City of Ryde Council Macquarie Park Pedestrian Access and Mobility Plan

2272190/00

Issue | 21 June 2013

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Job number 227219/00

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## **Document Verification**

# ARUP

Job title		Macquarie I Plan	Park Pedestrian Acc	<b>Job number</b> 227219/00				
Document title					File reference			
Document ref		2272190/00						
Revision	Date	Filename	0001-MacParkPAMP - DraftReport.docx					
Draft 1	12 Oct 2012	Descriptio n	First draft					
			Prepared by	Checked by	Approved by			
		Name	Joanna Lau	Andrew Hulse	Andrew Hulse			
		Signature						
Draft 2	8 Feb	Filename	002_MacParkPAN	t.docx				
	2013	Descriptio n						
			Prepared by	Checked by	Approved by			
		Name	Safiah Moore / James Turner	Andrew Hulse	Andrew Hulse			
		Signature						
Draft 2	20 Feb	Filename	003_MacParkPAN	/IP_2ndDraftReport	t.docx			
	2013	Descriptio n						
			Prepared by	Checked by	Approved by			
		Name						
		Signature						
Draft 3	3 May	Filename	MacParkPAMP_F					
	2013	Descriptio n	FINAL PAMP Re	port				
			Prepared by	Checked by	Approved by			
		Name	Safiah Moore	James Turner	Andrew Hulse			
		Signature						
			Issue Doc	ument Verification	n with Document 🗸			

## **Document Verification**

Job title Document title Document ref		Macquarie I	<b>Job number</b> 227219/00						
				File reference					
		2272190/00			<u> </u>				
Revision	Date	Filename	130611MacParkPA	130611MacParkPAMP_Final Report_FINAL.docx					
Issue 11 Jun 2013 <b>Description</b>		Descriptio n	Final PAMP issued	11th June 2013					
			Prepared by	Checked by	Approved by				
		Name	Safiah Moore	Safiah Moore	Andrew Hulse				
		Signature							
		Filename Descriptio n	130621MacParkPAMP_Final Report_FINAL.docx Final PAMP issued 21st June 2013						
			Prepared by	Checked by	Approved by				
		Name							
		Signature							
		Filename Descriptio n							
			Prepared by	Checked by	Approved by				
		Name							
		Signature							
		Filename Descriptio n							
			Prepared by	Checked by	Approved by				
		Name							
		Signature							

Issue Document Verification with Document

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## 1 Executive Summary

The City of Ryde (CoR) engaged Arup in September 2012 to develop a Pedestrian Access and Mobility Plan (PAMP) for the Macquarie Park study area. This project aims is to identify a framework for developing safe and convenient pedestrian routes and fostering improvements in personal mobility. The development of this PAMP follows the guidelines provided in the document "How to Prepare a Pedestrian Access and Mobility Plan – An easy three stage guide," and responds to the main objective of this study: to deliver a PAMP improvement work program that meets existing needs, caters for the emergent pedestrian demand through forecasted population and development growth. Recommendations within this PAMP are linked in a staged action plan to relevant planning and other strategic documents.

A priority PAMP route network through the study area was identified to focus on the development of a continuous and accessible path of travel for pedestrians. The priority PAMP route network was defined through:

- A consideration of existing situation through an analysis of the characteristics of the study area, a review of the existing transport services in the area, a documentation of site observations and a review of relevant state and local policy documents; and
- A consideration of the existing pedestrian facilities usage, current issues and locations for improvement and future demand as outlined through the community consultation process.

This route network was then categorised under three priorities (1,2 and 3) using a prioritisation criteria developed in conjunction with the CoR. Developing priority routes assist Council in determining priority works to be completed to form a connected pedestrian network.

