum footway width of 1330 mm should be provided beyond the top of the ramp, to ensure that users of the footway along the street are not inconvenienced by the ramp."

Figure 4-2 Kerb Ramp Design



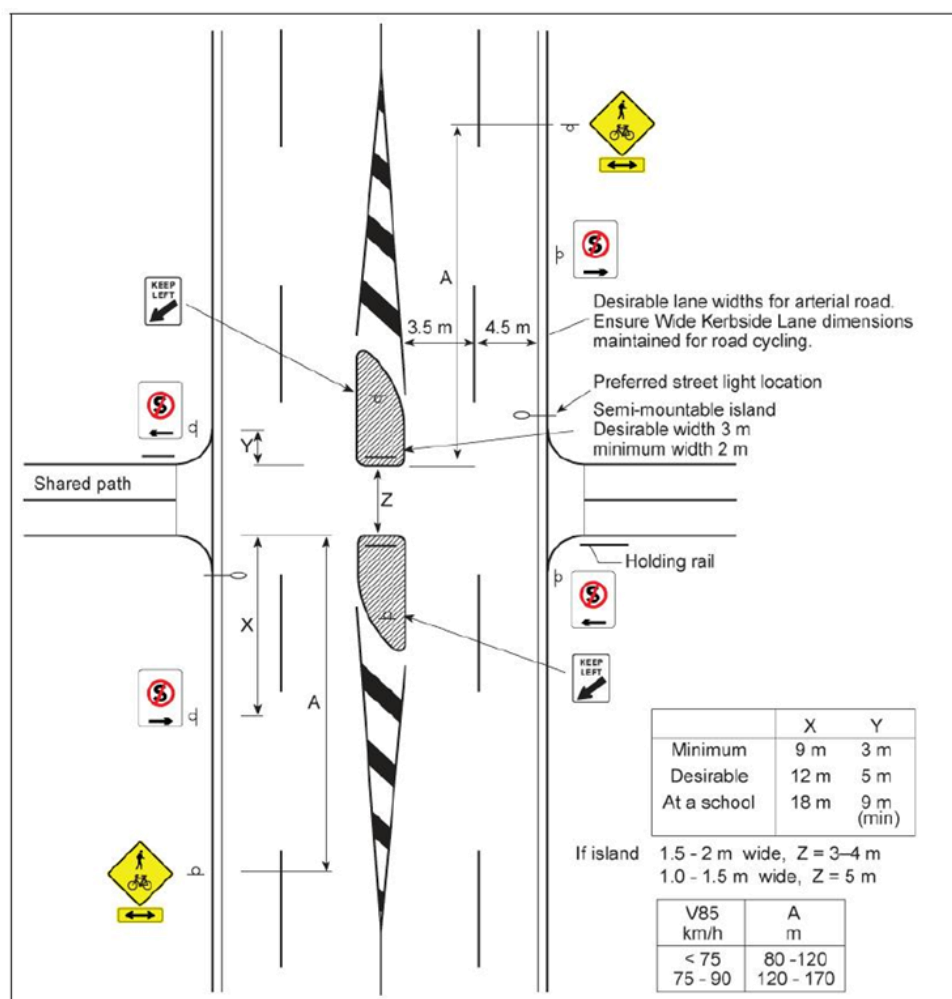
Source: Austroads Guide to Road Design Part 4 Intersections and Crossings.

Pedestrian Refuges

Pedestrian refuges allow a safe point for pedestrian store safe across wide or busy roads. It is noted that many people to not feel safe when using refuges and should the funds be available kerb extensions should be considered to reduce the width of the road at the crossing points rather than using refuges.

The general dimensions of a kerb ramps are illustrated in Figure 4-3. Pedestrian refuges should in all cases be adequately illuminated in accordance with AS/NZS 1158 – 2007 and careful positioning of street lights should be considered in accordance with AS 1158.4: 2007. Austroads Guide to Road Design Part 4 – Intersections and Crossings also recommends a refuge width of at least 2 m to allow storage for a person with a pram or bicycle needs.

Figure 4-3 Pedestrian Refuge Design

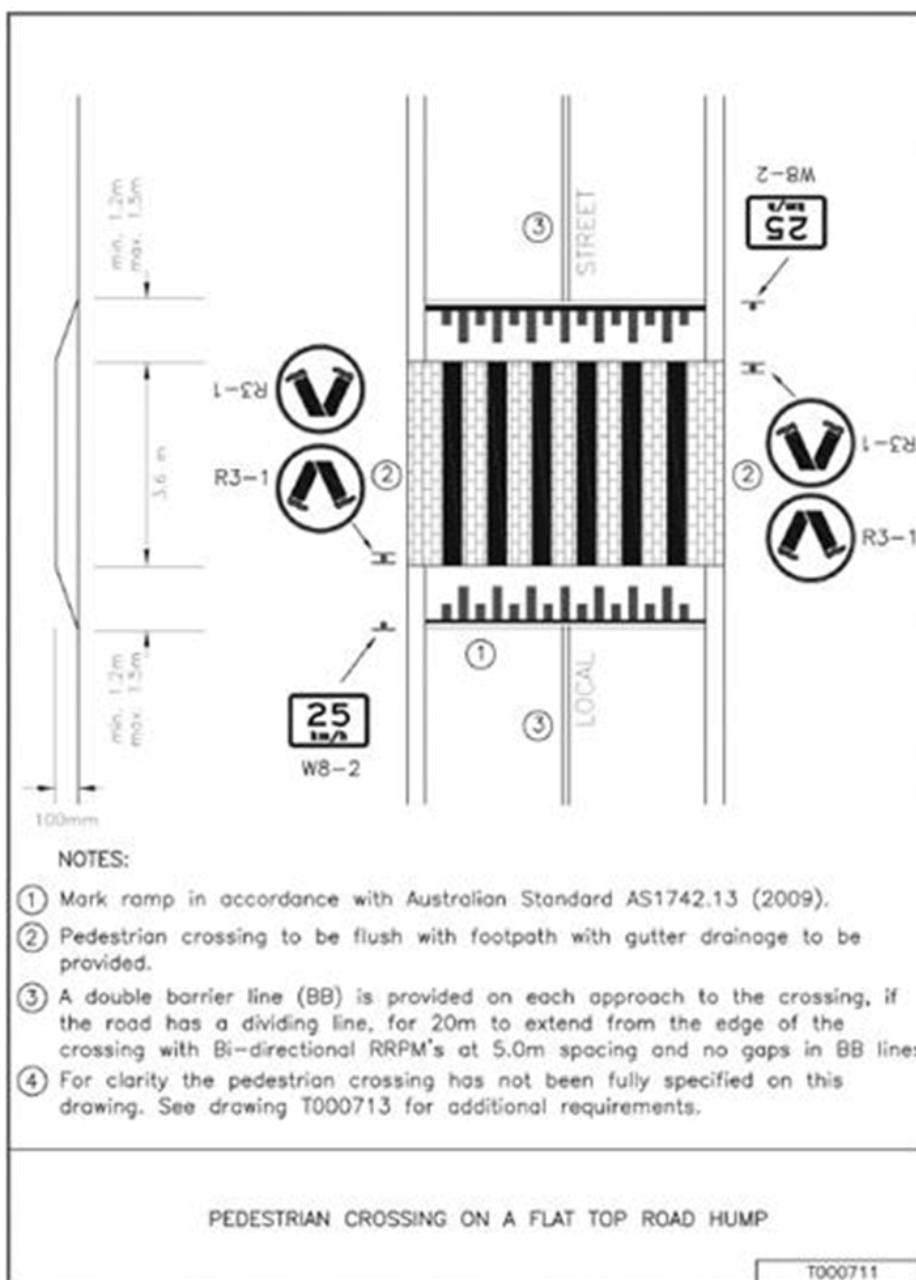


Source: Austroads Guide to Road Design Part 4 Intersections and Crossings.

Wombat Crossings

Wombat crossings are generally the same dimensions as flat top road humps (with pedestrian priority provided with the use of 'zebra' style line markings) as shown in Figure 4-4. It provides priority to pedestrians as well as acting as a traffic calming measure. The minimum length of the device including ramps is 6 metres and the desirable minimum height of the platform is 100 mm. Wombat crossings generally have ramp gradients of 1:15 to 1:20 to be bicycle and/or bus friendly. Wombat crossings can be used when the warrant for such a traffic control is met as required in AS 1742.10

Figure 4-4 Typical details of a wombat crossing



Source: RMS Australian Standards Supplement AS1742 Manual of Uniform Traffic Control Devices Parts 1-16 (RMS, July, 2013)

Tactile Ground Surface Indicators (TGSIs)

TGSI's should also be provided to indicate the edge of the roadway to sight impaired pedestrians.

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Roads and Maritime Requirements for Pedestrian (Zebra) Crossings

The Roads and Maritime *Australian Standard Supplements 2013*, section 6.3, provides practice for numerical warrants for a pedestrian (zebra) crossing. It is warranted where in each of three separate one hour periods in a typical day where:

- The pedestrian flow per hour (P) crossing the road is greater than or equal to 30 and;
- The vehicular flow per hour (V) through the site is greater than or equal to 500 and;
- The product PV is greater than or equal to 60,000.

Special Warrants may also be considered where consideration can be given to a potential pedestrian crossing site. In such circumstances, council should justify why this location is in need of special consideration. The special warrant conditions state that:

- $PV \geq 45,000$ and;
- $P \geq 30$ and;
- $V \geq 500$.

4.3 Methodology for Identifying Pedestrian Needs

4.3.1 Identification of Activity Generators and Primary Routes

The following approach was adopted in developing a hierarchy of pedestrian needs:

Primary Pedestrian Activity Zone

This is typically the main commercial street i.e. Avalon Parade in this case. Throughout the day, pedestrians are attracted to this zone from surrounding residential areas: therefore it is an important trip attractor. Also, there are high levels of pedestrian activity occurring within this zone, making it an important area for internal pedestrian movements (between shops and to car parking).

Secondary Pedestrian Activity Generators

This includes shops, schools, sporting facilities, clubs, hospitals and community facilities such as churches that are not located within the Primary Pedestrian Activity Zone (such as Avalon Recreation Centre). These land uses will attract people, but possibly only at certain times of the day or week.

Tertiary Pedestrian Activity Generators

These include the above land uses from the Secondary Activity Generators, but differentiate them based on a lower level of activity. Again, these are not located within the Primary Pedestrian Activity Zone.

Primary Pedestrian Routes

These are routes from residential areas to the Primary, Secondary and Tertiary Activity Zones and Generators. They are trunk or collector level routes, which do not reach every property but instead form a network of routes that are accessible to a significant catchment of population. These routes take account the existing street network and topographical constraints, aiming to provide a direct and convenient route to the major trip generators. The demographic use of connecting generators is considered when defining the routes (i.e. schools and playing fields, aged care facilities and return service league clubs).

4.3.2 Identification of Infrastructure Provision Goals

The hierarchy above provides a basis for applying standard treatments in each township, ensuring the development of a comprehensive and structured pedestrian network. Specific treatments may be required in some of these areas to accommodate the user needs or where other community suggestions are made.

These treatments form the basis of the proposed improvements. While this standard may not be achievable in the short-term due to the capital investment required, it is nevertheless a useful guide to work towards.

Desirable scenarios for potential infrastructure responses are outlined in Table 4-3.

Table 4-3 Infrastructure Provision Goals for Urban Areas

Hierarchy Feature	Desirable Route Infrastructure	Minimum Route Infrastructure
Primary Pedestrian Activity Zone	Footpaths of both sides of road adjacent to the generators within the Primary Pedestrian Activity Zone of full width between the property line and kerb line (typically 3-4 m).	Footpaths of both sides of road adjacent to the Primary Pedestrian Activity Zone of 2 m widths.
	Multiple assisted road crossings (pedestrian crossings or refuges).	Assisted road crossings where required by high traffic volumes.
Secondary Pedestrian Activity Generators	Footpath on the side of the road adjacent to the Activity Generator of 2 m widths.	Footpath on the side of the road adjacent to the Activity Generator of 1.2 m widths.
	Assisted road crossings at all Activity Generators.	Assisted road crossings where required by high traffic volumes and/or pedestrian types.
Tertiary Pedestrian Activity Generators	Footpath on the side of the road adjacent to the Activity Generator of 1.2 m widths.	Footpath on the side of the road adjacent to the Activity Generator of 1.0 m widths.
	Assisted road crossings where required by high traffic volumes and/or pedestrian types.	Assisted road crossings where required by high traffic volumes and/or pedestrian types.
Primary Pedestrian Routes	Footpath on one side of the road of 2 m widths, footpath on other side of the road of 1.2 m widths.	Footpath on one side of the road of 1.2 m widths.
	Assisted road crossings at most cross streets.	Assisted road crossings at major cross streets with high traffic volumes.
	Directional signage to Primary Pedestrian Activity Zones, Secondary and Tertiary Activity Generators for pedestrians.	Directional signage to Primary Pedestrian Activity Zones for pedestrians.

4.3.3 Aims in the Development of Infrastructure Recommendations

Major aims of the proposed improvement works, in decreasing order of priority, are:

- Fill any shortcomings in the Primary Pedestrian Activity Zone area through new footpaths and crossing points, particularly if safety issues have been raised
- Establish a network of key pedestrian routes in the town centre and between major trip generators including schools. Prioritised routes are those that serve a wide range of community users and can remove pedestrians from unsafe environments
- Broaden the extent of the network to areas outside of the Primary Pedestrian Activity Zones

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- Provide additional pedestrian routes for primarily recreational or tourism purposes

Additionally, crossing points are generally catered for via pedestrian refuges, rather than a zebra crossing or signalised crossing. This is because there are onerous requirements to install marked pedestrian crossings in terms of pedestrian and vehicle warrants, as described by the Australian Standards requirements of AS 1742 Part 10. Refuges are of benefit to pedestrians as they allow for a staged crossing of a road and provide a visual cue for motorists that pedestrians can be expected in the vicinity of a refuge.

5. Proposed Pedestrian Improvements

This section identifies the pedestrian improvements proposed as part of this PAMP.

5.1 Types of Pedestrian Improvements

Pedestrian infrastructure initiatives are classified under the following categories:

- **Amenity** which is the attractiveness of an area for pedestrians. Improvements could involve upgrading an existing footpath surface or introducing landscaping or art feature along walkways
- **Safety** along the route to address safety issues for pedestrians from traffic or other physical hazards including trip hazards. This also includes perceived safety issues for pedestrians such as walking along or crossing busy roads
- **Information** that includes wayfinding signage, maps, brochures and pamphlets
- **Disabled/pram access** along the routes that do not comply with Disabled Discrimination Act (DDA) standards and other issues including steep gradients and access via steps.
- **Connectivity** with new links between streets and land uses
- **Severance** for pedestrians to cross busy roads, railway lines or waterways
- **Access to adjacent land uses** with new pedestrian access to land uses being blocked by fences or walls

These pedestrian improvements can include the types of projects shown in Table 5-1, which also indicates the benefits of each pedestrian improvement.

Table 5-1 Potential Pedestrian Infrastructure Initiatives

Initiative	Amenity	Safety along the Route	Information	Security	Disabled/ Pram Access	Connectivity	Severance	Access to Adjacent Land Use
Footpath Resurfacing	✓	✓			✓			
Footpath Replacement	✓	✓			✓			
New Footpath	✓	✓			✓		✓	✓
Bridge Crossing		✓			✓	✓	✓	✓
Underpass Crossing		✓			✓	✓	✓	✓
Lighting	✓	✓		✓				
Ramps					✓	✓		
Lifts					✓	✓		
Stairs						✓		
Pedestrian Actuated Traffic Signal Crossing		✓			✓	✓	✓	
Zebra Crossing		✓			✓	✓	✓	
Wombat Crossing		✓			✓	✓	✓	
Shared Zone	✓	✓			✓			

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Initiative	Amenity	Safety along the Route	Information	Security	Disabled/ Pram Access	Connectivity	Severance	Access to Adjacent Land Use
Reduced Traffic Speed Limit		✓						
Traffic Calming	✓	✓						
Wayfinding/ Signage			✓	✓				
Information			✓	✓				

5.1.1 Cost Estimate Assumptions

The indicative unit costs shown in Table 5-3 for the purposes of costing the prioritised pedestrian improvement works,

Table 5-2 Indicative Cost Estimate Assumptions

PAMP / Footpath Treatment	Unit cost
New footpaths – 1.5 m wide, no reinforcement (per sqm)	\$ 130
Footpath upgrade /resurfacing (per sqm)	\$ 130
Shared path – 2.5 m wide, reinforced (per sqm)	\$ 160
Line marked footpath	\$ 50
Footpath grinding	\$ 50
Kerb ramp – to suit a standard 1.5 m wide path	\$ 1,800
Driveway treatment (raised continuous footpath)	\$ 20,000
Kerb blister / extension	\$ 13,500
Pedestrian refuge	\$ 15,000
Pedestrian Refuge + 2 blisters	\$ 43,500
Service lid repair	\$ 500
Zebra crossing	\$ 15,000
Wombat crossing	\$ 30,000
traffic signal controlled crossing	\$ 500,000
traffic signal controlled crossing (existing signal intersection)	\$ 100,000
Tactile Ground Surface Indicators	\$ 500
Road signage	\$ 300
Bus stop seats	\$ 1,200
Bus stop pad	\$ 8,400
Public seating	\$ 3,000
Pedestrian fence (handrail) per m	\$ 150
Pedestrian fence (guard rail) per m	\$ 300
Removal of pedestrian infrastructure and upgrade	\$ 13,500
Replace stair (per m)	\$ 195
Vegetation trimming (per site)	\$ 200

Where possible, unit rates provided by Northern Beaches Council have been used directly. For items where costs were not available previous studies, estimation and professional judgement have been used. These costs are indicative and are subject to change and make no allowances for contingencies or actual site design and installation.

5.2 Proposed Pedestrian Improvements

A full list of the proposed improvements is provided in Table 5-3. The issues and constraints identification (ID) references relate to those provided in Figure 3-2.

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Table 5-3 Infrastructure Provision Goals

PAMP ID	Location	Description of Issue	Description of Proposed Treatment	Number of units (individual items)	Length of footpath (m)	Estimated Cost
1	Barrenjoey Rd, at Woolworths car park	Pedestrian bridge over stormwater drainage is not connected to any other pedestrian infrastructure. No kerb ramp provided onto footbridge and car parking space is located at access to the bridge.	Removal of car space within car park, provision of x2 kerb ramps and footpath to Barrenjoey Road	2	35	\$8,625
2	West of Woolworths	Kerb ramp only provided on one side of the street	kerb ramp	1	0	\$1,800
3	Old Barrenjoey Rd / Avalon Parade	Long zebra crossings at x4 approaches to the intersection, which cross more than two traffic lanes in the same direction. Kerb ramps do not align with pedestrian crossing.	Intersection re-design	1	0	TBD
4	Avalon Parade, between Bellevue Ave and Barrenjoey Road	Poor quality and uneven footpath surface along both sides of Avalon Parade, between Bellevue Ave and Barrenjoey Road	Resurface footpath on both sides of Avalon Parade - approximately 200 m each side	0	400	\$156,000
5	Laneway between Wickham Ln and Old Barrenjoey Rd	Poor quality pavement through laneway	Create shared zone and resurface pavement	1	40	TBD
6	Bowling Green Lane, north of Avalon Parade	Trip hazard at pedestrian crossing location across Bowling Green Ln at intersection with Avalon Parade No clear road reservation (between roadway, footpath or driveway) makes it difficult for pedestrians to cross, unclear as to which user has right of way	Footpath grinding to remove trip hazard	2	0	\$100
7	Avalon Parade, east of Bowling Green Ln	Gaps in footpath surface can act as Trip Hazard	Resurface footpath	0	20	\$7,800
8	Avalon Parade	Footpath pavement surface uneven in some areas Potential Trip Hazard	Resurface footpath	0	30	\$5,850
9	Avalon Parade / Ruskin Rowe	Traffic slow point at intersection makes it difficult to cross Avalon Parade at this location	Intersection re-design	1	0	TBD
10	Avalon Parade, east of Ruskin Road	Footpath terminates approximately 65 m from Bus Stop and 125 m from Avalon Parade / Ruskin Rowe intersection	New footpath	0	180	\$35,100

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PAMP ID	Location	Description of Issue	Description of Proposed Treatment	Number of units (individual items)	Length of footpath (m)	Estimated Cost
11	Avalon Parade	Poor visibility of step presents a Trip Hazard	Provide Tactile Ground Surface Indicators (TGSIs) and high visibility paint at top of steps	1	0	\$500
12	Avalon Parade	Poor quality lid of service access, creating a trip hazard for pedestrians.	New service access lid to remove trip hazard	1	0	\$500
13	Lane off Bellevue Ave, south of Avalon Parade	No kerb ramps provided on either side of lane off Bellevue Ave, south of Avalon Parade	New kerb ramp	1	0	\$1,800
14	Avalon Parade / Wickham Ln intersection	Dangerous large step drop down from footpath presents a fall Hazard	Driveway treatment (raised continuous footpath)	1	0	\$20,000
15	Wickham Ln / Sanders Lane intersection	No kerb ramp at access point on corner of Wickham Ln / Sanders Ln	Driveway treatment (raised continuous footpath)	1	20000	\$20,000
16	Sanders Ln / Old Barrenjoey Rd	Potential crossing issue for school children crossing Sanders Ln (west) approach at intersection with Old Barrenjoey Rd. In addition, kerb ramps not aligned.	Consider provision of formal pedestrian crossing (wombat crossing)	1	30000	\$30,000
17	Old Barrenjoey Rd, south of Sanders Lane	Uneven and poor quality sections of footpath surface	Resurface footpath	0	150	\$29,250
18	Old Barrenjoey Rd, south of Sanders Lane	Fenced off former raised pedestrian crossing	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	1	0	\$13,500
19	Old Barrenjoey Rd, south of Sanders Lane	Fenced off former raised pedestrian crossing	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	1	0	\$13,500
20	Old Barrenjoey Rd, south of Sanders Lane	Trip Hazard	Footpath grinding to remove trip hazard	4	0	\$200