Audits were then conducted along the high priority PAMP routes, and the findings of the audits form the basis of the PAMP Action Plan. The key focus of the physical audits is to identify locations of kerb ramps and footpath deficiencies, crossing opportunities and footpath connections to key trips attractors and generators. The audit findings are explored and presented with GIS mapping in Section 8 of this report. Key audit items include;

- Pedestrian facilities in the form of footpaths and kerb ramps in the areas around the new rail stations are of high quality;
- Selected areas were in need of repair to the existing footpaths and existing kerb ramps;
- Lighting in selected areas could be enhanced to improve the pedestrian experience;
- Selected locations for additional wayfinding signage were identified to enhance the pedestrian environment;
- Selected bus stop locations require shelters; and
- Pedestrian crossing issues were identified as a key issue for the study area. Roundabouts in the area present unsafe pedestrian crossings, and large

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blocks and multiple lane roads also presented limited safe pedestrian crossing opportunities.

The analysis of the existing pedestrian facilities complimented with an analysis of the potential future pedestrian network was considered. As Macquarie Park is planning for significant changes in population and land use and form, an analysis of the indicative future pedestrian demand for the study area was undertaken. This brought an understanding of the potential future crossing requirements for the study area to inform potential future crossing points.

Recommended actions were then identified in the form of the PAMP Action Plan. The action recommendations are developed primarily through physical field audits undertaken on all the high priority routes identified in the PAMP network as well as through the literature review and consultation comments. The PAMP Action Plan is designed to be a 'living document' in the sense that Council will be able to make changes to and update the program where relevant.

PAMP Actions have been designed in consideration with the NSW Safe System Approach as outlined below.

	NSW Safe System Approach
Safe Travel	Fewer fatalities and serious injuries on NSW roads
Safe Speed	Speeds set at a level more forgiving of human error and reflecting risk to road users
Safer People	Positive road user behaviours that reduce the risk and severity of crashes
Safer Roads	Roads designed, constructed and maintained to reduce the risk of crashes and harm to people if a crash does occur
Safer Vehicles	Vehicles designed, constructed, and maintained to reduce the risk of crashes and harm to people if a crash does occur

Within the NSW Safe System Approach, most relevant to this PAMP is "Safer Roads". This PAMP study and the resulting action recommendations focus on the engineering actions and recommendations. These actions were priorities on a series of criteria (outlined in Section 11 of this report) and cost estimates were provided for each of the actions. A summary of the works identified in the Action Plan and the indicative costs are outlined in the table below.

Category	Action Priority							
		1		2		3	То	tal
Consultation with RMS to consider shorter waiting	¢		То	be	Тс	be	т	ha datamainad
times for pedestrians at selected locations	9	-	det	ermined	det	ermined	10	be determined
CoR to contact utility provider for further works to	¢		То	be	To	be	т	ha datarminad
be carried out by utility provider.	φ	-	det	ermined	det	ermined	To be determined	
Footpath grinding	\$	-	\$	591	\$	1,999	\$	2,590
Install new signalized areasing (mid block for future	Tot	be						
fine grain network)	dete	rmined if	\$	-	\$	300,000	\$	300,000
line grain network)	warr	ants are met						
Install pedestrian refuges	\$	12,000	\$	12,000	\$	12,000	\$	36,000
Install bus shelter	\$	38,500	\$	77,000	\$	269,500	\$	385,000
Install bus shelter only	\$	-	\$	-	\$	60,000	\$	60,000
Install CoR Wayfinding Sign	\$	-	\$	16,000	\$	160,000	\$	176,000
Install new footpath	\$	2,280,311	\$	-	\$	-	\$	2,280,311
Install new kerb ramps	\$	15,700	\$	20,000	\$	4,500	\$	40,200
Install pedestrian path lighting	\$	-	\$	8,000	\$	56,000	\$	64,000
Install signalised pedestrian crossing	¢		¢		¢		¢	
(Khartoum/Wateroo)	9	-	9	-	9	-	\$	-
Install pedestrian fencing	\$	11,250	\$	-	\$	-	\$	11,250
	To ł	be						
Install pedestrian crossing signal on one arm of the	dete	rmined in	¢		¢		¢	
intersection	cons	ultation with	φ	-	φ	-	φ	-
	RMS	5						
Pedestrian ungrades (by other parties)	\$		То	be	Τc	be	¢	_
redestrian upgrades (by other parties)	<b>э</b> -		determined		determined		<b>ə</b> -	_
Install signalised pedestrian crossing	\$	-	\$	400,000	\$	-	\$	400,000
Install zebra crossing	\$	-	\$	50,000	\$	-	\$	50,000
Extend width of footpath where narrow	\$	-	\$	216,000	\$	-	\$	216,000
Trim trees	\$	-	\$	300	\$	900	\$	1,200
Install new signalised pedestrian crossing (for	¢		¢		¢	800.000	¢	800 000
future fine grain network)	φ	-	φ	-	¢	800,000	φ	800,000
Total	\$	2,357,761	\$	799,891	\$	1,664,899	\$	4,822,551