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PAMP ID	Location	Description of Issue	Description of Proposed Treatment	Number of units (individual items)	Length of footpath (m)	Estimated Cost
21	Old Barrenjoey Rd / The Crescent	Kerb ramps not aligned	Realignment of kerb ramp	2	0	\$3,600
22	Old Barrenjoey Rd, between Avalon Parade and Sanders Lane	Poor quality footpath	Resurface footpath	0	50	\$9,750
23	Old Barrenjoey Rd, north of Sanders Ln	Potential to install pedestrian refuge	Upgrade kerb ramps and provide a new pedestrian refuge island and relocate 40 km/h high pedestrian activity zone to intersection with Sanders Lane	1	0	\$18,600
24	Old Barrenjoey Rd, north of Sanders Ln	No Tactile Ground Surface Indicators (TGSIs) on kerb ramp at disabled parking space	Update disabled parking and access to AS.2890.5 and provide Tactile Ground Surface Indicators (TGSIs)	1	0	\$1,800
25	Old Barrenjoey Rd, north of Sanders Ln	Poor quality footpath	Resurface footpath	0	5	\$975
26	Old Barrenjoey Rd, south of Avalon Parade	Kerb ramp is narrow with no Tactile Ground Surface Indicators (TGSIs). Difficult to access kerb ramp with parked car blocking the way.	Upgrade kerb ramp and consider removing a parking space.	1	0	\$1,800
27	Old Barrenjoey Rd, south of Avalon Parade	Kerb ramp is narrow with no Tactile Ground Surface Indicators (TGSIs). Difficult to access kerb ramp with parked car blocking the way.	Update disabled parking and access to AS.2890.5 and provide Tactile Ground Surface Indicators (TGSIs)	1	0	\$1,800
28	Old Barrenjoey Rd, south of Avalon Parade	Kerb ramps not aligned	Driveway treatment (raised continuous footpath)	1	0	\$20,000
29	Laneway off Old Barrenjoey Road	No footpath provided on either side of the laneway	Consider creating a shared zone	1	0	\$1,200
30	Avalon Parade / Edmund Hock Ave intersection	Kerb ramps not aligned	Driveway treatment (raised continuous footpath)	1	0	\$20,000
31	Avalon Parade / Barrenjoey Rd	No Tactile Ground Surface Indicators (TGSIs) provided at the traffic signal controlled pedestrian crossings. x5 of the kerb ramps are not aligned.	Upgrade kerb ramps + TGSIs x6. Provide traffic signal controlled crossing.	5	0	\$112,000

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PAMP ID	Location	Description of Issue	Description of Proposed Treatment	Number of units (individual items)	Length of footpath (m)	Estimated Cost
32	Barrenjoey Rd, south of Avalon Parade	In addition, no traffic signal controlled pedestrian crossing across eastern approach to the intersection. No footpath on either side of Barrenjoey Road south of Avalon Parade. "Goat track" observed along eastern side of Barrenjoey Rd, south of the Barrenjoey Rd / Avalon Parade intersection, indicating a pedestrian desire line along this route.	Consider provision of a new footpath	0	1000	\$400,000
33	Barrenjoey Rd	"Goat track" observed to the west of Avalon Beach Surf Life Saving Club leading to the Shared Path from Barrenjoey Rd. Pedestrians observed crossing at a mid-block crossing point at Barrenjoey Rd.	New traffic signal controlled mid block pedestrian crossing and footpath connection to the existing shared path.	1	10	\$500,000
34	Barrenjoey Rd	"Goat track" observed through Avalon Beach Surf Life Saving Club car park to shared path.	Consider providing new shared path connection	0	15	\$6,000
35	Des Creagh Reserve	Sections of poor quality footpath	Resurface footpath	0	30	\$5,850
36	Des Creagh Reserve	Unsurfaced footpath extending beyond existing surfaced footpath	New footpath	0	80	\$15,600
37	Central, east of Avalon Parade	Stair access from Barrenjoey Rd to footpath along northern side of Central Rd	Shared zone on Central Road	1	0	\$1,200
38	Central Rd / Barrenjoey Rd intersection	Un-signalised pedestrian crossing at signalised intersection	Provide traffic signal controlled pedestrian crossing across Central Road approach	1	0	\$100,000
39	Central Rd / Barrenjoey Rd intersection	"Goat track" observed adjacent to footpath, indicating pedestrian desire between Barrenjoey Rd and Central Rd (west)	Consider providing a new footpath link	0	20	\$3,900
40	Central Rd / Barrenjoey Rd intersection	Kerb ramps not aligned / missing	Realignment of kerb ramps and provide TGSIs	4	0	\$9,200
41	Barrenjoey Rd / Kevin Ave intersection	Traffic light lantern / pole is in the middle of the footpath, difficult for wider prams / wheelchairs to pass without using the road.	widen footpath or relocate traffic light	0	5	\$975

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PAMP ID	Location	Description of Issue	Description of Proposed Treatment	Number of units (individual items)	Length of footpath (m)	Estimated Cost
42	Park Ave / Kevin Ave intersection	Non standard pedestrian refuge / splitter island, which is no aligned with the footpath	Upgrade kerb ramps and pedestrian refuge island	0	1	\$18,600
43	Barrenjoey Rd / Kevin Ave intersection	Non standard pedestrian fencing on the corner of north western corner of Barrenjoey Rd / Kevin Ave intersection. This fence is to assist pedestrians on the steep section of footpath leading downwards towards Barrenjoey Road from Kevin Ave	replace pedestrian safety fencing / barrier.	0	10	\$800
44	Central Rd	Footpath, which provides walking access to Maria Regina Catholic School, is very narrow and becomes narrower particularly when parked vehicles overhang. Danger of vehicles reversing into pedestrians at this location.	Widen footpath and replace angle parking with parallel parking due to child safety and road width	16	45	\$8,775
45	Central Rd	Narrow footpath with signposts located at a bus stop further narrowing the effective footpath width.	Consider widening the footpath. Requires removal of 2 parking spaces on opposite side of the road	0	50	\$9,750
46	Central Rd	Overgrown foliage reduces the effective width of footpath, grass verge is worn indicating pedestrians walking along the verge as the footpath is too narrow.	Vegetation trimming	1	0	\$200
47	Central Rd	Footpath ends approximately 20 m west of Patterson Ln	New footpath	0	20	\$3,900
48	Footpath near car park at Bowling Green Lane	Raised section of footpath resulting in a trip hazard	Footpath grinding to remove trip hazard	6	0	\$300
49	Avalon Beach Bowling and Recreation Club	Missing pedestrian link between Central Road and footpath to Bowling Club car park - "goat track" observed indicating pedestrian desire line	Shared path	0	60	\$24,000
50	Bowling Green Lane	Kerb ramp located on only on one side of access driveway. Leads into unsuitable crossing location.	Narrow planted island and widen footpath and relocate kerb ramp.	1	10	\$3,750
51	Bowling Green Lane	Poor quality footpath	Resurface footpath	0	20	\$3,900
52	Bellevue Ave	Poor quality sections of footpath	Resurface footpath	0	50	\$9,750

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PAMP ID	Location	Description of Issue	Description of Proposed Treatment	Number of units (individual items)	Length of footpath (m)	Estimated Cost
53	Bellevue Av, north of Elouera Rd intersection	Footpath through here is narrow. Requires upgrade / widening	Widen footpath	0	135	\$26,325
54	Bellevue Ave / Dress Cir Rd	Non compliant kerb ramps - located near in Avalon Public School	Realignment of kerb ramp	2	0	\$3,600
55	Dress Cir Rd	No footpath provided on either side of road	New footpath connection to Palmgrove Reserve	0	400	\$78,000
56	Bellevue Ave / Sanders Ln	Non-standard kerb ramp, which has a steep gradient and results in a cross fall along the footpath. Footpath is narrow and made narrower at intersection due to location of a tree	Remove tree and upgrade / widen footpath at intersection through provision of a kerb blister	1	15	\$2,925
57	Bellevue Ave	Fenced off former raised pedestrian crossing	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	1	0	\$13,500
58	Bellevue Ave	Non standard kerb ramp at disabled parking space	Realignment of kerb ramp	1	0	\$1,800
59	Bellevue Ave	Fenced off former raised pedestrian crossing	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	1	0	\$13,500
60	The Crescent	Missing link - no footpath provided along western section of The Crescent	New footpath	0	100	\$19,500
61	The Crescent	Stairs providing link from The Crescent onto footpath. Trip hazard.	Replace steps	0	5	\$975
62	Avalon Parade and Surfside Ave, east of Barrenjoey Rd	Missing link - no footpath on either side of Avalon Parade east of intersection with Barrenjoey Rd	New footpath	0	200	\$39,000
63	Barrenjoey Rd	"Goat track" observed into car park from shared path	none - proposal for new mid-block pedestrian crossing connection at Barrenjoey Rd with footpath link	0	0	\$-

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PAMP ID	Location	Description of Issue	Description of Proposed Treatment	Number of units (individual items)	Length of footpath (m)	Estimated Cost
64	Old Barrenjoey Rd, south of Barrenjoey Rd	Non standard kerb ramps at shopping car park egress	Realignment of kerb ramp	2	0	\$3,600
65	Old Barrenjoey Rd, south of Barrenjoey Rd	Missing link - footpath terminates after the car park exit	New footpath	0	60	\$11,700
66	Old Barrenjoey Rd, south of Barrenjoey Rd	Sections of the footpath is deteriorated and uneven surface in areas. Requires upgrade	Resurface footpath	0	30	\$5,850
67	Barrenjoey Rd, north of North Avalon Rd	High drop on side of footpath, which provides a link to the northbound bus stop	Consider providing fencing	0	20	\$3,000
68	Barrenjoey Rd, north of North Avalon Rd	Kerb ramps not aligned	Realignment of kerb ramp	1	0	\$1,800
68	Barrenjoey Rd / North Avalon Rd intersection	Kerb ramp blocked by fencing. No footpath on adjacent side of the road	Removal of kerb ramp and footpath	1	0	\$13,500
69	Bangalley Way / North Avalon Rd intersection	Kerb ramps not aligned	Realignment of kerb ramp	1	0	\$1,800
70	Elouera Rd	Poor quality footpath	Resurface footpath	0	20	\$3,900
71	Old Barrenjoey Rd / Dress Circle Rd intersection	No kerb ramps at intersection. Access to northern side of intersection via steps	New footpath and kerb ramps	2	10	\$5,550
72	Old Barrenjoey Rd, north of Barrenjoey Rd	Narrow footpath width on both sides of the street	Widen footpath	0	150	\$29,250
73	Old Barrenjoey Rd, north of Barrenjoey Rd	Poor quality kerb ramps	Upgrade kerb ramps	2	0	\$3,600

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PAMP ID	Location	Description of Issue	Description of Proposed Treatment	Number of units (individual items)	Length of footpath (m)	Estimated Cost
74	Barrenjoey Rd / Old Barrenjoey Rd / Plateau Rd intersection	Overgrown foliage reduces the effective width of footpath	Vegetation trimming	1	0	\$200
75	Barrenjoey Rd / Old Barrenjoey Rd / Plateau Rd intersection	Multiple issues for pedestrians, including missing or poor quality refuge / splitter islands and kerb ramps, crossing at bus slip lane, poor pedestrian fencing / rails and steep grades.	Intersection re-design	1	0	TBD
76	Plateau Rd, east of Barrenjoey Rd	Poor quality footpath	Resurface footpath	0	20	\$3,900
77	Plateau Rd, east of Barrenjoey Rd	Overgrown foliage and collapsed wall reduces the effective width of footpath	Vegetation trimming	1	0	\$200
78	Elouera Rd, east of Ruskin Row	Missing link - missing section of footpath	New footpath	0	150	\$29,250
79	Palmgrove Road	No footpath on either side of the road	New footpath	0	600	\$117,000
80	Ruskin Row, west of Palmgrove Rd	No footpath on either side of the road	Create footpath through line marking and raised pavement markers	0	500	\$25,000
81	Ruskin Row, north of Palmgrove Rd	No footpath on either side of the road	New footpath	0	140	\$27,300
82	Avalon Parade / Ruskin Row intersection	Kerb ramps not aligned	Realignment of kerb ramp	2	0	\$3,600
83	Avalon Parade, west of Ruskin Row	Non standard kerb ramps and pedestrian refuge	New pedestrian refuge island and upgrade kerb ramps	1	0	\$18,600
84	Avalon Parade, east of Gunjulla Parade	Non standard kerb ramps and pedestrian refuge	New pedestrian refuge island and upgrade kerb ramps	1	0	\$18,600
85	Avalon Parade, between Ruskin Row and Gunjulla Parade	Missing link - missing section of footpath on southern side of Avalon Parade	New footpath	0	180	\$35,100

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PAMP ID	Location	Description of Issue	Description of Proposed Treatment	Number of units (individual items)	Length of footpath (m)	Estimated Cost
86	Hudson parade, west of Hilltop Rd	Poor quality footpath	Resurface footpath	0	5	\$975
87	Hilltop Rd	Poor quality (cracked) footpath at commercial development. Footpath narrows to the north	Resurface footpath	0	20	\$3,900
88	Hudson parade, east of Hilltop Rd	Non-standard Pedestrian refuge	Upgrade pedestrian refuge island and upgrade kerb ramps	1	0	\$18,600
89	Hudson parade / Central Road intersection	Poor quality footpath	Resurface footpath	0	20	\$3,900
90	Hudson parade / Central Road intersection	Kerb ramps not aligned	Realignment of kerb ramp	2	0	\$3,600
91	Central Road / Catalpa Ave intersection	Kerb ramps not aligned	Realignment of kerb ramp	2	0	\$3,600
92	Central Road east of Catalpa Ave	Sections of poor quality footpath	Resurface footpath	0	50	\$9,750
93	Patterson Lane	Narrow lane, high usage for walking by school children	Shared zone	1	0	\$1,200
94	Queens Ave	Missing link - no footpath on either side of the street	New footpath	0	240	\$46,800
95	Terry Street	Missing link - no footpath on either side of the street. There is a short section of footpath on the western side of the road, south of Queens Ave	New footpath	0	580	\$113,100

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6. Priorities for Pedestrian Improvements

6.1 Methodology to Prioritise Pedestrian Requirements

The *How to Prepare a Pedestrian Access and Mobility Plan* (Roads and Maritime, 2002) provides guidance on what is important in providing footpaths. This method was used to determine the prioritisation of the proposed improvements.

Scores were derived for each of the recommended pedestrian improvements for the purpose of prioritising projects. The Weighted Criteria Scoring System from the Roads and Maritime publication *How to Prepare a Pedestrian Access and Mobility Plan* (2002) was used to prioritise each proposed improvement as shown in Table 6-1.

Table 6-1 RMS Weighted Criteria Scoring System

Category	Criteria
Land Use	Number of Attractors/Generators
	Land Use Type
	Proximity to Attractors/Generators
	Future Development with Attractors/Generators
Traffic Impact	Road Hierarchy
Safety	Identified as Hazardous Area (from Consultation)
	Identified Pedestrian Crashes
Facility Benefits	Demonstrated Path
Continuity of Routes	Addition to Existing Facility
Priority	Pedestrian Route Hierarchy

Roads and Maritime defines the overall work prioritisation as:

- High (100 – 70);
- Medium (<70 – 40); and
- Low (<40).

In order to determine the priorities of the pedestrian access improvement items in a PAMP, the infrastructure initiatives or studies are given a priority rating to be accommodated in the Council budget cycle. A possible weighted scoring system is provided in Table 6-2. However, a system could be customised to suit specific council areas according to local needs.

Table 6-2 Weighted Scoring Criteria to Prioritise the PAMP Initiatives

Category	Criteria	Performance Conditions 1	Score 2, 3
Land Use	Number of attractors/ generators (locations)	more than 5 locations	10
		3-5 locations	8
		1-2 locations	5
		0 locations	0
	Land use type	schools	10
		commercial/retail	8
		residential	5
		other	0
	Proximity to generators/ attractors	less than 250 metres	10
		>250-500 metres	8
		>500-1000 metres	5
		>1000 metres	0
	Future development with attractors/ generators	High	5
		medium	3
		low	1
Traffic Impact	Road hierarchy	State Road	15
		Regional Road	10
		Local Road	8
		Special use	5
		Other	0
Safety	Identified as hazardous area (from audit or consultation)	High	10
		Medium	8
		Low	5
		None	0
	Identified pedestrian crashes	>3 reported crashes per year	15
		3 reported crashes per year	10
		2 reported crashes per year	8
		1 reported crash per year	5
		0 reported crashes per year	0
Facility Benefits	Demonstrated path	High usage	10
		Medium usage	8
		Low usage	5
		No demonstrated use	0
Continuity of routes	Addition to existing facility	Link existing facilities	10
		Extension of facilities	8
		Addition to facilities	5
		Other	0
Priority	Pedestrian route hierarchy	High use	5
		Medium use	3
		Low use	1

Notes:

¹ Only one performance condition is to be selected for each criteria e.g. Land use type residential = 5.

² The overall work prioritisation is then determined by adding up each criteria scores to reflect the environment of the specific area. e.g. High (100-70), Medium (<70-40), Low (<40) or Considering (not scored).

³ The maximum score achievable overall is 100.

Source: *How to Prepare a Pedestrian Access and Mobility Plan*, Roads and Traffic Authority of NSW (RTA), 2002

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Limitations of Roads and Maritime Methodology

Please note that there are limitations to the Roads and Maritime based methodology for prioritising each proposed improvement. For example, the Weighted Criteria Scoring System does not include the presence of existing footpaths on the opposite side of the street. This results in the proposed improvement having a higher priority using the Roads and Maritime method (as it is assumed there is no footpath on the route).

Also, at some key generators, pedestrian facilities may be urgently required (outside an aged care facility for example) but as the weighting system may not provide a score that is significantly higher for the same facility for a less critical location. Therefore, consideration needs to be taken when assessing priorities in conjunction with the Roads and Maritime methodology.

6.1.1 Walking Route Hierarchy

A hierarchy of pedestrian routes has been established, based on observed pedestrian demand and proximity to pedestrian attractors, such as town centre land uses and schools, and key walking routes. This walking route hierarchy was used as part of the scoring method to determine the priority for implanting proposed pedestrian infrastructure upgrades.

Figure 6-1 show the walking route hierarchy used for the PAMP scoring assessment. The figure shows high and medium use walking routes, with all other routes being low use.

Figure 6-1 Walking Route Hierarchy



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6.2 Ranking of the Pedestrian Improvements

Results from the Roads and Maritime weighted prioritisation are provided in Table 6-3. The issues and constraints identification (ID) references relate to those provided in Figure 3-2. Recommendations are based on GHD site based prioritisation. Roads and Maritime weighted prioritisations are provided in full in Appendix A.

Table 6-3 Infrastructure Provision Goals for Avalon

PAMP ID	Location	Description of Proposed Treatment	RMS Priority	RMS Rank
3	Old Barrenjoey Rd / Avalon Parade	Intersection re-design	82	1
1	Barrenjoey Rd, at Woolworths car park	Removal of car space within car park, provision of x2 kerb ramps and footpath to Barrenjoey Road	81	2
33	Barrenjoey Rd, north of Avalon Parade	New traffic signal controlled mid-block pedestrian crossing and footpath connection to the existing shared path.	80	3
31	Avalon Parade / Barrenjoey Rd	Upgrade kerb ramps + TGSIs x6. Provide traffic signal controlled crossing.	72	4
32	Barrenjoey Rd, south of Avalon Parade	Consider provision of a new footpath	72	4
28	Old Barrenjoey Rd, south of Avalon Parade	Driveway treatment (raised continuous footpath)	58	6
44	Central Rd	Widen footpath and replace angle parking with parallel parking due to child safety and road width	58	6
4	Avalon Parade, between Bellevue Ave and Barrenjoey Road	Resurface footpath on both sides of Avalon Parade - approximately 200 m each side	57	8
23	Old Barrenjoey Rd, north of Sanders Ln	Upgrade kerb ramps and provide a new pedestrian refuge island and relocate 40 km/h high pedestrian activity zone to intersection with Sanders Lane	57	8
30	Avalon Parade / Edmund Hock Ave intersection	Driveway treatment (raised continuous footpath)	57	8
75	Barrenjoey Rd / Old Barrenjoey Rd / Plateau Rd intersection	Intersection re-design	57	8
9	Avalon Parade / Ruskin Rowe	Intersection re-design	56	12
10	Avalon Parade, east of Ruskin Road	New footpath	56	12
13	Lane off Bellevue Ave, south of Avalon Parade	New kerb ramp	56	12
14	Avalon Parade / Wickham Ln intersection	Driveway treatment (raised continuous footpath)	56	12
45	Central Rd	Consider widening the footpath. Requires removal of 2 parking spaces on opposite side of the road	56	12
60	The Crescent	New footpath	56	12
16	Sanders Ln / Old Barrenjoey Rd	Consider provision of formal pedestrian crossing (wombat crossing)	55	18

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PAMP ID	Location	Description of Proposed Treatment	RMS Priority	RMS Rank
29	Laneway off Old Barrenjoey Road	Consider creating a shared zone	55	18
43	Barrenjoey Rd / Kevin Ave intersection	Replace pedestrian safety fencing / barrier.	55	18
47	Central Rd	New footpath	55	18
67	Barrenjoey Rd, north of North Avalon Rd	Consider providing fencing	55	18
68	Barrenjoey Rd, north of North Avalon Rd	Realignment of kerb ramp	55	18
11	Avalon Parade	Provide Tactile Ground Surface Indicators (TGSIs) and high visibility paint at top of steps	53	24
15	Wickham Ln / Sanders Lane intersection	Driveway treatment (raised continuous footpath)	53	24
55	Dress Cir Rd	New footpath connection to Palmgrove Reserve	53	24
56	Bellevue Ave / Sanders Ln	Remove tree and upgrade / widen footpath at intersection through provision of a kerb blister	53	24
58	Bellevue Ave	Realignment of kerb ramp	53	24
65	Old Barrenjoey Rd, south of Barrenjoey Rd	New footpath	53	24
93	Patterson Lane	Shared zone	53	24
21	Old Barrenjoey Rd / The Crescent	Realignment of kerb ramp	52	32
24	Old Barrenjoey Rd, north of Sanders Ln	Update disabled parking and access to AS.2890.5 and provide Tactile Ground Surface Indicators (TGSIs)	52	32
26	Old Barrenjoey Rd, south of Avalon Parade	Upgrade kerb ramp and consider removing a parking space.	52	32
27	Old Barrenjoey Rd, south of Avalon Parade	Update disabled parking and access to AS.2890.5 and provide Tactile Ground Surface Indicators (TGSIs)	52	32
41	Barrenjoey Rd / Kevin Ave intersection	widen footpath or relocate traffic light	52	32
62	Avalon Parade and Surfside Ave, east of Barrenjoey Rd	New footpath	51	37
17	Old Barrenjoey Rd, south of Sanders Lane	Resurface footpath	50	38
53	Bellevue Av, north of Elouera Rd intersection	Widen footpath	50	38
54	Bellevue Ave / Dress Cir Rd	Realignment of kerb ramp	50	38
64	Old Barrenjoey Rd, south of Barrenjoey Rd	Realignment of kerb ramp	50	38
6	Bowling Green Lane, north of Avalon Parade	Footpath grinding to remove trip hazard	48	42
7	Avalon Parade, east of Bowling Green Ln	Resurface footpath	48	42
12	Avalon Parade	New service access lid to remove trip hazard	48	42
39	Central Rd / Barrenjoey Rd intersection	Consider providing a new footpath link	48	42

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PAMP ID	Location	Description of Proposed Treatment	RMS Priority	RMS Rank
40	Central Rd / Barrenjoey Rd intersection	Realignment of kerb ramps and provide TGSIs	48	42
57	Bellevue Ave	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	48	42
59	Bellevue Ave	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	48	42
69	Bangalley Way / North Avalon Rd intersection	Realignment of kerb ramp	48	42
18	Old Barrenjoey Rd, south of Sanders Lane	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	47	50
19	Old Barrenjoey Rd, south of Sanders Lane	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	47	50
20	Old Barrenjoey Rd, south of Sanders Lane	Footpath grinding to remove trip hazard	47	50
22	Old Barrenjoey Rd, between Avalon Parade and Sanders Lane	Resurface footpath	47	50
25	Old Barrenjoey Rd, north of Sanders Ln	Resurface footpath	47	50
85	Avalon Parade, between Ruskin Row and Gunjulla Parade	New footpath	47	50
88	Hudson parade, east of Hilltop Rd	Upgrade pedestrian refuge island and upgrade kerb ramps	47	50
8	Avalon Parade	Resurface footpath	46	58
2	West of Woolworths	kerb ramp	45	59
42	Park Ave / Kevin Ave intersection	Upgrade kerb ramps and pedestrian refuge island	45	59
46	Central Rd	Vegetation trimming	45	59
66	Old Barrenjoey Rd, south of Barrenjoey Rd	Resurface footpath	45	59
78	Elouera Rd, east of Ruskin Row	New footpath	45	59
79	Palmgrove Road	New footpath	45	59
81	Ruskin Row, north of Palmgrove Rd	New footpath	45	59
34	Barrenjoey Rd	Consider providing new shared path connection	43	66
52	Bellevue Ave	Resurface footpath	43	66
61	The Crescent	Replace steps	43	66
68	Barrenjoey Rd / North Avalon Rd intersection	Removal of kerb ramp and footpath	43	66
71	Old Barrenjoey Rd / Dress Circle Rd intersection	New footpath and kerb ramps	43	66
80	Ruskin Row, west of Palmgrove Rd	Create footpath through line marking and raised pavement markers	43	66
90	Hudson parade / Central Road intersection	Realignment of kerb ramp	43	66
91	Central Road / Catalpa Ave intersection	Realignment of kerb ramp	43	66

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PAMP ID	Location	Description of Proposed Treatment	RMS Priority	RMS Rank
94	Queens Ave	New footpath	43	66
95	Terry Street	New footpath	43	66
74	Barrenjoey Rd / Old Barrenjoey Rd / Plateau Rd intersection	Vegetation trimming	42	76
82	Avalon Parade / Ruskin Row intersection	Realignment of kerb ramp	42	76
83	Avalon Parade, west of Ruskin Row	New pedestrian refuge island and upgrade kerb ramps	42	76
84	Avalon Parade, east of Gunjulla Parade	New pedestrian refuge island and upgrade kerb ramps	42	76
86	Hudson parade, west of Hilltop Rd	Resurface footpath	42	76
87	Hilltop Rd	Resurface footpath	42	76
37	Central, east of Avalon Parade	Shared zone on Central Road	41	83
38	Central Rd / Barrenjoey Rd intersection	Provide traffic signal controlled pedestrian crossing across Central Road approach	41	83
51	Bowling Green Lane	Resurface footpath	41	83
35	Des Creagh Reserve	Resurface footpath	40	86
49	Avalon Beach Bowling and Recreation Club	Shared path	40	86
72	Old Barrenjoey Rd, north of Barrenjoey Rd	Widen footpath	40	86
73	Old Barrenjoey Rd, north of Barrenjoey Rd	Upgrade kerb ramps	40	86
76	Plateau Rd, east of Barrenjoey Rd	Resurface footpath	40	86
77	Plateau Rd, east of Barrenjoey Rd	Vegetation trimming	40	86
5	Laneway between Wickham Ln and Old Barrenjoey Rd	Create shared zone and resurface pavement	38	92
50	Bowling Green Lane	Narrow planted island and widen footpath and relocate kerb ramp.	38	92
70	Elouera Rd	Resurface footpath	38	92
89	Hudson parade / Central Road intersection	Resurface footpath	38	92
92	Central Road east of Catalpa Ave	Resurface footpath	38	92
36	Des Creagh Reserve	New footpath	33	97
48	Footpath near car park at Bowling Green Lane	Footpath grinding to remove trip hazard	33	97

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7. Conclusions and Recommendations

7.1 Findings

7.1.1 Community Consultation

The key results of community engagement included:

- The majority of general survey respondents (91%) have access to a motor vehicle. Driving was the most popular mode of transport.
- The most popular reason why general survey respondents do not walk more often was the road having no marked or dedicated footpath (54%). The most popular proposed change that would make survey respondents more likely to walk on a regular basis, was better availability of footpaths, roads and streets.
- The most popular reason why school survey respondents do not walk more often was a lack of safe pedestrian crossings at busy roads (57%). Over two-thirds of school respondents (39%) regularly cross Barrenjoey Road to get to school. The most popular proposed change was additional road/rail crossings for pedestrians (64%).
- In the surveys and pop-up session, some of the most commonly identified gaps in the Avalon walking network were:
 - Barrenjoey Road between Plateau Road roundabout and Avalon Parade, especially near the Serpentine;
 - Barrenjoey Road from Avalon to Palm Beach – improve safety, especially near the intersection with Carrel Head Road;
 - Traffic lights at the four-way intersection in the town centre;
 - Pedestrian crossings at the Barrenjoey Road/Avalon Parade intersection;
 - Making Old Barrenjoey Road pedestrianised north of Avalon Parade;
 - Upgrade to creek footpath from Catalina Crescent and North Avalon Road near the high school;
 - Riverview Road and Hilltop Road;
 - Hudson Parade footpath extension, from Clareville to Taylors Point; and
 - Riviera Avenue and Stapleton Reserve
 - Cabarita Road
 - Patrick Street
 - Central Road
 - Kevin Street
 - Alleyway access on corner of Avalon Parade and Central Road should be re-opened

7.1.2 Crash Data

A review of crash data was undertaken which found that there were four crashes involving pedestrians over the five year period. All crashes occurred during the day, including:

- Two incidents at Barrenjoey Road, north of Avalon Parade
- One incident at the Barrenjoey Road/Avalon Parade intersection
- One incident at Old Barrenjoey Road, north of Avalon Parade

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7.1.3 Site Audit:

An audit of existing issues and constraints for pedestrians was undertaken in the study area. The audit focused on identifying existing facilities, land uses, any shortcomings in the pedestrian environment and potential safety issues. The key issues and constraints included:

- Poor quality footpath surfaces
- Pedestrians crossing busy roads at non-permitted crossing locations
- Missing pedestrian links
- Lack of pedestrian crossings
- Poor quality pedestrian crossings
- Street furniture or overgrown vegetation in footpaths, blocking the path of pedestrians
- Lack of disabled or pram access

7.2 Recommendations

Pedestrian access and mobility improvement works were identified and prioritised for study area. The highest ranking projects that are considered worthwhile progressing into the detailed concept planning, design and implementation stage are listed under the categories of:

- Further investigations and concept planning;
- Footpath works to improve the safety for pedestrians along the streets; and
- Upgrades to allow for safer pedestrian movements to cross busy streets.

7.2.1 Investigations and Concept Planning

- Avalon Parade / Old Barrenjoey Road intersection:
 - Intersection identified as an issue as part of the community consultation process and through the site audits.
 - Issues include Long zebra crossings at all four approaches to the intersection, which cross more than two traffic lanes in the same direction. Kerb ramps do not align with pedestrian crossing.
 - Requires further investigation for an intersection redesign.
- Barrenjoey Rd / Old Barrenjoey Rd / Plateau Rd intersection
 - Multiple issues for pedestrians, including missing or poor quality refuge /splitter islands and kerb ramps, crossing at bus slip lane, poor pedestrian fencing / rails and steep grades.
 - Requires further investigation for an intersection redesign.
- Avalon Parade / Ruskin Rowe
 - Traffic slow point at intersection makes it difficult to cross Avalon Parade at this location

7.2.2 Footpath Works

Identified locations for new footpath connections include:

- Avalon Parade and Surfside Ave, east of Barrenjoey Rd
- Central Road / Barrenjoey Rd intersection

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- Avalon Parade, between Ruskin Row and Gunjulla Parade
- Elouera Road, east of Ruskin Row
- Palmgrove Road
- Ruskin Row, north of Palmgrove Road
- Barrenjoey Road, south of Avalon Parade (shared path)
- Ruskin Row, west of Palmgrove Rd
- Queens Avenue
- Terry Street
- Central Road, east of Avalon Parade
- Avalon Beach Bowling and Recreation Club
- Avalon Beach Bowling and Recreation Club
- Section through Des Creagh Reserve

7.2.3 Pedestrian Crossings

Traffic signal controlled pedestrian crossings at the following locations:

- Barrenjoey Road, north of Avalon Parade intersection
 - High number of pedestrians observed crossing at a mid-block location at Barrenjoey Road, north of Avalon Parade. Walking desire line between Avalon Beach / Surf Club with Avalon centre / Woolwoths car park.
 - Crash data indicates safety issue for pedestrians at this location.
 - Requires further investigation for a mid-block traffic signal controlled pedestrian crossing, with footpath connection.
- Avalon Parade / Barrenjoey Road intersection:
 - No traffic signal controlled pedestrian crossing on the eastern approach to the intersection.
 - Requires TGSI's and kerb ramp upgrades
- Central Rd / Barrenjoey Rd intersection
 - No traffic signal controlled pedestrian crossing on the eastern approach to the intersection.
 - Requires TGSI's and kerb ramp upgrades

Proposed wombat crossing at:

- Sanders Ln / Old Barrenjoey Rd

New pedestrian refuges / upgrade to pedestrian refuges at the following locations:

- Old Barrenjoey Road, north of Sanders Lane
- Hudson parade, east of Hilltop Road
- Park Avenue / Kevin Avenue intersection
- Avalon Parade, west of Ruskin Row
- Avalon Parade, east of Gunjulla Parade

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Appendices

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Appendix A – Consultation Report

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Northern Beaches Council

Walk Avalon Consultation Summary Report

April 2017

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Appendices

- Appendix A – Walking Survey results
- Appendix B – Schools Walking Survey results
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1. Introduction

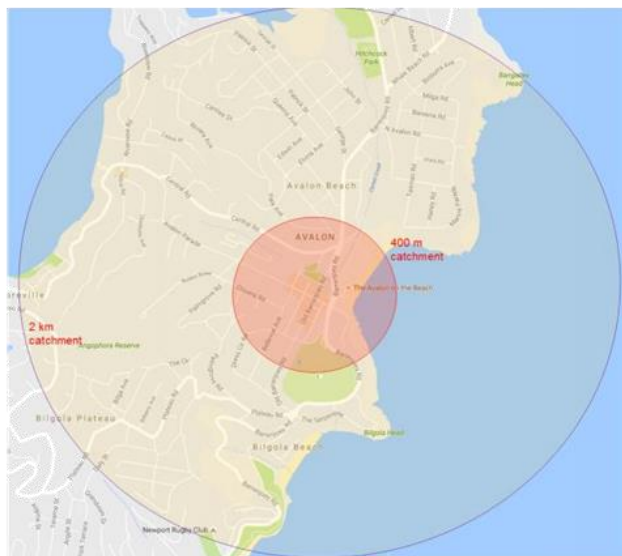
GHD is working with Northern Beaches Council (Council) to develop Walk Avalon, a Pedestrian Access and Mobility Plan (PAMP) for the Avalon area. A PAMP is a comprehensive strategic and action plan to develop pedestrian policies and facilities. The Walk Avalon PAMP will provide an important framework for existing pedestrian needs, future management, use and enhancement for pedestrians of all ages and mobility.

The study area for the Walk Avalon PAMP includes:

- Detailed pedestrian facilities audit within a 400 m catchment from Avalon Town Centre, including Avalon Public School, Mater Regina Catholic Primary School, retirement villages and beach access.
- Considerations of key pedestrian links within a 2 km catchment of town centre for access and linkage.

The approximate 400 m and 2 km study areas is shown in Figure 1.

Figure 1 400 m and 2 km Study Area



Source: Google Maps (2016), modified by GHD

In the first stage of the project, GHD carried out a comprehensive site audit of the existing path network and pedestrian facilities within a 400m radius of Avalon Village.

In the second stage of the project, in October and November 2016, community engagement was undertaken to determine the community's views, concerns, and ideas relating to pedestrian facilities. The Walk Avalon project and links to an online survey were promoted through:

- Manly Daily Council Have Your Say website
- Direct emails to resident and community groups and Avalon Palm Beach Business Chamber
- Media releases to the Manly Daily
- Posters and flyers dropped to local businesses, and
- Facebook.

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This report provides a summary of the consultation undertaken, including:

- To identify current pedestrian accessibility and mobility needs, GHD developed two surveys to allow the community to provide information about existing transport and walking behaviours and issues. Feedback from the surveys is helping Council to understand walking behaviours, and will provide Council with information to identify opportunities for improving the walking route network in Avalon. A survey of the broader community received a total of 133 online responses between 14 October to 30 November 2016. A survey of schools within the study area (Avalon Public School, Maria Regina Catholic Primary School, and Barrenjoey High School) received a total of 23 online responses between 18 to 24 October 2016.
- The Walk Avalon Footpath Pop-up Session was held on 24 October 2016 from 3 to 5 pm outside the recreation centre on Old Barrenjoey Road in Avalon. A pop-up session is a meeting held in a public space, and increases participation in the project from people who may not normally attend a public meeting. For the pop up session, GHD held informal one-on-one discussions with members of the public, to identify existing issues in the pedestrian network in Avalon. People were able to drop by and discuss their issues, and identify problematic locations on a large map that was used to help the discussions. Members of the public were able to mark-up the locations and types of issues for walking in Avalon on the map. Over 50 people attended the pop-up session.
- Ten people also chose to provide additional feedback by email.

This report provides a brief summary of community and school survey results, the pop-up session and email feedback – including the key issues and priorities raised by the community.

In the next stage of the Walk Avalon PAMP project, the draft Walk Avalon Pedestrian and Access Mobility Plan will be placed on public exhibition in March 2017.

2. Key results

In October and November 2016, community engagement was undertaken to determine the community's views, concerns, and ideas relating to pedestrian facilities, including:

- Two surveys to allow the community to provide information about existing transport and walking behaviours and issues. A survey of the broader community received a total of 133 responses, and a survey of schools within the study area received a total of 23 online responses.
- The Walk Avalon Footpath Pop-up Session, in which GHD held informal one-on-one discussions with members of the public, to identify existing issues in the pedestrian network in Avalon. Over 50 people attended the pop-up session.
- Ten people also chose to provide additional feedback by email.

The key results of community engagement included:

- The majority of general survey respondents (91%) have access to a motor vehicle. Driving was the most popular mode of transport.
- The most popular reason why general survey respondents do not walk more often was the road having no marked or dedicated footpath (54%). The most popular proposed change, that would make survey respondents more likely to walk on a regular basis, was better availability of footpaths, roads and streets.
- The most popular reason why school survey respondents do not walk more often was a lack of safe pedestrian crossings at busy roads (57%). Over two-thirds of school respondents (39%) regularly cross Barrenjoey Road to get to school. The most popular proposed change was additional road/rail crossings for pedestrians (64%).
- In the surveys and pop-up session, some of the most commonly identified gaps in the Avalon walking network were:
 - Barrenjoey Road between Plateau Road roundabout and Avalon Parade, especially near the Serpentine
 - Barrenjoey Road from Avalon to Palm Beach – improve safety, especially near the intersection with Carrel Head Road
 - Traffic lights at the four-way intersection in the town centre
 - Pedestrian crossings at the Barrenjoey Road/Avalon Parade intersection
 - Making Old Barrenjoey Road pedestrianised north of Avalon Parade
 - Upgrade to creek footpath from Catalina Crescent and North Avalon Road near the high school
 - Riverview Road and Hilltop Road
 - Hudson Parade footpath extension, from Clareville to Taylors Point
 - More footpaths in Avalon.

Detailed results are discussed in Section 3, 4, 5 and 6.

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3. General Survey summary

A total of 133 responses were received between 14 October to 30 November 2016.

The survey was advertised through Council's Have Your Say website and social media, and hard copies of the survey were made available. Responses were received online, and through hard copy submissions, including 25 submissions from the residents of Pittwater Retirement Village.

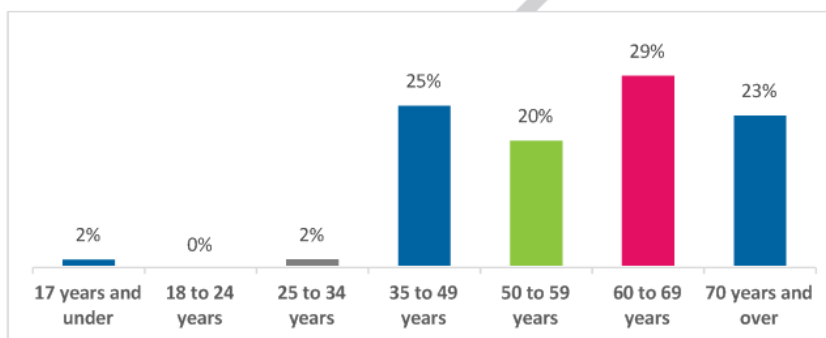
The survey consisted of nine multiple-choice and short answer questions. Feedback from the surveys is helping Council to understand walking behaviours, and will provide Council with information to identify opportunities for improving the walking route network in Avalon.

This section provides an analysis of the general survey results. A full summary of survey results is provided at Appendix A.

3.1 Profile of respondents

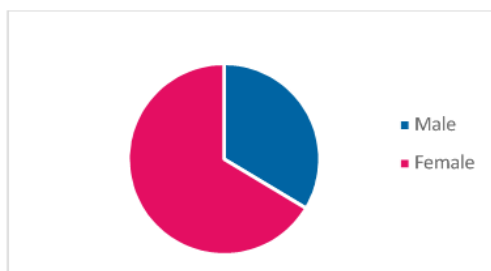
Respondents were asked to provide their age group and gender. The majority of respondents were 35 years old and older (97%) with only a small number of respondents aged 17 to 34 years old (3%).

Figure 2 Age groups of respondents



Around two-thirds of respondents were female (66%) and around a third were male (34%). One respondent did not answer this question.

Figure 3 Gender of respondents



3.2 Access to a motor vehicle

Respondents were asked if they have access to a motor vehicle. The majority of respondents (91%) have access to a motor vehicle.

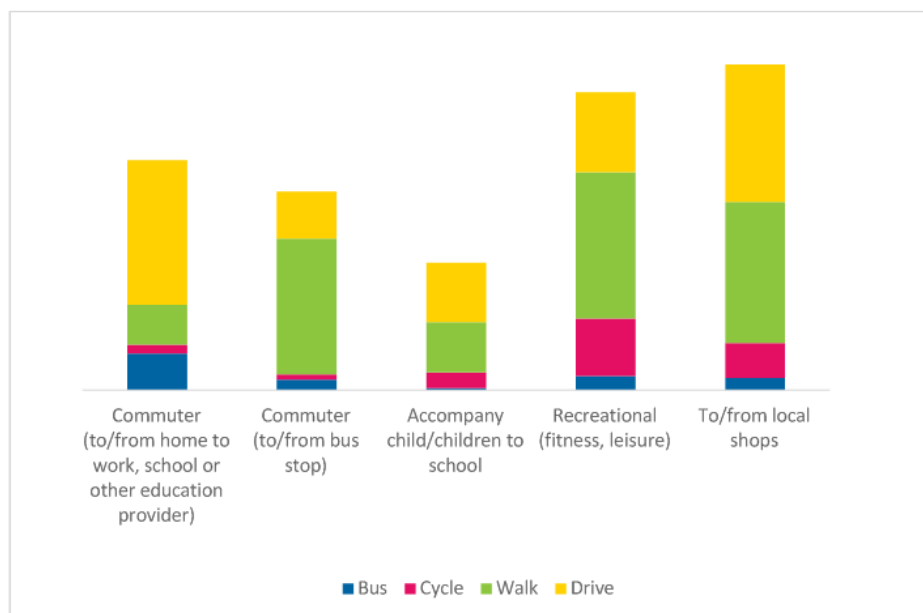
3.3 Transport usage

Respondents were asked what type of transport they typically use for a variety of travel activities. Respondents were able to choose more than one mode of transport for each activity type:

- For commuting to/from home to work, school or other, the majority of respondents drive (78%).
- For commuting to/from the bus stop, the majority of respondents walk (80%).
- To accompany a child/children to school, the majority of respondents drive (58%) or walk (49%).
- For recreational activities, the majority of respondents walk (69%).
- To travel to/from local shops, the majority of respondents walk (62%) or drive (61%).

Cycling and the bus were the least popular modes of transport across all activities.

Figure 4 Transport usage by activity type



3.4 Reasons for not walking

Respondents were asked to provide the reasons why they do not walk more often, for three different journey types (to shops, school and work). Three respondents did not answer this question.

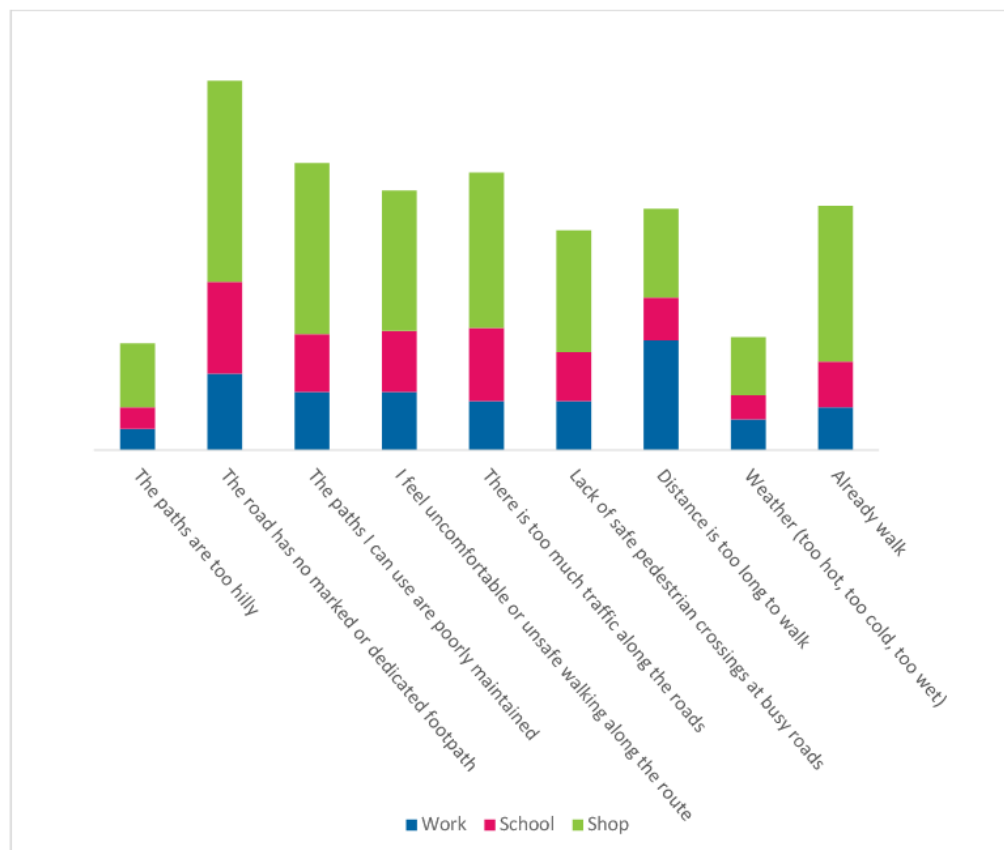
The most popular reasons why respondents do not walk more often, for all three journey types (to shops, school and work), were:

- The road has no marked or dedicated footpath (54%)
- The paths are poorly maintained (46%)
- There is too much traffic along the roads (43%)
- Distance is too long (42%)
- I feel uncomfortable or unsafe walking along the route (40%).

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The most popular reason why respondents did not walk more often to the shops or school was the road having marked or dedicated footpaths (17% for shops and 20% for school). The most popular reason why respondents did not walk more often to work was the distance is too long (22%).

Figure 5 Reasons why respondents do not walk more often, by journey type



3.5 Gaps in the Avalon walking network

Respondents were asked to identify the top three gaps in the Avalon walking network that they would like to see improved in the future. Nine respondents did not answer this question.

Some of the most commonly identified gaps in the Avalon walking network were:

- Barrenjoey Road between Plateau Road roundabout and Avalon Parade, especially near the Serpentine
- Barrenjoey Road from Avalon to Palm Beach – improve safety, especially near the intersection with Carrel Head Road
- Avalon Parade, especially the south side
- Old Barrenjoey Road and the Avalon Village footpaths – remove clutter
- The intersection at Avalon Parade and Old Barrenjoey Road – safety improvements and traffic lights needed
- Upgrade to creek footpath from Catalina Crescent and North Avalon Road near the high school

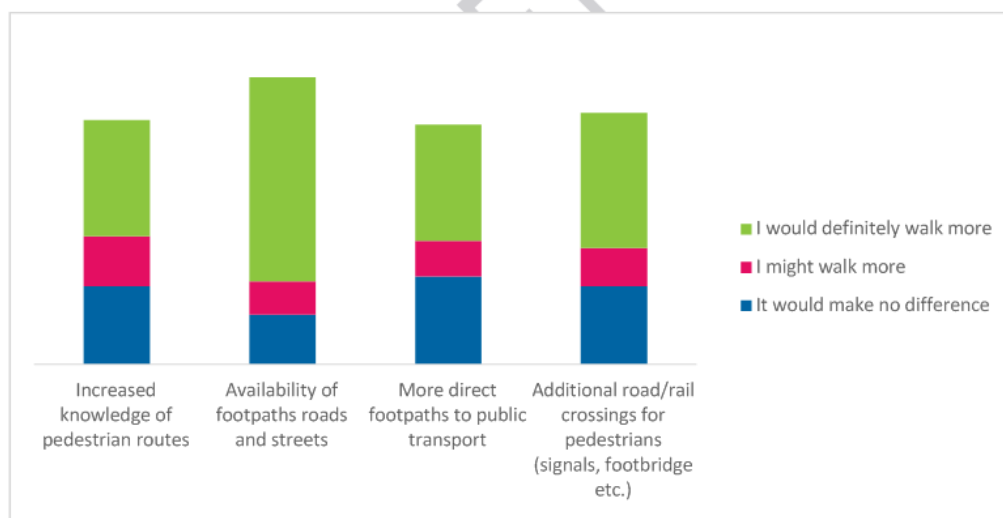
- Riverview Road and Hilltop Road
- Hudson Parade footpath extension from Clareville to Taylors Point
- Riviera Avenue and Stapleton Reserve
- Cabarita Road
- Patrick Street
- Central Road
- Kevin Street
- More off-leash dog areas
- Hedges and fences obscuring views
- Alleyway access on corner of Avalon Parade and Central Road should be re-opened.

3.6 Proposed changes

Respondents were asked what proposed changes would make them more likely to walk on a more regular basis for everyday local trips, or to commute to work/study.

The proposed changes that was most likely to make respondents walk more was availability of footpaths, roads and streets.

Figure 6 Whether the following proposed changes would make respondents more likely to walk on a regular basis



3.7 Other feedback

Respondents were asked if there is anything else that they would like to say about pedestrian access in Avalon. The most popular responses included feedback regarding:

- Traffic speeds, especially on Careel Head Road
- Poor footpath maintenance, especially in the village (a particular issue for older people and people with motorised scooters).

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4. Schools survey summary

The survey of three schools in the area (Avalon Public School, Maria Regina Catholic Primary School, and Barrenjoey High School) received a total of 23 responses were received between 18 to 24 October 2016. The survey was conducted online, and advertised through Council's Have Your Say website and social media. The survey consisted of ten multiple-choice and short answer questions. Feedback from the surveys is helping Council to understand student's walking behaviours, and will provide Council with information to identify opportunities for improving the walking route network in Avalon.

The majority of respondents attend Avalon Public School (83%). A few respondents attend Barrenjoey High School (17%).

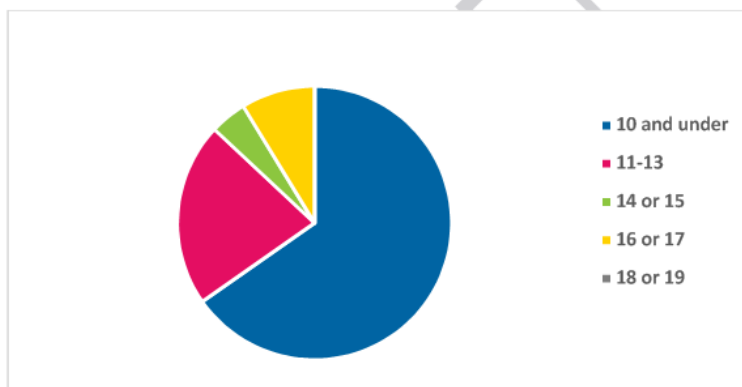
This section provides an analysis of the school survey results. A full summary of survey results is provided at Appendix B.

4.1 Profile of respondents

Respondents were asked to provide their age group, gender, and which school they attend.

The majority of respondents were aged 10 years and under (65%). This was followed by respondents aged 11 to 13 years (22%), 14 to 15 years (4%), and 16 to 17 years (9%). There were no respondents 18 to 19 years.

Figure 7 Age groups of respondents

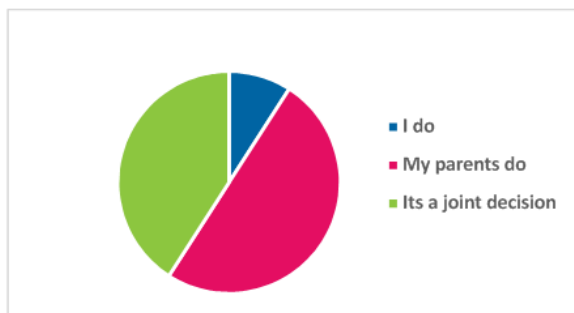


Around half of respondents were female (52%) and around half were male (48%).

4.2 Travel choice

Respondents were asked who chooses how they travel to school. Half said their parents do (50%), and the remaining respondents said it was a joint decision (41%) or they do (9%). One respondent did not answer the question.

Figure 8 Who chooses how you travel to school

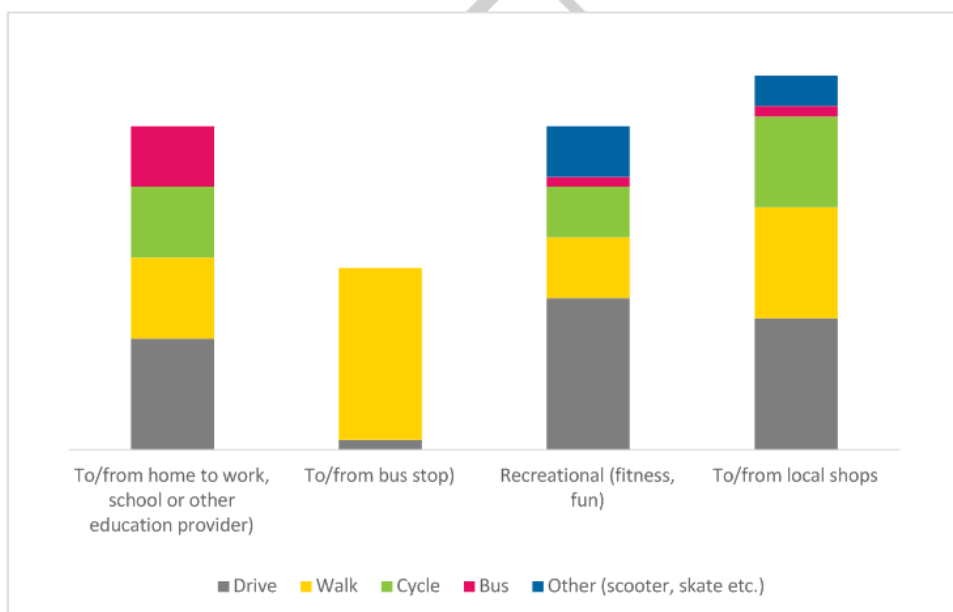


4.3 Transport usage

Respondents were asked how they normally travel for a variety of travel activities. Respondents were able to choose more than one mode of transport for each activity type.

Driving was the most popular mode of transport for: commuting to/from home, work or school (48%), commuting to recreational activities (71%), and commuting to/from shops (57%). Walking was the most popular for commuting to/from bus stops (94%). Cycling was somewhat popular for different activities. The bus and other modes were the least popular transport modes.

Figure 9 Transport usage by activity type



4.4 Reasons for not walking

Respondents were asked to provide the reasons why they do not walk more often, for three different journey types (to shops, school and work).

The most popular reasons why respondents do not walk more often, for all three journey types, were:

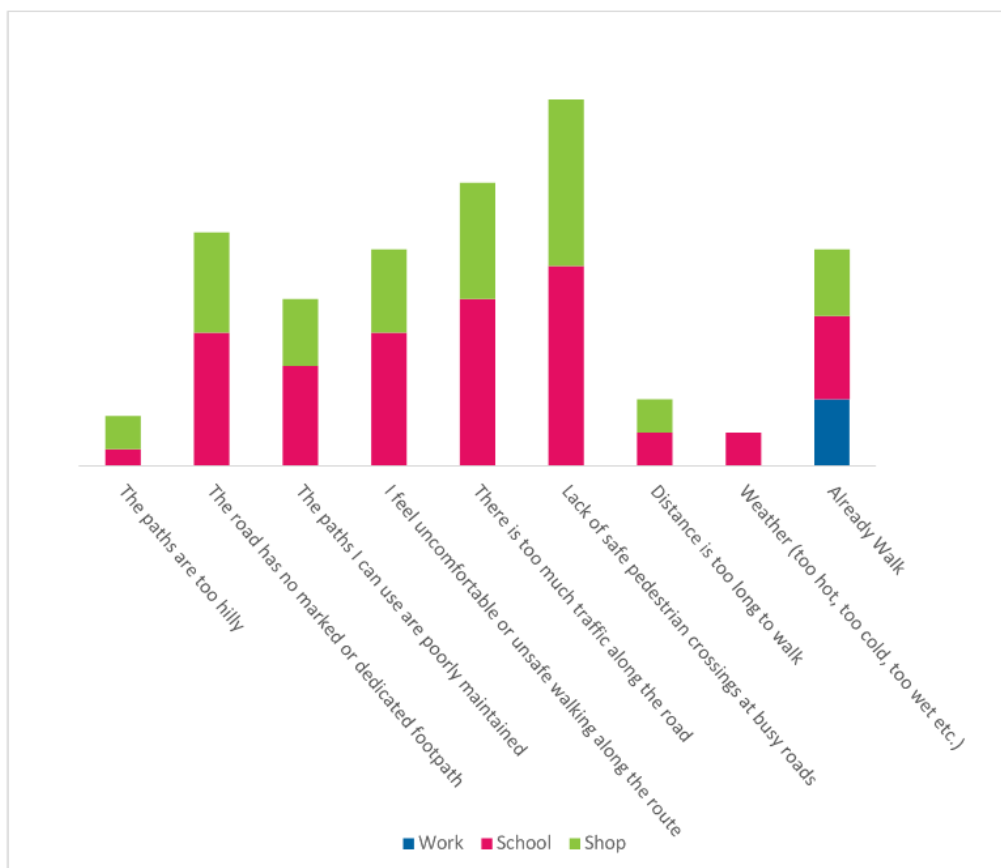
- Lack of safe pedestrian crossings at busy roads (57%)
- There is too much traffic along the road (43%)

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- The road has no marked or dedicated footpath (35%)
- I feel uncomfortable or unsafe walking along the route (35%).

The most popular reason why respondents did not walk more often to the shops or school was a lack of safe pedestrian crossings at busy roads (25% for shops and 22% for schools). The most popular reason why respondents did not walk more often to work was they already walk (100%).

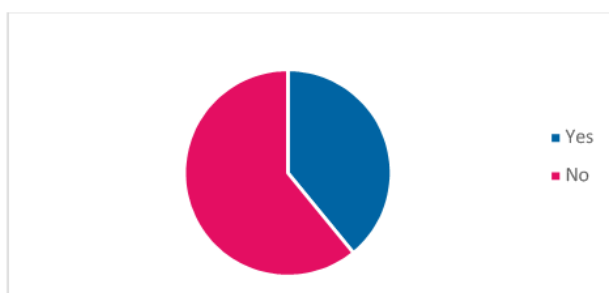
Figure 10 Reasons why respondents do not walk more often, by journey type



4.5 Barrenjoey Road

Respondents were asked if they cross Barrenjoey Road regularly to get to school. Over two-thirds said yes (39%).

Figure 11 Cross Barrenjoey Road regularly to get to school



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4.6 Reasons for transport usage

Respondents were asked the main reasons why they travel the way they do to and from school. Two respondents did not answer the question. The most popular responses were:

- Most convenient (57%)
- I am too young to travel alone (43%)
- Safety (43%)
- Too much traffic (29%).
- I like to travel with friends (19%)
- Fastest option (14%)
- Health and fitness (10%)
- Good for the environment (10%).

The most common responses under 'other' were related to concerns about safety at intersections, the need for a dedicated cycle path, and a lack of footpaths.

4.7 What would make respondents walk more regularly

Respondents were asked what would make them walk more regularly, from a list of four options. One respondent did not answer the question.

The most popular responses were:

- Additional road/rail crossings for pedestrians (64%)
- Availability of footpaths, roads and streets (59%).

Other less popular responses were: 'increased knowledge of pedestrian routes (1%) and 'more direct footpaths to public transport' (1%).

5. Pop up session summary

The Walk Avalon Footpath Pop-up Session was held on 24 October 2016 from 3-5pm outside the recreation centre on Old Barrenjoey Road in Avalon. A pop-up session is a meeting held in a public space, and increases participation in the project from people who may not normally attend a public meeting.

For the pop up session, GHD held informal one-on-one discussions with members of the public, to identify existing issues in the pedestrian network in Avalon. People were able to drop by and discuss their issues, and identify problematic locations on a large map that was used to help the discussions. Members of the public were able to mark-up the locations and types of issues for walking in Avalon on the map. Over 50 people attended the pop-up session.

This section provides summary of the pop-up session outcomes. Notes from the pop-up session are provided at Appendix C.

The most common themes discussed at that the pop-up session were:

- The potential for traffic lights at the four-way intersection in the town centre
- Improving the pedestrian crossings at the Barrenjoey Road/Avalon Parade intersection
- Making Old Barrenjoey Road pedestrianised north of Avalon Parade
- More footpaths in Avalon.

6. Written email feedback

Ten emails were received from residents raising specific concerns.

This section provides summary of the ten written submissions. The emails are provided at Appendix D.

Issues raised in the emails included:

- Pedestrian safety concerns at the intersections of both Barrenjoey Road and Old Barrenjoey Road with Avalon Parade.
- Pedestrian safety concerns walking into Avalon Village along the high side of Barrenjoey Road due to traffic proximity
- Suggestions to remove buses from using the intersection at Avalon Parade and Old Barrenjoey Road to improve pedestrian safety and to improve traffic conditions generally
- The need for a safety awareness campaign on road rules and responsibilities, targeted at drivers, pedestrians and cyclists.
- Unsafe pavement on Old Barrenjoey Road, Avalon beach (between the former Ibiza café and the shops Bounce and Catts)
- Unsafe erosion of nature slips in the area, requiring an upgrade of the footpaths in the area
- Trip hazards caused by old or damaged footpaths in the area
- The need for lighting around popular walking areas, particularly at Barrenjoey Road near the Recreation Centre, along the Elba Pathway, and through Catalpa Reserve
- Removing buses from the town centre intersection to install a walking mall on Old Barrenjoey Road
- Pedestrian safety concerns regarding Riverview Road due to the congestion and proximity of both traffic and pedestrians
- Unsafe pavement on Old Barrenjoey Road, causing a number of residents to fall and be injured
- Issues with the intersection of Barrenjoey Road and Old Barrenjoey Road with Avalon Parade, namely traffic behaviour and the difficulties that pedestrians are encountering in trying to cross at these intersections

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Appendices

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Appendix A – Walking Survey results

1. Age:		
Answer Options	Response Percent	Response Count
17 and under	1.5%	2
18 to 24	0.0%	0
25 to 34	1.5%	2
35 to 49	24.8%	33
50 to 59	19.5%	26
60 to 69	29.3%	39
70 and over	23.3%	31
answered question		133
skipped question		0

2. Gender:		
Answer Options	Response Percent	Response Count
Male	33.6%	44
Female	66.4%	87
answered question		131
skipped question		2

3. Do you have access to a motor vehicle?		
Answer Options	Response Percent	Response Count
Yes	90.9%	120
No	9.1%	12
answered question		132
skipped question		1

4. What type of transport do you typically use for the following travel activities? (Please select all that apply)					
Answer Options	Drive	Walk	Cycle	Bus	Response Count
Commuter (to/from home to work, school or other education provider)	83	23	5	21	106
Commuter (to/from bus stop)	27	78	3	6	97
Accompany child/children to school	34	29	9	1	59
Recreational (fitness, leisure)	46	84	33	8	121
To/from local shops	79	81	20	7	130
answered question					130
skipped question					3

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5. Please select the reasons why you would not walk more often from the list below for each journey type. (Please select all that apply)

Answer Options	Shop	School	Work	Response Count
The paths are too hilly	21	7	7	26
The road has no marked or dedicated footpath	66	30	25	69
The paths I can use are poorly maintained	56	19	19	58
I feel uncomfortable or unsafe walking along the route	46	20	19	51
There is too much traffic along the roads	51	24	16	54
Lack of safe pedestrian crossings at busy roads	40	16	16	40
Distance is too long to walk	29	14	36	53
Weather (too hot, too cold, too wet)	19	8	10	23
Already walk	51	15	14	52
	answered question			127
	skipped question			6

6. Please identify the top three gaps in the Avalon walking network that you would like to see improved in the future (street names/cross roads)?

Answer Options	Response Percent	Response Count
1.	100.0%	118
2.	78.0%	92
3.	55.9%	66
	answered question	118
	skipped question	15

#	1.	2.	3.
1	cars don't stop at bowling	alley lane onto Avalon Parade	
2	I would like the guide hall back	Pave/tarmac roads for skating	Acknowledge skating as true way of travelling
3	More trees needed	Hedges and fences across views such as Betsy Wallis Plateau Road and Barrenjoey Road to Palm Beach	Catholic school at 3pm dangerous
4	dangerous near Catholic school before and after school	wrong signage at public paths (eg. at 58 Hudson Parade says no access to beach on accessway)	Drivers don't hesitate
5	Allow gophers in shops	re-open closed accessway (eg. Catholic Church locked at corner of Avalon Parade and central Road next to service station)	
6	Need more bubblers	Closing of access	dog poo
7	Make Edmund hock safer (trucks)	Educate drivers re: pedestrian indicators	Make Avalon Parade/ Old Barrenjoey crossing 6 ways
8	Edmund Hock Avenue blocked by trucks	Not enough shade trees	Tables at cafes on footpaths create obstruction
9	footpaths more even	paths wider	
10	crossroad at Old Barrenjoey Road and Avalon Parade is an accident waiting to happen. Pedestrian crossing are too close to intersection and cars rarely stop at the stop sign	uneven surfaces and changes in height of paving make it difficult for someone with impaired vision	
11	Avalon Parade from Retirement Village to shops		
12	I cannot see any gaps in Avalon		

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13	Avalon Parade	Old Barrenjoey Road	
14	Barrenjoey Road, from Crane Lodge Road to Palm Beach Phillip Park (not footpath)	Barrenjoey Road, Careel bay to Governor Palm Beach.	Barrenjoey Road from Avalon to R...at "Kamikazi" or top Old Barrenjoey Road (top of golf course)
15	uneven/irregular footpath	obstructions from cafes and other shops	
16	Narrow footpaths on Avalon Parade	Uneven paths on Avalon Parade	Pedestrian crossings in main Avalon dangerous
17	Avalon Parade 32 to Avalon Shops		
18	Wollstoncraft Ave	Queens Ave	Net Rd and Cannes Dr
19	Intersection Avalon Pde and Old Barrenjoey Rd		
20	Careel Head Road	Barrenjoey Road	Whale Beach Road
21	Old Barrenjoey Road/Avalon Parade	Cabarita Road	Riverview Road
22	Riverview road	Patrick st	Cabarita road
23	avalon to Newport Barrenjoey rd	Avalon To Palm Beach Barrenjoey Rd	Avalon Village Crossroads to t intersection
24	Slower speeds on roads.	More safety pedestrian refuges and crossing	Mobile speed camers on Avalon Parade
25	Barrenjoey Rd between Avalon Parade and Plateau Rd Roundabout	The Serpentine	Wouldn't it be great if there were a walk/cycle track through the bush between the Plateau/Barrenjoey roundabout and Newport!
26	Walkway from Avalon north along Barrenjoey Rd to Palm Beach	Walkway south from the village to Newport via Barrenjoey Rd	
27	Removal of 3rd railing at new surf club Avalon beach	Shade trees	Access through Edmund hock avenue often blocked by trucks
28	Educate people that we walk on the left in Australia. People need to learn etiquette.	Get people to look up when walking, especially on roads	Please return BBQ tables to beach, I have to carry one to the beach nowadays.
29	Blocked eastern access steps at Catholic Church Dunbar park. This makes a huge difference to me as the cancer progresses. If this were reopened without black fence across it it would be lovely	Lack of access from barrenjoey road through back gate and grass of community centre	Lack of shady trees and bubblers. Need one at community centre and at small town at least
30	Park avenue heavy vehicle traffic NO footpath		
31	The Serpentine/Barrenjoey/AvalonPde		
32	Pedestrian path from Avalon Beach to Bilgola Beach along Barrenjoey Road	Stairs repaired opposite Bilgola Terrace from Plateau Road to Old Barrenjoey Road	Pedestrian crossing at traffic circle on Barrenjoey Road (Plateau Road & Old Barrenjoey Road)
33	Close to traffic, except buses, Old Barrenjoey Rd between Avalon Parade and Woolworth carpark.	Improve Careel Creek walkway around side of Barrenjoey High.	
34	1.'Back track' beside the creek, begins behind 1 Catalina Cres & joins up to the 'Yellow Brick Road' behind High School	2. See No 1 above	3. See No 1 above
35	From Plateau Road down to Old Barrenjoey Road heading to Avalon Shops (at the roundabout)	From Pittwater Road (at the roundabout bus stop) up to Plateau Road	From Pittwater Road (at the roundabout bus stop) along main road to Avalon Beach via lane way to Surfside Ave - to Avalon Beach!
36	Footpath on southern and western side of avalon parade	Crossing between Katandra close and central road so that school kids can cross safely to the path up to Chisholm avenue.	Turn lane way from school to post office into one way traffic with footpath.
37	footpath at 40 Avalon Pde, uneven, dangerous	lighting along the track from Sth to Nth Avalon at night	the village footpaths are uneven and dangerous in parts
38	Upgrade the popular creek footpath from Catalina Crescent and North Avalon Road	Close to traffic, except buses, Old Barrenjoey Rd	Use a similar model to Hastings St Noosa

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		between Avalon Parade and Barrenjoey Rd at fire station.	
39	Avalon Parade & Old Barrenjoey Road	Avalon Parade & Centra Road	
40	Lack of foot paths on Barrenjoey Road especially as you get closer to Palm Beach.	Please, please, please put a set of traffic light at the intersection of Avalon Parade and Old Barrenjoey Rd Avalon. Pedestrians take their life in their hands every time they cross the road there. The traffic seems very confused about who has the right of way. It is a very dangerous intersection!!!!	
41	a continuous walkway between Avalon & Palm beach	a safe pedestrian walkway along Barrenjoey road up to Palm beach	
42	Wollstonecraft Ave		
43	Riverview Road	Cabarita Road	Barrenjoey Road
44	South side Avalon Parade between Bellvue St & Ruskin Row	Northside Park St	Old Barrenjoey Rd & Avalon Parade westside
45	Footpaths in Park Ave to Barrenjoey road	Safer access to beach both North and South Av across Barrenjoey road	Walking access near Clareville Beach
46	complete paved cycleway beside (west of) Barrenjoey high school from Central Rd to North Avalon Rd	continue path west from Bowling Green to connect seamlessly with both Central Rd and Avalon Pde	upgrade pathway from south avalon headland to the serpentine
47	the alley that the red cross is on, very uneven ground	Outside Swell the tables and chairs take up WAY too much room, you can barely pass with a stroller or dog...	cars parked along Central Road make it almost impossible to drive down, old trailers, boats
48	Barrenjoey Rd esp north of Careel Bay		
49	Pathways	Too many crossings too close together in the centre of Avalon	
50	Footpath west of Frech restaurant towards car park and doctors is in extremely bad condition. It is a hotspot of materials and requires crampons to negotiate safely.	Footpaths throughout the village are generally dirty.	People should be discouraged from bringing their dogs into the village. They make navigation more difficult especially when they are tied up outside shops. Not all dog owners pick up dog poo.
51	Kevin Avenue	Wollstonecraft Avenue	
52	Therry Street to Careel Bay Marina (George Street)	Palm beach wharf to Palm Beach Golf club (barrenjoey Rd)	
53	Traffic lights needed at junction of Avalon parade and old barrenjoey rd		
54	Riviera Ave / Park Ave		
55	Walking path on ocean side from Central Road back towards skate park and beach		
56	The intersection of Old Barrenjoey Road and Avalon Parade is dangerous with the 4 x pedestrian crossings. There is much confusion at rush hour times and there is the potential for a fatality.	Accessible car parking in the main parking precinct on Old Barrenjoey Road. The current car park near the video store is a bit isolated.	Enhancing a pedestrian 'loop' walk from Avalon to North Avalon along the beach path.
57	Barrenjoey Road	Surf Road	Thyra Road
58	Barrenjoey rd . Between carrel head rd and crane lodge rd , it's just plane dangerous	Crossing Barrenjoey rd at the dog park	
59	Barrenjoey between carrel head road and crane lodge place	Barrenjoey road on opposite side of road between etival and career head road	
60	better walking path along the coast	from Bilgola Beach to Avalon beach i.e. from Serpentine	
61	hudson pde from delecta ave to torpedo base taylors point	hudson pde from avalon sailing club to Riverview rd on northern side of road	old barrenjoey road outside telstra near avalon school footpath really bad
62	a walkway along the back of the beach, dogs included	clear footpath and less rubbish on Wickham lane	the "barefoot Boulevard" walk to bus-stop is grubby
63	Cabarita Road/ Riverview Road total length	Patrick Street from Cabarita Road to end	Shore Brace from Riverview Rd to Cabarita Road
64	Therry St to end of Gerge Street		
65	George street from Therry Street to the Marina		

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66	hudson pde from delecta ave to torpedo base	hudson pde from avalon sailing club to riverview rd	barrenjoey rd to avalon school in front of telstra building
67	Hudson Parade from Delecta to Taylors Point		
68	Hudson Parade Clareville to Taylors Point	Palm beach ferry to Gov Phillip Park	
69	Footpaths on Cabarita road	Footpaths on riverview road	
70	Wandeen Road	Riverview Road	Hudson Parade
71	Footpath full length of Hudson Parade	Footpath from Bilgola Plateau to Hudson Parade	Upkeep of walkways / pathways throughout Avalaon & Clareville
72	Safe footpaths for school children near career at soccer fields	Zebra crossing out the front of the entrance to Barrenjoey High School	A space on the main roads for bike riders
73	Hudson Pde footpath extension from Delecta Ave to Taylors Pt	Riverview Road	Bilgola Beach to Avalon Beach
74	Avalon to Bilgola to Newport		
75	River Road	Intersection Avalon Pde/Old Barrenjoey Rd	
76	Plateau Road to roundabout on the bends	Footpaths throughout Bilgola Plateau	
77	Careel head road/Barrenjoey road	Whale beach road/barrenjoey road	
78	More joined up walks so that I can walk my dog closer to home - currently almost impossible for practical and safety reasons	Integrate open spaces and off leash areas onto walks so that people can walk to and from - healthy for them and their dog - currently impossible for most north of the Bilgola bends	Consider other walking opportunities for dog and non dog owners alike where pavement is unsuitable / expensive e.g. Newport to Bilgola along the beach - the random bit of pavement is obsolete and a waste of money
79	Barrenjoey Rd around golf course	Barrenjoey rd near skatepark	Riviera Ave hill
80	Footpath along Riverview Road	Footpath along Cabarita Road	Footpath along Shore Brace
81	complete footpath to the end of Hudson parade	build a footpath up wandering road	build a footpath along Riverview road
82	Avalon Parade intersection with Old Pittwater Rd		
83	Barrenjoey Road between Surf Road and Careel Head Road		
84	Improved footpaths around the Clareville area .	Footpath behind the drainage channel behind the high school . It's very muddy and unkempt . It could be a pleasant walk .	
85	Extend yellow brick road	Bike path to Careel Bay & Hitchcock	Bike path along Avalon Parade
86	Riverview Rd	Riverview Rd	Riverview Rd
87	Clareville Beach to Taylors Point		
88	Footpaths Patrick St		
89	Barrenjoey Rd from Avalon to Kamikaze Corner - this is so dangerous - then the Serpentine. We need to extend the South Bilgola Headland walk all the way into Avalon. Imagine how great this would be for tourism, businesses in AV and Newport and also allowing people to walk to our beaches rather than drive the car. PLUS it will allow our kids to be able to walk to the beaches.	I live in Bilgola and i would love to walk to Clareville Beach. This is a great beach for my nieces and nephew but the only way I can get there is to take the car. So a footpath from Taylors Point to Clareville Beach would be great.	I also I have heard that there are public pathways I could take as an alternative but I can't find them. PLEASE, please label them!!!!
90	hudson pde path from delecta ave to tailors point		
91	Hudson Pde between Delecta & Taylors Point Wharf	Barrenjoey Rd between Avalon Pde & Bilgola	Wandeen Rd between Hudson & Plateau Rd
92	Riverview Road - would like more footpath		
93	Riverview Road	Cabarita Road	
94	Riverview & Hilltop roads	Avalon to Bilgola via Serpentine	Hudson parade to Taylors Point

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95	No footpaths in many streets, no pram access in many streets	Avalon Village has uneven, potholed footpaths, gutters and lane ways have no pedestrian footpaths	Storm water drains in Avalon Village are totally ineffective, All Streets should have pedestrian access, it would be useless to have to be informed as listed below as to where to walk, tourist, children and most people would not know
96	Central Road, Avalon needs to have restricted parking as in only on one side of the street	Stopping cars from half parking on the verge of streets	
97	Hudson Pde	roundabout crossing at start of Bilgola Bends	
98	Kevin Avenue crossing Park Avenue	Barrenjoey Road Careel Bay to Palm Beach	Queens Avenue Full length
99	Intersection Avalon Pde & Old Barrenjoey Rd	dangerous!	
100	Pedestrian crossing at Cnr Careel head rd and barrenjoey rd joining bus stop to shops	Burrawong rd and surrounds Trees/bushes cleared that take up whole nature strip on roads in north Avalon that force you to walk on the road	Safe crossing/pathway near entrance to Careel bay soccer fields (40km/hr from Careel bay shops to the park entrance would be good too as cars speed past there and there are many children and dog owners that walk in and out of there and around there)
101	Stapleton reserve/riviera avenue		
102	Riviera Road up hill past Stapleton Teserve	Along Barrenjoey Road to Serpentine past Golf course	Park Avenue all the way to Riviera
103	Queens Ave, Wollstonecraft Ave, Patrick st & kevin ave (impossible to use current footpath with small children/pram)	Hitchcock Park (walking careel bay to palm beach)	Barrenjoey Rd (Avalon to Palm Beach)
104	Careel Bay football fields - no pedestrian crossing across busy Barrenjoey Road	Walkway along beachfront from north to south Avalon beach through dunes to prevent youth drug usage in this area	Need shared pathway from south Avalon beach along Barrenjoey road up to Kamikaze cnr , through the bends to Newport
105	Hilltop Road	Hudson Parade	Bellevue Road
106	Patrick street	Kevin street	Wollstonecraft
107	Confusion Corner in Avalon	Speed limits on smaller roads e.g. Chisholm / Hilltop	Make joined up walks for dog owners - currently we have to drive to North Avalon, there is no nearer safe place to walk our dogs
108	Hudson Parade to Hilltop Rd to Clareville beach	Riverview Rd and Paradise Ave to Paradise Beach	Barrenjoey Rd between Avalon Pde to roundabout
109	Riverview Rd at Hudson Pde end	The whole section of Barrenjoey Rd between the bends and the lights at Avalon Pde	The whole length of Riverview Rd
110	Fix public path between 38-40 Chisholm to 65A-67 Hilltop	Make a footpath on lefthand side of Avalon Parade to the point where stairs to Chisholm begin.	Chisholm Avenue has no foot path
111	Avalon to Bilgola Beach especially the Serpentine.	Allen Ave to Bilgola Car park ...dog access along beach please	Hilltop Rd shops to Claireville
112	Better conectivity along the main routes, including through the parks	Some seats along the way	Upgrade the small public pathways that provide the permeability through the area
113	Links to most of Clareville and Bilgola Plateau - this includes Hudson Pde, Riverview and pathways which have no wayfinding signs and are badly maintained.	The route between Avalon Newport you could have an amazing cliff walk which would link the two	Can we look at paths not on steets. We have and amazing network of pathways which aren't used, aren't sign posted and aren't maintained. Please see:

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			https://cabpra.wordpress.com/funds-for-pedestrian-safety/pathways-in-the-cabpra-area/ and click on Pittwater Pathways
114	closure of public paths and access (i can think of at least 12 places that have been blocked, sold off or fenced over) GET THOSE CHAIRS OF FOOT ACCESS - ESPECIALLY AT HANDRAILS AT AVALON SURFCLUB AND ON CORNER NEAR WOOLWORTHS	felling of trees that provide shade in avalon shopping centre particularly	Central road is sooo pleasant to walk on, cars go slow because of one lane access - perfect building across views with hedges and houses - the walk down plateau rd and to palm beach had many views of the sea until recently (e.g Betsy Wallis reserve used to have a view of the sea)
115	None		
116	Park Ave	Barrenjoey / to Beach / Avalon Parade	Walk Tunnel under Barrenjoey to Beach & Skate Park?
117	Riverview road, Cabarita road, Patrick st		
118	all North Avalon roads	Burrawong Road	

7. Please indicate whether the following changes would make you more likely to walk on a more regular basis for everyday local trips or to commute to work/study: (Please provide an answer for each option)

Answer Options	I would definitely walk more	I might walk more	It would make no difference	Response Count
Increased knowledge of pedestrian routes	49	21	33	101
Availability of footpaths roads and streets	86	14	21	121
More direct footpaths to public transport	49	15	37	101
Additional road/rail crossings for pedestrians (signals, footbridge etc.)	57	16	33	105
			answered question	123
			skipped question	10

8. Is there anything else that you would like to tell us about pedestrian access in Avalon?

Answer Options	Response Count
	24
answered question	24
skipped question	109

#	Response Text
1	Uses motorised scooter (not car). I am happy with the crossings as they are - people have to be educated on the rules of crossing. No mobile phones!
2	SKATEBOARDER (just checked cyclist boxes in survey).
3	Fences and hedges across views make routes that used to be pleasant unpleasant and walled
4	I use a mobility scooter instead of driving. Not very mobile.
5	please do not change central road as it means traffic slow - very pleasant and safe.
6	better variety of shops and competitions for groceries and fruit means I wouldn't go to Mona Vale to shops but would walk to shops here.
7	Occasionally I use my walker, but mostly my mobility scooter which is not always easy as the single line only footpath makes it difficult to pass a mobility scooter coming towards you in opposite direction. Scooter wheels sink into soft grass if you go off footpath. I would greatly appreciate another stretch of footpaths alongside first one.

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-
- 8 More use of the alleys for pedestrian access. Good idea to beautify the alleys with public art! More public benches/public furniture for the elderly to rest when walking.
-
- 9 Crossing Barrenjoey from Careel Head road to Hitchcock Park and Careel Bay ovals is very dangerous for children. Also Careel Head Road needs to be the secondary route to Whale Beach, not the primary route i.e. MOVE THE WHALE BEACH SIGN FROM CAREEL HEAD ROAD AND PUT IT AT WHALE BEACH RD BARRENJOEY RD INTERSECTION. Speeding cars down Careel Head Road are extremely dangerous and Council needs to address this problem. I have tried but Council are in denial.
-
- 10 I fell heavily three weeks ago and badly bruised my knee and grazed my elbow on the section between the former Ibiza cafe and dress shop Bounce. The pavement here is shocking, made up of old (probably decades old) concrete slabs that are cracked and uneven. I understand that Mark Ferguson and officers from the previous council have been made aware of this, doing a walk through the area in 2015, and remediation was promised but nothing has happened and people continue to trip and fall.
-
- 11 The footpaths in the village are poorly maintained and have many trip hazards.
- The crossroads intersection is very dangerous. Need a T intersection closing off north side old Barrenjoey Rd. More bike paths needed especially for Public/primary students. Could look at one way around Edmond Hock and Bellvue and around Golf course. Pedestrian crossing Barrenjoey rd should be centre near beach entry - not on corner where cars swing round. Better lighting needed through Dunbar Park and back way to Pittwater Palms. More bike racks needed in Village.
-
- 12 The speeds on Avalon Parade are very worrying, often 80kmh or more. With population increase more cars and more reckless drivers. No safe pedestrian refuge when crossing Central Road near the intersection of Avalon Parade and Hudson. Parade. Pedestrian refuge near Katandra Close and Avalon Parade corner as this is the only clear vision a pedestrian has to see traffic coming both ways.
-
- 13 1 The footpath outside the Telstra Exchange to the Decjuba shop is especially poor and needs upgrading and landscaping. 2. The bush path that connects Old Barrenjoey Road to Bellevue Ave (opposite 24 Old Blaney Rd at the Southern end of Avalon Public School) is in a disgraceful state of repair. There is erosion and water damage to the whole path from a granny flat that has dodgy plumbing and a temporary raised path has been put in place in one section so as to avoid mud & water flows, but problem needs a long term fix and the whole path needs grading so that it's safer and easier to walk along please. Lots of school kids and local residents use it every day. 3. Also the footpaths along both sides of Avalon Pde from the Shell service station right through to the Newsagency are in a terrible state and need to be replaced totally. 4. As do the footpaths in Avalon Village on both sides of Old Barrenjoey Rd from The Telstra Exchange right through to Dunbar Park. 5. More large canopy trees need to be planted along the footpaths throughout Avalon Village too please.
-
- 14 I think that Avalon is in pretty good shape already for pedestrians. Little needs to be done. I think the 4 way pedestrian crossing at the centre of Avalon actually works extremely well (I say this because I suspect you will get many calls for change, which may spoil the current relaxed village feel).
-
- 15 It's a pity that the gate next to the grass at the back of the community centre is locked, it is a lovely access point. When are we going to get our lovely shady bit of Dunbar park back that is currently rented by the RSL for a beer garden, it was lovely to walk there.
-
- 16 Could you please stop the cafe at the surf club roping off the access with handrail to the beachfront park benches. Could you also get the surfclub restaurant to not have smokers gathered around its entrance, especially at and after dark. It smells.
-
- 17 Need some traffic calming or more zebra crossings to slow traffic. Would be good to be able to go into shops with gophers, especially the hardware and the supermarket. Get rid of seats signs and other clutter on footpaths outside shops though more park benches would be welcome. Please don't allow the blocking of views as you have recently and pending. See for instance 44 Plateau Rd where view from walk about to be blocked. 61 Plateau Rd and 953 and 977 Barrenjoey Rd and 41 Pacific Rd. All these have or will spoiled walking routes
-
- 18 I would like to see small commuter buses bringing shoppers closer to Avalon. I live just too far from Avalon shops to drive and be able to carry home my shopping. I am prepared to pay a fare. This would also put less stress on parking issues in Avalon.
-
- 19 Needs to be improved for both residents and visitors to the general area.
-
- 20 The 'Back Track' as in 6 above is has a high use area as access to the high school, mum with babies in prams, fitness runners as well as older people. We have asked many times that this path be improved but to no avail. Please make this a priority & inform me as to your plan for this path
-
- 21 This is so important. Please consider safe walking accessibility for the people walking from Bilgola Plateau down into Avalon shopping centre and along Pittwater Road to Avalon Beach. The stairs at the end of Plateau Road had have been barricaded for over a year. This means we have to walk all the way down to the roundabout close to oncoming traffic on an unfinished and unsafe to walk down into Avalon centre. It is completely unacceptable that work has been done and left unfinished making it even more precarious.

Also, if someone jumps on the E89 from Wynyard, the only option is to get off at the roundabout and walk precariously along Pittwater Road, two feet from oncoming traffic doing up to 60 kmph, on gravel and un-level ground, to the next bus stop at Avalon Beach! This is extremely unsafe at any time of the day!! This walk in the dark at night and in heels is not for the faint hearted!!

It is also extremely unsafe to walk from the roundabout to the Bilgola stairs. There is a sharp bend in the

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road that oncoming cars will not see pedestrians crossing the road and walking to the stairs on the Serpentine.

Please consider the above as a matter of urgency in your proposal.

Call me if you have any questions.

Angela Farmer 0417 665 775

22 We would love for our kids to walk to school but paths are not available or safe to do so. We must improve our this

23 A crossing from the Careel Bay tennis courts to Whale Beach road would be great as lots of school children get off at that bus stop and find it very difficult crossing the road .

Also maybe a consideration for people with a disability who maybe in wheel chairs or mobility scotters..

24 footpaths could be widened

9. If you would like to go in the running to win a pair of movie tickets or to be kept informed about the progress of Walk Avalon, please provide your contact details below (Optional)

Answer Options	Response Percent	Response Count
Name	98.3%	59
Company	16.7%	10
Address	88.3%	53
Address 2	10.0%	6
City/Town	76.7%	46
State	80.0%	48
Postal Code	81.7%	49
Email Address	85.0%	51
Phone Number	71.7%	43
answered question		60
skipped question		73

Responses to question #9 are not included in the report, to maintain respondent's privacy.

Appendix B – Schools Walking Survey results

1. Age:

Answer Options	Response Percent	Response Count
10 and under	65.2%	15
11-13	21.7%	5
14 or 15	4.3%	1
16 or 17	8.7%	2
18 or 19	0.0%	0
answered question		23
skipped question		0

2. Gender:

Answer Options	Response Percent	Response Count
Male	47.8%	11
Female	52.2%	12
answered question		23
skipped question		0

3. Who chooses how you travel to school?

Answer Options	Response Percent	Response Count
I do	9.1%	2
My parents do	50.0%	11
Its a joint decision	40.9%	9
answered question		22
skipped question		1

4. Which school do you attend?

Answer Options	Response Percent	Response Count
Avalon Public School	82.6%	19
Maria Regina Catholic Primary School	0.0%	0
Barrenjoey High School	17.4%	4
answered question		23
skipped question		0

5. How do you normally travel for the following activities?

Answer Options	Drive	Walk	Cycle	Bus	Other (scooter, skate etc.)	Response Count
To/from home to work, school or other education provider)	11	8	7	6	0	23

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To/from bus stop)	1	17	0	0	0	18
Recreational (fitness, fun)	15	6	5	1	5	21
To/from local shops	13	11	9	1	3	23
answered question						23
skipped question						0

6. Please select the reasons why you would not walk more often from the list below for each journey type

Answer Options	Shop	School	Work	Response Count
The paths are too hilly	2	1	0	2
The road has no marked or dedicated footpath	6	8	0	8
The paths I can use are poorly maintained	4	6	0	6
I feel uncomfortable or unsafe walking along the route	5	8	0	8
There is too much traffic along the road	7	10	0	10
Lack of safe pedestrian crossings at busy roads	10	12	0	13
Distance is too long to walk	2	2	0	4
Weather (too hot, too cold, too wet etc.)	0	2	0	2
Already Walk	4	5	4	5
answered question				23
skipped question				0

7. Do you cross Barrenjoey Road regularly to get to school?

Answer Options	Response Percent	Response Count
Yes	39.1%	9
No	60.9%	14
answered question		23
skipped question		0

8. What is the main reason you travel the way you do to and from school/work?

Answer Options	Response Percent	Response Count
Health and Fitness	9.5%	2
Not physically able to walk or cycle	0.0%	0
I have a lot to carry	0.0%	0
I am too young to travel alone	42.9%	9
I like to travel with friends	19.0%	4
Good for the environment	9.5%	2
Too much traffic	28.6%	6
Safety	42.9%	9
The weather	4.8%	1
Saves money	0.0%	0
My parent/guardian has to pick up/drop off others	4.8%	1
I am dropped off on the way to other activities	9.5%	2
Most convenient	57.1%	12
Fastest option	14.3%	3
Only available option	0.0%	0

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Other (please specify)	6
answered question	21
skipped question	2

#	Other (please specify)
1	My parents encourage walking instead of them having to drive me.
2	My mum & dad won't let me walk on my own because the pedestrian crossings in the middle of Avalon aren't safe. Too busy & too many ways to check at once.
3	the intersection in the middle is far too dangerous. No one knows who has the right of way and I know at least three people who have had near misses. my mum has written to the council about this many times. way too dangerous she and her friends think.
4	Too far to walk
5	A dedicated cycle path to school and around Avalon is needed if you want to encourage more people/kids to cycle. It's quiet dangerous to cycle around the main shops and a dedicated cycle path is needed.
6	No footpaths on Therry or queen or woolstencraft st

9. What would make you walk as a form of travel more regularly?

Answer Options	Response Percent	Response Count
Increased knowledge of pedestrian routes	4.5%	1
Availability of footpaths, roads and streets	59.1%	13
More direct footpaths to public transport	4.5%	1
Additional road/rail crossings for pedestrians (signals, footbridges etc.)	63.6%	14
answered question		22
skipped question		1

10. If you would like to go in the running to win a pair of movie tickets or to be kept informed about the progress of Walk Avalon, please provide your contact details below (Optional).

Answer Options	Response Percent	Response Count
Name	100.0%	17
School	100.0%	17
City/Town	100.0%	17
Contact details	100.0%	17
answered question		17
skipped question		6

Responses to question #10 are not included in the report, to maintain respondent's privacy.

Appendix C – Footpath pop-up session notes

Monday 24th October 2016

3:00pm – 5:00pm

Outside Recreation Centre, Old Barrenjoey Road, Avalon

- Corner of Barrenjoey Road near Surf Club
- Old Barrenjoey Road – make pedestrianised north of Avalon Parade
- Town Centre Crossing – 4-way
- No lights along path between skate park to Barrenjoey Road
- Buses sometimes terminate at Avalon – forces people to walk to North Avalon
- Remove shrubs at Stapleton Park – Riviera Avenue
- 54-56 Binburra Avenue – needs bollards to stop motorbikes
- Avalon Parade – 4-way crossing
- No kerb and guttering on Queens Avenue
 - Joseph to Terry Ave – flooding issues
- Needs traffic lights at 4-way
- Needs 4-way to be improved
- Not enough time for pedestrians at lights at Barrenjoey Road at the moment
- Drop speed limit to 50km/h on Barrenjoey Road
- Not sure about lights at 4-way
- Bike path – would love to see in village
- Needs more bike parking in village
- P&C at Avalon Public School – needs pedestrian crossing on Sanders
- Infants and Primary are separate – Primary on the south side
- Needs – Upgrade of Pedestrian refuge on Barrenjoey Road to North – See map
- Need more footpaths!!
 - Queens Road
 - Elving – proposed on Eastern side
- Retirement Village near George Street
- Kevin Park – Needs pram ramp at Pedestrian Refuge
- Close of Old Barrenjoey Road to cars (buses only)
- Make one-way loop for Edmund Rock and Wickham Lane for Bikes
- Old Barrenjoey Road crossing – remove existing crossing
 - Provide a new one mid-block
 - New signal at Old Barrenjoey Road and Barrenjoey Road
- New Bike Paths from Barrenjoey Road/Serpentine into Village from Newport
- Wickham Lane at Avalon Parade is unsafe for kids and bikes
- Need more off road bike paths
- Fitness route
- More school bus drop-off to eastern end of Central Road
- More driver signage to car parks
- School education programmes:
 - Scooters and bikes on footpath
 - More bike racks – outside woollies
- Disabled Parks outside woollies next to Old Barrenjoey Road – issue for pedestrian safety
- Introduce shared zones in village
- Avalon Parade
 - Difficult
 - Utilities
 - Prams take up room
- Restaurant Tables in footpath in Avalon Park Bowling Green Lane
- Missing footpath to Elba Lane near RSL
- Flooding along Yellow Brick Road
- Move Pedestrian crossing and bus stop

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- Bike hire scheme would be good
- Improve wayfinding:
 - No signal along coastal walk
- Need more lights at Northern end of Yellow Brick Road and Dunbar Park Walkway
- Hilltop Road
 - Construction trucks parked
 - Full of pot holes
 - Walkways to Hudson and Chisholm Avenue
 - Need to slow vehicles down
 - Lighting is poor
- George Street
 - Not good for disabled scooters
 - Links to pedestrian refuge
- Crossing on Barrenjoey Road – bad crossing at Central Road
- Central Road
 - Cars parked across footpath at driveways
 - Restrict parking on one side?
- A few trip hazards in town – Avalon Parade near Newsagency

DRAFT

Appendix D – Written email feedback

-----Original Message-----

From: [REDACTED]
Sent: Tuesday, 15 November 2016 2:28 PM
To: Michelle Carter
Subject: Re: Avalon Survey

Thanks for your reply Michelle.

I think it's wonderful to have a plan to make Avalon more 'pedestrian friendly' and wish to make what I hope is constructive criticism.

For me, the most challenging choice is how to make two 'intersections' more safe. Years ago, I wrote to the Council after spending six years living in the US. I know Council can't make road Traffic rules as they must remain State Government regulations. The intersections of both Barrenjoey Road and Old Barrenjoey Road with Avalon Parade are the problem. Old Barrenjoey Road and Avalon Parade is a nightmare for both drivers and pedestrians. They have in the US what is known as 'Four Way Stop Signs' A driver approaches them in a manner they (should) approach a roundabout... ie...first in, first out. I never did receive a response to that mail. Gone are the days when those on foot reach an intersection, stop and look right, then left then right again and cross 'briskly'. People seem to think they can step onto the road whenever they like and simply dawdle as if they are strolling along the beach.

Drivers must adhere to road rules and so should pedestrians. Awareness is key to safety, and I think a council publicity blitz should remind both pedestrians and drivers of their responsibilities. The same should be for bike riders. Bicycles these days are so well designed and are almost silent in operation. It should be mandatory for a bike rider to ring a bell, or at least call out, as they approach someone from behind-alerting that they are approaching. I have had several close encounters from a silent bike approaching from behind me-particularly on the 'yellow brick road'. Again, this is relevant to awareness and courtesy.

At one point, it was rumoured that the crossing of Barrenjoey Road was to have a very wide crossing, so it included the 'gap' in the median strip where cars turn into the beach car-park. People just avoid the crossing and 'jay-walk' where the gap is. Nothing more happened with that as the pedestrian crossing at the Shell Service Station was upgraded with some fencing installed. Incidentally, the fencing near the bus-stop is worthwhile BUT the pavement needs completing and certainly some landscaping work needs to be done on that particular corner. If you take a look at it, there is less than half a metre for someone to negotiate that corner. Simply unacceptable.

I hope the above provides some reason for considering my suggestions. There are plenty of areas to walk, but it's the safety at crossings that need attention.

Sincerely,

[REDACTED]

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From: [REDACTED]
Sent: Friday, 18 November 2016 8:42 AM
To: Northern Beaches Info
Cc: avalonpreservation@gmail.com
Subject: : Unsafe pavement on Old Barrenjoey Road Avalon Beach between the former Ibiza cafe and the shops Bounce and Catts

Attention
Mr Dick Persson Administrator
Mr Mark Ferguson General Manager
Northern Beaches Council

Dear Mr Persson and Mr Ferguson

Re: Unsafe pavement on Old Barrenjoey Road Avalon Beach between the former Ibiza café and the shops Bounce and Catts

On Saturday 5 November, I tripped and fell flat on the uneven pavement along Old Barrenjoey Road, near the Avalon Beach Cinema. I badly bruised my knee and received a deep graze on my elbow. Even now, two weeks later, I still have difficulty walking and was fortunate not to break any bones.

I have since heard of a number of people who have also tripped and/or fallen in this area. The manager of the Bounce dress shop said she had seen a number of people trip and fall. She now warns her customers about the unevenness of the pavement.

Would you please organise for one of the NBC officers to inspect the area? Unlike much of Avalon, this area is not paved. The surface is made up of, possibly decades old, concrete slabs which are now cracked and broken providing a most uneven surface.

I consider that I was lucky in that I have only needed patience and a course of physiotherapy to recover but I consider that someone could have a serious fall if NBC does not take steps to fix the surface.

I look forward to hearing from you as to your opinion of the state of this section of the Avalon Village pavement.

regards

[REDACTED]

10 January 2017

Ben Taylor
Deputy General Manager
Environment and Infrastructure
Northern Beaches Council

Attention: Michelle Carter, Active Transport Officer

Dear Mr Taylor,

I note with interest Council's current 'Walk Avalon' initiative and I believe I recently submitted a response to a survey on this matter. However I am keen to ensure that my concerns re. pedestrian safety along Riverview Road are taken seriously since this is a busy thoroughfare for vehicles as well as for walkers. The road is narrow and is increasingly lined by parked vehicles on both sides. Since it is a connector route to Careel Bay and beyond, Riverview Road provides a loop walk for pedestrians and based on recent analysis attracts significant numbers of walkers particularly in the early morning and late afternoon. This includes a) commuters heading to the E189 bus at the corner of Hudson parade and Riverview Road, b) local school children and those who attend school further afield, c) dog walkers and c) recreational/ healthy lifestyle walkers.

I believe that the lack of footpath along Riverview Road is an accident waiting to happen and I look forward to your response.

Yours sincerely

Sent: Friday, 4 November 2016 7:19 AM
To: Michelle Carter
Subject: Walk Avalon

Hello Michelle.

This email is about the Walk Avalon survey and associated issues.

The survey poses a number of questions which presume the existence of a number of issues. In my view there are additional issues beyond those exposed by the survey. As well as that, a survey about walking and access will give a result which is strongly in support of walking. I would like to see a statement of any objectives which have been assumed as part of the initiation of the work, such as supporting walking at the expense of driving. A balanced approach would mean the objectives should be disclosed.

There are a number of competing considerations and activities which may be impacted. A response to a walking survey must be balanced with consideration of other needs, such as road transport and vehicular access, and the wish of many residents to retain the rustic character and informality of the village and its surrounds.

As an example of issues outside of the survey: Pedestrian access within the village itself is compromised by obstructions placed on pavements - landscaping and plantings, pavement furniture, goods for sale, café tables and charity collectors. Our pavement population includes, walkers, dogs, people with walkers, mobility scooters, cyclists, skateboards, kids on riding toys and baby carriages. And the answer is not to pedestrianise the roads or paint cycle paths on them.

The issues involved in walking to the village or walking around the outlying areas are different from the issues involved in getting about the village itself. Fortunately Avalon village is not like Newport with the main road cutting the shopping centre down the middle. Nor is it like Mona Vale with the shops split around a big park in the middle and a whole lot of cars which cannot easily get out.

My wife and I live half-way up the hill behind the public school. We walk to the village and the beach on many days. The biggest issue for us in getting to the Village is the poor condition and narrow width of the footpath at the northern end of Bellvue Avenue. When it is dark, the lighting is inadequate as well.

I hope your survey is supported with the interest it deserves.

Regards



Sent: Saturday, 5 November 2016 5:35 PM
To: Michelle Carter
Subject: Walk - Avalon

Hello Michelle,

Walk - Avalon

Thank you for the invitation to submit ideas about the above matter.

A hot topic that's got wide appeal, is the lighting of some pathways so that they can be used at night – particularly important during the long nights of the winter months when sundown is so early.

The pathway beside the Avalon Recreation Centre from Old Barrenjoey Road to the RSL Club car park. Suggestions from frequent users suggest –

Up-lighting along the pathway that will highlight the branches of the palms and provide a wide, subdued and attractive light.

Lighting along the Elba Pathway from Avalon Bowling Club, westwards and joining Central Rad.

And Lighting through Catalpa Reserve – badly needed for night time as it is a popular short cut to Riverview Road, Appian Way, Brindisi Place and Capua Place. This is an area of popular use and appeal because of the logistical benefits of walking from Avalon, along the Elba Path, along Central Road and then through Catalpa Reserve to the above-mentioned areas. Catalpa Reserve can be a minefield to negotiate because of bike ramps that are dug into the ground on the paths – near deadly if you fall over them.

They're the topics for the moment – widely supported by walkers. Perhaps more later.

Kind regards,

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> Sent: Sunday, 6 November 2016 8:13 PM
> To: Michelle Carter
> Subject: Walk Avalon
>
> Having looked at the Walk Avalon Survey I see that it is about the need to provide additional footpaths.
>
> My concern is with the poor state of existing footpaths in the centre of the village, which are very uneven. My wife tripped and fell last summer (near the chicken shop in Old Barrenjoey Road) and broke her elbow, and we know of at least 3 other people who have fallen in the same location.
>
> Although there are numerous areas containing trip hazards I would highlight the east side of Old Barrenjoey Road, south of Avalon Parade to The Crescent, and the north side of Avalon Parade eastwards from the doctors' surgery by the car park. There have been attempts to patch these paths, but they need relaying.
>
> The council needs to put the existing footpaths in order before worrying about new ones!

Sent: Tuesday, 8 November 2016 5:16 PM
To: Michelle Carter
Subject: Re: John Williams - Walk Avalon

Michelle, a further thought. Although not a footpath, Wickham Lane is heavily used by pedestrians going to and from school. It's not in good shape!

Having been responsible at various times in my career for footpaths (associated with the design and construction of roads) I am very conscious of the minimum requirements!

Regards,

Sent: Tuesday, 8 November 2016 3:48 PM
Subject: Dangerous nature strip outside 7 Avalon Parade

To the general manager Mark Ferguson, and the urban infrastructure department.

My name is [REDACTED] and I am writing on behalf of the [REDACTED], Avalon beach. I have a ref no 576588 lodged today at Councils Mona Vale office.

The nature strip passing our apartment and two more apartments up the hill at south Avalon has become eroded and dangerous. It has had increasing foottraffic from the unmetered and metered parking further up the hill, and has obviously reached its used by date as a grassed strip.

We ask council to consider building a footpath that is capable of handling the ever increasing foottraffic, and in the short term repair the dangerously eroded parts of the nature strip.

Sincerely

Sent: Monday, 14 November 2016 11:58 AM
To: Michelle Carter
Cc: [REDACTED]
Subject: RE: Dangerous nature strip outside 7 Avalon Parade

Thankyou for the reply Michelle.

My point was that while we realize that we will have to wait our turn.

In the mean time the existing grassed nature slip which has been eroded and is on a slope is Obviously Dangerous and in need of immediate repair.

Yours sincerely

Sent: Friday, 18 November 2016 12:25 PM
To: Michelle Carter
Subject: Bus Review - Avalon
Attachments: Bus Review v1.8.pdf

Hi Michelle

I write to you as a resident of Avalon for the last thirty years, in your capacity managing Traffic and Transport projects for Northern Beaches Council.

Recently I have moved from Clareville into "town", now residing in Old Barrenjoey Road next to the Avalon Fire Station. I have been driving buses through Avalon for approximately two years and I am aware of the pedestrian safety concerns at the intersections of Avalon Parade and Old Barrenjoey Roads. I have come up with a simple solution that would improve pedestrian safety, enhance bus passenger experience and generally improve the atmosphere of Avalon Village centre.

I have been working on the attached concept document to remove the 130 odd buses using the above intersection every weekday and allow future planning for the possible introduction of B-Line express services between Avalon and the city. The main change would be the introduction of a U-Turn lane on Barrenjoey Road approx 50 metres north of the Old Barrenjoey Road intersection.

Whilst it is still in draft form, I plan to approach the Service Delivery Group within State Transit for their consideration. I thought it links into some of the projects that the Council is currently working on. Would you be interested in an informal meeting to discuss?

Thanks and regards

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IMPROVE BUS FLOW IN AVALON VILLAGE

November 16, 2016

1. Background

The concept outlined in this document focuses on:

- Addressing pedestrian safety issues created by buses using town center as a loop.
- Improving the 'livability' of Avalon village by reducing bus movements through the Village centre
- Reduce delays of State Transit bus services by traffic congestion
- Provide solutions for future transit needs, in particular, B-Line services and enhance customer interchange experience

2. Scope

The scope of this report focuses on issues created by the Avalon 'loop' that buses use when either terminating or commencing services in Avalon, in particular the L88, E88, L90 and school routes. There are currently approximately 137 buses using the Avalon loop each weekday.

It proposes an option for the introduction of a new U-Turn bay on Pittwater Rd 50 metres north of Old Barrenjoey rd and explains the advantages of adopting this plan.

3. Current Issues

Avalon has a small village centre consisting mainly of two roads, Avalon Parade and Old Barrenjoey Road. The intersection of these roads has been a pedestrian's safety concern by local residents and the former Pittwater Council for many years. Many changes have been tried to reduce the congestion and safety issues.

Currently it has stop signs on both sides of Old Barrenjoey Road and pedestrian crossing on all four corners. Although this should manage traffic, in reality it has become a game of 'chicken' between the two roads of traffic and the pedestrians. Into this mix we have buses using this intersection at peak periods (AM, PM and School) as a turning loop to commence services or to return after terminating services.

To achieve this 'loop' buses do a right hand turn out of Old Barrenjoey Road which leads to traffic congestion. It is unusual to complete this turn without creating some form of traffic obstruction to either or both sides of Barrenjoey Road due to bus speed and vision issues. Buses also tend to 'layup' in Avalon village centre with engines running creating unnecessary noise and fumes.

During peak times traffic queues develop, leading to car drivers disregarding road signs and pedestrian traffic. When buses are present it leads to impatience and at times reckless actions by car drivers. Whilst some services need to travel through this intersection (School, 191, 192, E89), most bus traffic is generated by the need to approach Avalon (In) to commence services and those services terminating 'looping' to return in a southbound direction.

A further issue is that local services (191 and 192) both commence and complete their journeys from different bus stops. A proportion of passengers also transfer to/from city services meaning a short walk and crossing of busy roads.

4. An Option for Consideration

Being a resident for many years in Avalon, and as bus operator using this area, it has been commented to me by local residents and shopkeepers that the number of buses using this main intersection has substantially increased in frequency and vehicle size. The number of services commencing and terminating in Avalon has substantially increased and the buses have become noisier and longer with articulated vehicles.

There are concerns by some that the introduction of double decker buses using a shuttle schedule will only increase the problem.

After these discussions, I have come up with a concept that I believe will not only improve issues cited above but will also provide an improved service experience for current services and potential B-Line services (should they be extended to Avalon) as all stands would be within a fifty metre radius.

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Proposed changes:

1. Build a new bus only U-turn on Barrenjoey Rd about twenty metres north of Old Barrenjoey Rd using the council land currently not utilized for any other purpose. Buses would approach this turn using lane three northbound and complete the turn into the current bus layup area.
2. All buses needing to do a "loop" would be restricted to using the new U-Turn lane removing the need to enter Avalon Village centre
3. Move the current Avalon (Out) stand to twenty metres north of the Shell service station.
4. Create a new "Set Down Only" stand between the current Avalon (In) stand and the bus layup area to the north
5. Consolidate the 191 and 192 bus stops extending the current 191/E89 stand. Close the 192 stand in Old Barrenjoey Road.
6. Have the 191 and 192 (and any other future local services) terminate at the main Avalon In/Out stands, then use the U-turn to commence the next service.

5. Opportunities created by these Changes

Reducing bus traffic in Avalon village will reduce safety concerns to pedestrians and increase the village atmosphere that Avalon is known for by both locals and visitors to the area. Any bus operator will affirm that getting through the Avalon Parade / Old Barrenjoey Road intersection then doing a right hand turn out of Old Barrenjoey Road can be difficult at peak times.

Current opportunities that will be delivered by this change:

1. The U-Turn lane will make an easier option for buses needing to start journeys at Avalon main or head south and reduce congestion in Avalon.
2. Terminating local services at the Avalon main In/Out stands would allow interchanging passengers to 'step off / step on' without walking to a different part of the village
3. By moving the Avalon (Out) stand, current services will have a larger stand that can accommodate a number of buses simultaneously picking up or dropping passengers. It would also eliminate the need for most passengers needing to cross busy roads to either connect with other services or make their way home
4. By consolidating the 191/192 stands there would be less confusion as to where to catch the next local service. The current stand could be extended, the tradeoff being the closing of the 192 stand
5. The new Set Down Only stand will allow buses commencing 191/192 services or any run north of Avalon to safely cross two lanes of traffic to make a right hand turn into Avalon Parade.

Further opportunities that will be available by this change:

1. B-Line services will have a longer layup area with a clear view to the main bus stop at Avalon to allow an efficient "staging" of services using a shuttle timetable.
2. By relocating the Avalon (Out) stand further north, the buses would have a flat road to unload passengers and with easier connections.
3. There would be an improvement as passengers will have direct access to the Woolworths carpark and Avalon Village through the current pathway beside the Service Station. This could be improved with the addition of a hard surface path, lighting and commuter bicycle storage rack.
4. B-Line and other services can commence next service or return to depot more efficiently by using U-turn avoiding the congestion in Avalon.
5. All current local services, and, future services from/to the north of Avalon will have an easier interchange with B-Line services reducing the impact of changes and cancellation to services. In particular, E89 and L90 services to the city will be impacted by B-Line's introduction. All stands in Avalon would be within thirty metres of each other.
6. Infrastructure costs would be minimal, the crown land is owned by the State Government and unused. There are no height issues with accommodating double decker buses and no issues with poles/wires or tree removal. Other options would require changes to current infrastructure and the possible removal of vegetation.
7. There is a large amount of all day parking in the Surf club and near the skate park which could be easily extended

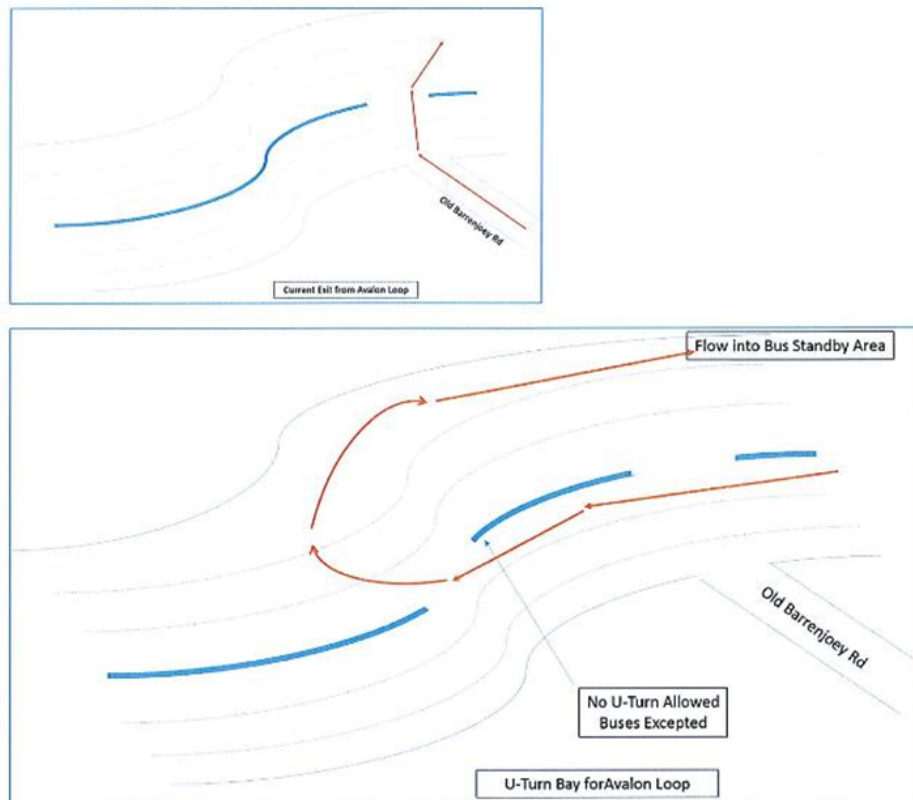
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8. Currently the Avalon Fire Station does not have the ability to do a legal right hand turn out of the Fire Station. Currently the firetruck heads south on the wrong side of the road then using the Old Barrenjoey Road break in the road island. A new U-Turn would require a break in the road island which would also be available for fire trucks to do a legal right turn.

6. Key Stakeholders

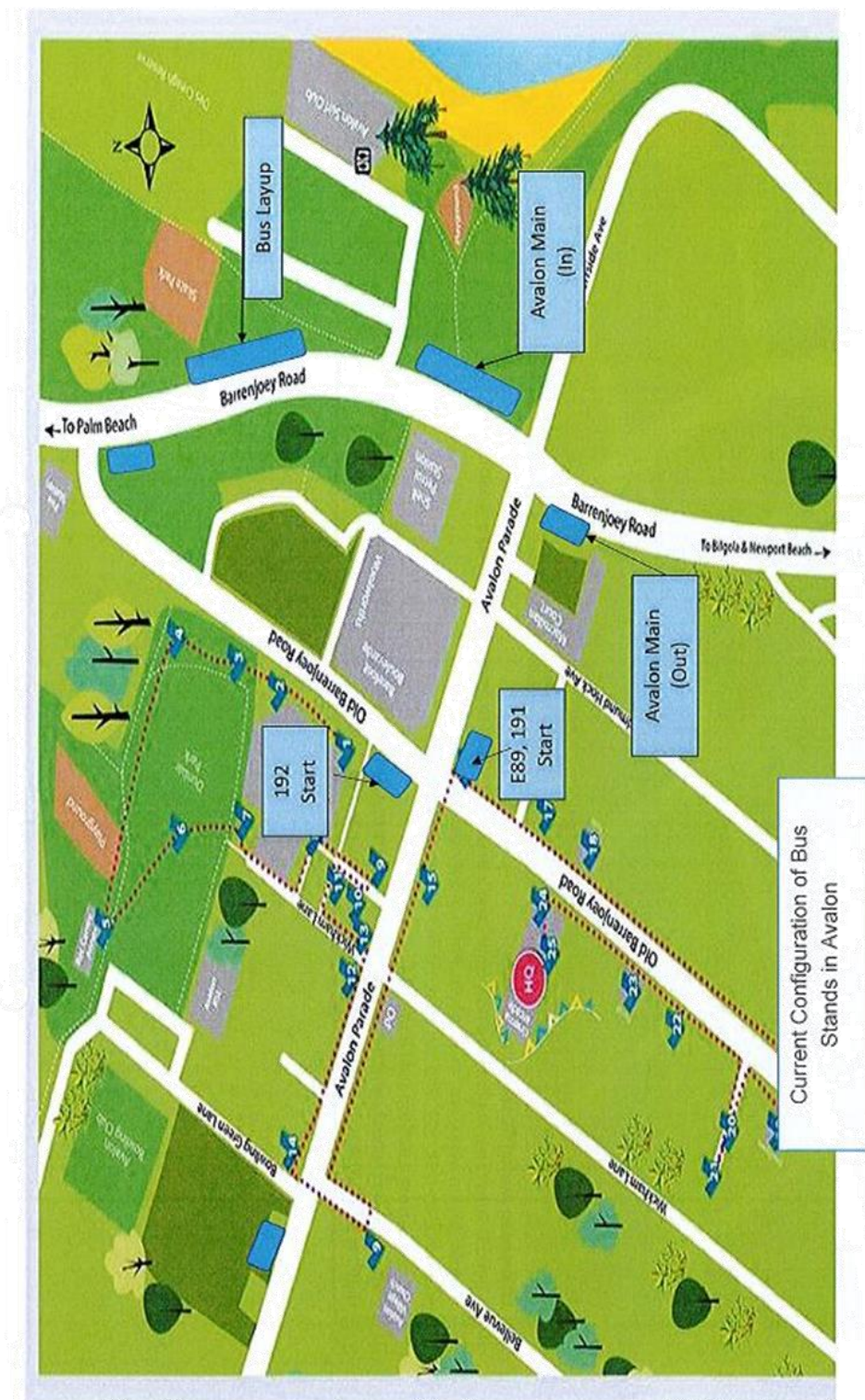
- State Transit – Sydney Buses
- Roads and Maritime Services
- Northern Beaches Council
- Avalon Clareville Residents Action Group
- Avalon Palm Beach Business Chamber



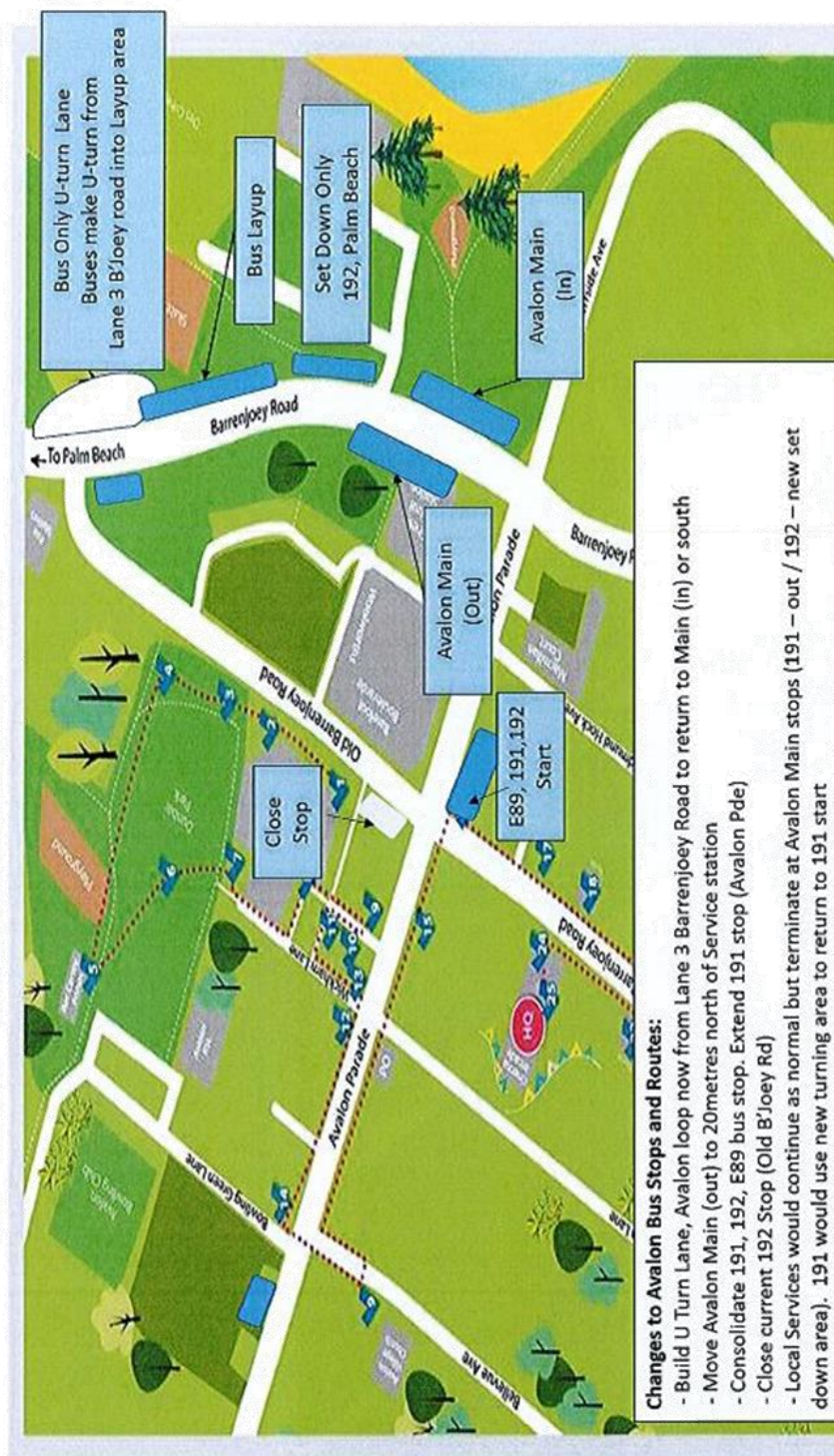
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Services Commencing or Terminating at Avalon In/Out

Mon-Fri		Sat/Sun		
In - L90	Out - L88	Out - L88	In - L90	Out - L88
4:23 AM	6:20 AM	7:14 PM	2:29 AM	5:52 AM
4:38 AM	7:38 AM	7:13 PM	3:01 AM	2:05 AM
5:03 AM	8:11 AM	7:30 PM	3:29 AM	
5:33 AM	8:33 AM	7:41 PM	3:58 AM	
5:45 AM	8:48 AM	7:39 PM	4:31 AM	
6:26 AM	9:08 AM	7:57 PM	4:51 AM	
6:27 AM	9:18 AM	8:08 PM		
6:44 AM	9:39 AM	8:27 PM		
6:56 AM	9:49 AM	8:35 PM		
7:04 AM	10:09 AM	8:51 PM		
7:18 AM	10:19 AM	9:00 PM		
7:26 AM	10:38 AM	9:18 PM		
7:52 AM	10:44 AM	9:28 PM		
8:19 AM	11:04 AM	9:53 PM		
8:54 AM	11:14 AM	10:23 PM		
9:21 AM	11:39 AM	10:53 PM		
9:55 AM	12:09 PM	11:23 PM		
10:25 AM	12:39 PM	11:53 PM		
11:25 AM	1:09 PM	2:06 AM		
11:55 AM	1:39 PM	2:31 AM		
12:25 PM	2:09 PM	3:01 AM		
12:55 PM	2:39 PM	3:31 AM		
1:25 PM	3:09 PM	3:58 AM		
1:55 PM	3:39 PM	4:29 AM		
2:25 PM	4:04 PM	4:51 AM		
2:56 PM	4:14 PM			
4:26 PM	4:32 PM			
4:56 PM	4:34 PM			
4:27 PM	4:44 PM			
4:57 PM	5:04 PM			
5:22 PM	5:16 PM			
5:32 PM	5:36 PM			
5:54 PM	5:46 PM			
7:06 PM	6:04 PM			
6:28 PM	6:13 PM			
6:39 PM	5:17 PM			
6:59 PM	6:34 PM			
7:09 PM	6:37 PM			
7:36 PM	6:40 PM			
8:17 PM	7:04 PM			
40	40	25	6	2
Estimated School Services				24
Total Services using Avalon Loop*				137

* Some Services may commence in Avalon without using loop
such as those continuing on from previous local services
- this would be a very low number.

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Sent: Wednesday, 30 November 2016 4:42 PM
To: Michelle Carter
Subject: WALK AVALON Pedestrian Access & Mobility Plan - ATTN Michelle Carter

Hi Michelle,

Firstly, my sincere apologies for the delay in sending you my email to be received by the survey closure date of 27/11/2016. I have been ill with a hospital stay over this time.

I wish to express my grave concerns about walking INTO Avalon Village, heading in a southerly direction from where I reside along Barrenjoey Road. Particularly, the concrete pathway on the higher side of main Barrenjoey Road, just north of the traffic lights located on the corner of Barrenjoey Road & Kevin Avenue.

My family & I have walked this stretch of pathway more times than one could count. We are obviously not alone as many other Avalon residents, students, children & dogs residing North of the Village, walk this path.

What concerns me, is just how close the general traffic of car's, trucks, buses & bikes are to that of this pedestrian pathway. There is a slim, metal 'railing' that "protects" the pedestrian ? situated right on that corner however it stops as you walk approximately 1 to 3 meters further north of the traffic light. There is nothing to protect the pedestrian from being near side swiped by "moving traffic" let alone being 'sucked' into the vacuum of air suction that occurs when a big commercial truck or bendy bus screams past you at 60 km's plus an hour - right next to you, in the one of the two lanes.

Yes, this area I am talking about is in the school slow down zone which reduces traffic speed to 40 km's per hour, but this "slow traffic" is of course only during school zoned traffic hours. The slow zone does not stop the moving traffic from being dangerously close to the pedestrian walking on this path. When two pedestrians pass, one pedestrian usually has to stop & allow the other to pass them otherwise the pedestrian must arrest the main road is almost left walking in the gutter - ON the main road.

This path is a very COMMON way to walk south, INTO Avalon Village.

In my experience it is an extremely unsafe path for a pedestrian to walk & something really needs to be done to make it a safer option for all, to WALK into Avalon Village.

Surely this could be brought to the attention of new Northern Beaches Council - I am aware that this is not the first time locals have raised this issue with previously named Pittwater Council & I believe, Member for Pittwater's Rob Stokes. Some years ago Avalon local primary school students & parents wrote to council with a signed petition - but no action was under taken by Council.

And, so nothing has been done to date. Your advertisement in the Manly Daily is why I am writing to you.

It is only a matter of time until an accident happens.

Yours Sincerely,

Sent: Tuesday, 18 October 2016 11:19:49 PM
To: Michelle Carter
Subject: Avalon Pedestrian Plan

Hello Michelle,

I was very interested to see the Avalon Public school newsletter advising this planning is going on at the moment - just after arriving home after seeing yet another near miss on the crossroads in the heart of Avalon. This area with its four pedestrian crossings, increasing traffic and big surge in tourists over Summer is an accident waiting to happen.

Please see the letters attached that I've sent the Pittwater Council in the past. I know the Pedestrian Council have also tried to draw attention to this intersection many times as well.

Maybe the new council will be more responsible and more responsive now that it hopefully has more money to keep children/residents safe.

The buses using Avalon as a turning circle was one of the excuses used in the past but there is no reason there couldn't be a walking mall on Old Barrenjoey Road between the intersection and the entrance to Woolworths carpark and only the buses accessing it for turning.

Or better still the buses could turn just a bit further up the Barrenjoey road at North Avalon - just before the Metro Service Station by turning into North Avalon Road then left into Bangalley Way and if a tiny bus only access road was put in back onto the main road at the end. (see below) Seems obvious and likely to save a life I think.

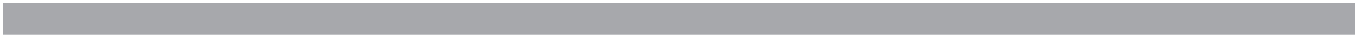
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C:\Users\clau\Desktop\PAMP survey results report.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	M.Wray	M.Lander				

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Appendix B – Site Audit and Weighted PAMP Scoring

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List of Proposed Upgrades - Summary

Walk Avalon

Location	Description of Issue	Issue Type	Description of Proposed Treatment	Treatment Type	Footpath / PAMP	Number of units	Distance (m)	Agency Responsible	Estimated Cost/Year	RMS Estimated Cost/Year	RMS Rank
Barrington Rd / North Barrington Rd intersection	Un-signalised pedestrian crossing at signalised intersection	Missing kerb	Provides signal controlled pedestrian crossing across Central Road approach	Signal controlled pedestrian crossing	PAMP	1	0	Roads and Maritime	\$ 100,000	\$ 41	83
Barrington Rd / North Barrington Rd intersection	'Clear track' reserved adjacent to footpath, indicating pedestrian desire between Barrington Rd and Central Rd (west)	Missing kerb	Consider providing a new footpath link	New footpath	Footpath	0	20	Roads and Maritime	\$ 3,000	\$ 48	42
Barrington Rd / North Barrington Rd intersection	Kerb ramps not aligned / missing	Kerb ramps / Traffic Ground Surface indicators	Realignment of kerb ramps and provide TSSIs	Kerb ramps / TSSIs	PAMP	4	0	Roads and Maritime	\$ 5,200	\$ 48	42
Barrington Rd / North Barrington Rd intersection	Traffic light beam / pole is in the middle of the footpath, difficult for older people / wheelchair to pass without using the road	Footpath obstruction	Widen footpath to relocate traffic light	Widen footpath	Footpath	0	5	Roads and Maritime	\$ 975	\$ 52	32
Barrington Rd / North Barrington Rd intersection	Non standard pedestrian refuge / splitter island, which is not aligned with the footpath	Non standard pedestrian refuge / kerb ramps	Upgrade kerb ramps and pedestrian refuge island	Kerb ramps and pedestrian refuge	PAMP	0	1	Council	\$ 18,800	\$ 45	59
Barrington Rd / North Barrington Rd intersection	Non standard pedestrian refuge on the corner of north western corner of Barrington Rd and Central Rd, which is not aligned with the footpath	Non standard pedestrian refuge / kerb ramps	Upgrade kerb ramps and pedestrian refuge island	Kerb ramps and pedestrian refuge	PAMP	0	10	Roads and Maritime	\$ -	\$ 55	18
Central Rd	Footpath, which provides walking access to the Barrington Rd / North Barrington Rd intersection, is very narrow	Footpath width	Widen footpath and remove angle parking with parallel parking due to drive side	Widen footpath	Footpath	16	45	Council	\$ 8,775	\$ 59	6
Central Rd	Narrow footpath with significant localised bus stop / kerb / narrow footpath	Footpath width	Consider widening the footpath. Realignment of 2 parking spaces on opposite side of the road	Widen footpath	Footpath	0	50	Council	\$ 9,750	\$ 56	12
Central Rd	Overgrown foliage	Overgrown foliage	Vegetation trimming	Vegetation trimming	Footpath	0	20	Council	\$ 200	\$ 45	59
Central Rd	Footpath ends approximately 20 m west of Barrington Ln	Missing kerb	New footpath	New footpath	Footpath	0	20	Council	\$ 3,000	\$ 55	18
Footpath near car park at Barrington Rd / North Barrington Rd intersection	Raised section of footpath resulting in a trip hazard	Footpath width	Footpath grading to remove trip hazard	Footpath grading	Footpath	6	0	Council	\$ 300	\$ 33	97
Avalon Beach Bowling Club	Missing pedestrian link between Central Road and footpath to Bowling Club car park - 'Goal track' observed indicating pedestrian desire line	Missing kerb	Shared path as detailed in the Draft like Player (2016) report	Shared path	Footpath	0	60	Council	\$ 24,000	\$ 40	86
Barrington Rd / North Barrington Rd intersection	'Goal track' observed indicating pedestrian desire line	Missing kerb	Narrow planted island and widen footpath and relocate kerb ramp	New footpath	PAMP	1	10	Council	\$ 3,750	\$ 38	92
Barrington Rd / North Barrington Rd intersection	Poor quality footpath	Poor quality footpath	Resurface footpath	Resurface footpath	Footpath	0	20	Council	\$ 3,000	\$ 41	83
Barrington Rd / North Barrington Rd intersection	Poor quality footpath	Poor quality footpath	Resurface footpath	Resurface footpath	Footpath	0	50	Council	\$ 9,750	\$ 43	66
Barrington Rd / North Barrington Rd intersection	Footpath through here is narrow. Requires upgrade / widening	Footpath width	Widen footpath	Widen footpath	Footpath	0	135	Council	\$ 28,325	\$ 56	36
Barrington Rd / North Barrington Rd intersection	Non compliant kerb ramps - located near in Avalon Public School	Kerb ramps	Realignment of kerb ramp	Realignment of kerb ramp	PAMP	2	0	Council	\$ 3,600	\$ 50	38
Barrington Rd / North Barrington Rd intersection	Non compliant kerb ramps - located near in Avalon Public School	Missing kerb	New footpath connection to Barrington Rd	New footpath	Footpath	0	400	Council	\$ 78,000	\$ 53	24
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Footpath width	Remove tree and upgrade / widen footpath at intersection through provision of a kerb ramp	Widen footpath	Footpath	1	15	Council	\$ 2,825	\$ 53	24
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Old pedestrian infrastructure	Remove tree and upgrade / widen footpath at intersection through provision of a kerb ramp	Widen footpath	PAMP	1	0	Council	\$ 13,500	\$ 48	42
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Kerb ramps	Realignment of kerb ramp	Kerb ramps	PAMP	1	0	Council	\$ 1,800	\$ 53	24
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Old pedestrian infrastructure	Remove tree and upgrade / widen footpath at intersection through provision of a kerb ramp	Widen footpath	PAMP	1	0	Council	\$ 13,500	\$ 48	42
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Missing kerb	New footpath	New footpath	Footpath	0	100	Council	\$ 18,500	\$ 56	32
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Missing kerb	Resurface footpath	Resurface footpath	PAMP	0	5	Council	\$ 975	\$ 43	66
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Missing kerb	New footpath	New footpath	Footpath	0	200	Council	\$ 28,000	\$ 51	37
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Missing kerb	New footpath	New footpath	Footpath	0	0	Council	\$ -	\$ 0	0
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Kerb ramps	Realignment of kerb ramp	Kerb ramps	PAMP	2	0	Council	\$ 3,600	\$ 50	38
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Missing kerb	New footpath	New footpath	Footpath	0	60	Council	\$ 11,700	\$ 53	24
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Poor quality footpath	Resurface footpath	Resurface footpath	Footpath	0	30	Council	\$ 8,800	\$ 45	59
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Footpath width	Consider providing kerb	Paving	PAMP	0	20	Council	\$ 3,000	\$ 55	18
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Kerb ramps	Realignment of kerb ramp	Kerb ramps	PAMP	1	0	Council	\$ 1,800	\$ 55	18
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Kerb ramps	Remove of kerb ramp and footpath	Remove of kerb ramp and footpath	PAMP	1	0	Council	\$ 13,500	\$ 43	66
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Kerb ramps	Realignment of kerb ramp	Kerb ramps	PAMP	1	0	Council	\$ 1,800	\$ 48	42
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Poor quality footpath	Resurface footpath	Resurface footpath	Footpath	0	20	Council	\$ 3,000	\$ 38	92
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Kerb ramps	New footpath and kerb ramps	Footpath / kerb ramps	Footpath / PAMP	2	10	Council	\$ 5,500	\$ 43	66
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Widen footpath	Widen footpath	Widen footpath	Footpath	0	150	Council	\$ 28,250	\$ 40	86
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Kerb ramps	Upgrade kerb ramps	Kerb ramps	PAMP	2	0	Council	\$ 3,600	\$ 40	86
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Vegetation trimming	Vegetation trimming	Vegetation trimming	Footpath	1	0	Council	\$ 200	\$ 42	76
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Intersection re-design	Intersection re-design	Intersection re-design	PAMP	1	0	Council	N/A	\$ 0	0
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Footpath width	Resurface footpath	Resurface footpath	Footpath	0	20	Council	\$ 3,000	\$ 40	86
Barrington Rd / North Barrington Rd intersection	Footpath is narrow and made narrower at intersection due to location of a tree	Overgrown foliage	Vegetation trimming	Vegetation trimming	Footpath	1	0	Council	\$ 200	\$ 40	86

List of Proposed Upgrades - Summary

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Page 3 of 15

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One South Street, Fremantle (Opposite carparking)

Walk Avalon

Project ID	Project Name	Project Type	Project Status	Project Description	Project Location	Project Photo	Project Details	Project Impact	Project Cost	Project Timeline	Project Priority	Project Risk	Project Outcome
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One South Street, Fremantle (Opposite the Library)

Walk Avalon

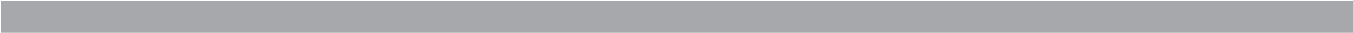
Project ID	Type	Street Intersection / Location	Photograph	Description of Issue	Issue Type	Severity of Problem	Request Type	Project ID	Requester	Estimated Cost	No. of Pedestrians Affected	No. of Cyclists Affected	No. of Motorists Affected	Priority	Current Status	Estimated Completion Date	Comments
78	78	Avalon / Collins Ave / Collins Street		Narrow footpath with a steep drop-off to the road. No footpath provided on the north side of Collins Ave. No footpath provided on the south side of Collins Ave. No footpath provided on the east side of Collins Ave.	Footpath	High	High	100	1	1	1	1	1	1	1	1	1
79	79	Avalon / Collins Ave / Collins Street		No footpath provided on the north side of Collins Ave. No footpath provided on the south side of Collins Ave. No footpath provided on the east side of Collins Ave.	Footpath	High	High	100	1	1	1	1	1	1	1	1	1
80	80	Avalon / Collins Ave / Collins Street		No footpath provided on the north side of Collins Ave. No footpath provided on the south side of Collins Ave. No footpath provided on the east side of Collins Ave.	Footpath	High	High	100	1	1	1	1	1	1	1	1	1
81	81	Avalon / Collins Ave / Collins Street		No footpath provided on the north side of Collins Ave. No footpath provided on the south side of Collins Ave. No footpath provided on the east side of Collins Ave.	Footpath	High	High	100	1	1	1	1	1	1	1	1	1
82	82	Avalon / Collins Ave / Collins Street		No footpath provided on the north side of Collins Ave. No footpath provided on the south side of Collins Ave. No footpath provided on the east side of Collins Ave.	Footpath	High	High	100	1	1	1	1	1	1	1	1	1
83	83	Avalon / Collins Ave / Collins Street		No footpath provided on the north side of Collins Ave. No footpath provided on the south side of Collins Ave. No footpath provided on the east side of Collins Ave.	Footpath	High	High	100	1	1	1	1	1	1	1	1	1
84	84	Avalon / Collins Ave / Collins Street		No footpath provided on the north side of Collins Ave. No footpath provided on the south side of Collins Ave. No footpath provided on the east side of Collins Ave.	Footpath	High	High	100	1	1	1	1	1	1	1	1	1
85	85	Avalon / Collins Ave / Collins Street		No footpath provided on the north side of Collins Ave. No footpath provided on the south side of Collins Ave. No footpath provided on the east side of Collins Ave.	Footpath	High	High	100	1	1	1	1	1	1	1	1	1
86	86	Avalon / Collins Ave / Collins Street		No footpath provided on the north side of Collins Ave. No footpath provided on the south side of Collins Ave. No footpath provided on the east side of Collins Ave.	Footpath	High	High	100	1	1	1	1	1	1	1	1	1

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
Draft A	M Tran O Peel	G McCabe		G McCabe	On file	10/02/2017
Draft B	M Tran O Peel	G McCabe		G McCabe	On file	13/04/2017

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Priority Schedule Infrastructure Provision Goals for Avalon

PAMP ID	Location	Description of Proposed Treatment	RMS Priority	RMS Rank
3	Old Barrenjoey Rd / Avalon Parade	Intersection re-design	82	1
1	Barrenjoey Rd, at Woolworths car park	Removal of car space within car park, provision of x2 kerb ramps and footpath to Barrenjoey Road	81	2
33	Barrenjoey Rd, north of Avalon Parade	New traffic signal controlled mid-block pedestrian crossing and footpath connection to the existing shared path.	80	3
31	Avalon Parade / Barrenjoey Rd	Upgrade kerb ramps + TGSIs x6. Provide traffic signal controlled crossing.	72	4
32	Barrenjoey Rd, south of Avalon Parade	Consider provision of a new footpath	72	4
28	Old Barrenjoey Rd, south of Avalon Parade	Driveway treatment (raised continuous footpath)	58	6
44	Central Rd	Widen footpath and replace angle parking with parallel parking due to child safety and road	58	6
4	Avalon Parade, between Bellevue and Barrenjoey	Side of Avalon Parade each side	57	8
23	Old Barrenjoey Rd north of Sanders Ln	Side a new footpath to relocate 40 km/h speed limit to intersection with	57	8
30	Avalon Parade / Edmund Hock A intersection	Continuous footpath)	57	8
75	Barrenjoey Rd / Barrenjoey Rd / Rd intersection		57	8
9	Avalon Parade / Ruskinn Rowe	Intersection re-design	56	12
10	Avalon Parade, east of Ruskinn Road	New footpath	56	12
13	Lane off Bellevue Ave, south of Avalon Parade	New kerb ramp	56	12
14	Avalon Parade / Wickham Ln intersection	Driveway treatment (raised continuous footpath)	56	12
45	Central Rd	Consider widening the footpath. Requires removal of 2 parking spaces on opposite side of the road	56	12
60	The Crescent	New footpath	56	12
16	Sanders Ln / Old Barrenjoey Rd	Consider provision of formal pedestrian crossing (wombat crossing)	55	18

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PAMP ID	Location	Description of Proposed Treatment	RMS Priority	RMS Rank
29	Laneway off Old Barrenjoey Road	Consider creating a shared zone	55	18
43	Barrenjoey Rd / Kevin Ave intersection	Replace pedestrian safety fencing / barrier.	55	18
47	Central Rd	New footpath	55	18
67	Barrenjoey Rd, north of North Avalon Rd	Consider providing fencing	55	18
68	Barrenjoey Rd, north of North Avalon Rd	Realignment of kerb ramp	55	18
11	Avalon Parade	Provide Tactile Ground Surface Indicators (TGSIs) and high visibility paint at top of steps	53	24
15	Wickham Ln / Sanders Lane intersection	Driveway treatment (raised continuous footpath)	53	24
55	Dress Cir Rd	New footpath connection to Palmgrove Reserve	53	24
56	Bellevue Ave / Sanders Ln	Remove tree and upgrade / widen footpath at intersection through provision of a kerb blister	53	24
58	Bellevue Ave	Realignment of kerb ramp	53	24
65	Old Barrenjoey Rd, south of Barrenjoey Rd	New footpath	53	24
93	Patterson Lane	Shared zone	53	24
21	Old Barrenjoey Rd / The Crescent	Realignment of kerb ramp	52	32
24	Old Barrenjoey Rd, north of Sanders Ln	Update disabled parking and access to AS.2890.5 and provide Tactile Ground Surface Indicators (TGSIs)	52	32
26	Old Barrenjoey Rd, south of Avalon Parade	Upgrade kerb ramp and consider removing a parking space.	52	32
27	Old Barrenjoey Rd, south of Avalon Parade	Update disabled parking and access to AS.2890.5 and provide Tactile Ground Surface Indicators (TGSIs)	52	32
41	Barrenjoey Rd / Kevin Ave intersection	widen footpath or relocate traffic light	52	32
62	Avalon Parade and Surfside Ave, east of Barrenjoey Rd	New footpath	51	37
17	Old Barrenjoey Rd, south of Sanders Lane	Resurface footpath	50	38
53	Bellevue Av, north of Elouera Rd intersection	Widen footpath	50	38
54	Bellevue Ave / Dress Cir Rd	Realignment of kerb ramp	50	38
64	Old Barrenjoey Rd, south of Barrenjoey Rd	Realignment of kerb ramp	50	38
6	Bowling Green Lane, north of Avalon Parade	Footpath grinding to remove trip hazard	48	42
7	Avalon Parade, east of Bowling Green Ln	Resurface footpath	48	42
12	Avalon Parade	New service access lid to remove trip hazard	48	42
39	Central Rd / Barrenjoey Rd intersection	Consider providing a new footpath link	48	42

PAMP ID	Location	Description of Proposed Treatment	RMS Priority	RMS Rank
40	Central Rd / Barrenjoey Rd intersection	Realignment of kerb ramps and provide TGSIs	48	42
57	Bellevue Ave	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	48	42
59	Bellevue Ave	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	48	42
69	Bangalley Way / North Avalon Rd intersection	Realignment of kerb ramp	48	42
18	Old Barrenjoey Rd, south of Sanders Lane	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	47	50
19	Old Barrenjoey Rd, south of Sanders Lane	Removal of pedestrian infrastructure (kerb blisters) as this could be confusing to drivers / pedestrians. Replace with plated islands.	47	50
20	Old Barrenjoey Rd, south of Sanders Lane	Footpath grinding to remove trip hazard	47	50
22	Old Barrenjoey Rd, between Avalon Parade and Sanders Lane	Resurface footpath	47	50
25	Old Barrenjoey Rd, north of Sanders Ln	Resurface footpath	47	50
85	Avalon Parade, between Ruskin Row and Gunjulla Parade	New footpath	47	50
88	Hudson parade, east of Hilltop Rd	Upgrade pedestrian refuge island and upgrade kerb ramps	47	50
8	Avalon Parade	Resurface footpath	46	58
2	West of Woolworths	kerb ramp	45	59
42	Park Ave / Kevin Ave intersection	Upgrade kerb ramps and pedestrian refuge island	45	59
46	Central Rd	Vegetation trimming	45	59
66	Old Barrenjoey Rd, south of Barrenjoey Rd	Resurface footpath	45	59
78	Elouera Rd, east of Ruskin Row	New footpath	45	59
79	Palmgrove Road	New footpath	45	59
81	Ruskin Row, north of Palmgrove Rd	New footpath	45	59
34	Barrenjoey Rd	Consider providing new shared path connection	43	66
52	Bellevue Ave	Resurface footpath	43	66
61	The Crescent	Replace steps	43	66
68	Barrenjoey Rd / North Avalon Rd intersection	Removal of kerb ramp and footpath	43	66
71	Old Barrenjoey Rd / Dress Circle Rd intersection	New footpath and kerb ramps	43	66
80	Ruskin Row, west of Palmgrove Rd	Create footpath through line marking and raised pavement markers	43	66
90	Hudson parade / Central Road intersection	Realignment of kerb ramp	43	66
91	Central Road / Catalpa Ave intersection	Realignment of kerb ramp	43	66

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PAMP ID	Location	Description of Proposed Treatment	RMS Priority	RMS Rank
94	Queens Ave	New footpath	43	66
95	Terry Street	New footpath	43	66
74	Barrenjoey Rd / Old Barrenjoey Rd / Plateau Rd intersection	Vegetation trimming	42	76
82	Avalon Parade / Ruskin Row intersection	Realignment of kerb ramp	42	76
83	Avalon Parade, west of Ruskin Row	New pedestrian refuge island and upgrade kerb ramps	42	76
84	Avalon Parade, east of Gunjulla Parade	New pedestrian refuge island and upgrade kerb ramps	42	76
86	Hudson parade, west of Hilltop Rd	Resurface footpath	42	76
87	Hilltop Rd	Resurface footpath	42	76
37	Central, east of Avalon Parade	Shared zone on Central Road	41	83
38	Central Rd / Barrenjoey Rd intersection	Provide traffic signal controlled pedestrian crossing across Central Road approach	41	83
51	Bowling Green Lane	Resurface footpath	41	83
35	Des Creagh Reserve	Resurface footpath	40	86
49	Avalon Beach Bowling and Recreation Club	Shared path	40	86
72	Old Barrenjoey Rd, north of Barrenjoey Rd	Widen footpath	40	86
73	Old Barrenjoey Rd, north of Barrenjoey Rd	Upgrade kerb ramps	40	86
76	Plateau Rd, east of Barrenjoey Rd	Resurface footpath	40	86
77	Plateau Rd, east of Barrenjoey Rd	Vegetation trimming	40	86
5	Laneway between Wickham Ln and Old Barrenjoey Rd	Create shared zone and resurface pavement	38	92
50	Bowling Green Lane	Narrow planted island and widen footpath and relocate kerb ramp.	38	92
70	Elouera Rd	Resurface footpath	38	92
89	Hudson parade / Central Road intersection	Resurface footpath	38	92
92	Central Road east of Catalpa Ave	Resurface footpath	38	92
36	Des Creagh Reserve	New footpath	33	97
48	Footpath near car park at Bowling Green Lane	Footpath grinding to remove trip hazard	33	97