The implementation of this PAMP Action Plan would need to be assessed and implemented based on specific site conditions that reflect the latest pedestrian facilities standards at the time.

The PAMP Action Plan also explores potential funding sources for the works identified in the plan. Potential funding sources include;

- City of Ryde (including funding from General Revenue/ Section 94 Plans. Macquarie Park Special Rate Levy)
- Potential Developer Contribution (in the form of Condition of Consent or VPA)
- RMS
- Transport for NSW

The development of the PAMP Action Plan will provide the users of Macquarie Park with a safe, continuous and accessible network of footpaths of travel. The development of this PAMP presents an integrated Action Plan that links pedestrian planning and a program for delivery of improvements for the Macquarie Park area.

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## 2 Introduction

### 2.1 Background

The City of Ryde (CoR) engaged Arup in September 2012 to develop a Pedestrian Access and Mobility Plan (PAMP) for the Macquarie Park study area, shown in Figure 1. The project aims is to identify a framework for developing safe and convenient pedestrian routes and fostering improvements in personal mobility.

As part of its Ryde Integrated Transport and Land Use Strategy (RITLUS), the City of Ryde identified the development of a continuous and comprehensive integrated pedestrian network across the six (6) key centres of Ryde. The Macquarie Park PAMP is the second PAMP (after Eastwood) to be undertaken for each of the key centres, namely Macquarie Park, West Ryde, Meadowbank, Gladesville and Top Ryde. The Macquarie Park PAMP adopts a precinct approach to focus on developing a continuous accessible path for connectivity between key pedestrian attractors and generators within the Macquarie Park area.

The rapid growth experienced in the Macquarie Park area in recent years provides opportunity for Council to review its existing footpath provision and to develop a systematic methodology to prioritise footpath construction through a network of connected and safe pedestrian facilities. The main objective of this study is to deliver a PAMP improvement work program that meets existing needs, caters for the emergent pedestrian demand through forecasted population and development growth. Recommendations within this PAMP are linked in a staged action plan to relevant planning and other strategic documents. Figure 1: Macquarie Park PAMP Study Area



### 2.2 Study Objectives

The key aims for the Macquarie Park PAMP are to improve the pedestrian network in terms of:

- Equity of access;
- Safety;
- Connectivity;
- Coherence;
- Directness;
- Comfort; and
- Attractiveness

The key objectives as outlined in City of Ryde's project brief are:

Improve pedestrian access and priority	Develop a guiding policy and strategy for accessibility and mobility for Macquarie Park	Further Council's obligations under the Commonwealth Disability Discrimination Act (1992) and associated		
Reduce severance, ennance safety and convenient	e Develop a program of works	regulations (1996)		
crossing opportunities	ossing opportunities which enables coordination a prioritisation of works			
Identify and resolve	schedules, maintenance and			
pedestrian crash clusters	upgrade programs under the O of Ryde Four Year Delivery Pla	City Enable pro-active infrastructure plannir	Enable pro-active nfrastructure planning	
Facilitate improvements in t	he	using all available sou	irces	
level of personal mobility an safety for pedestrians	d Ensure that pedestrian facilities are appropriate	of funding		
Provide links with other transport services	and relevant to the surrounding land use and pedestrian user groups	Link PAMP with Council's existing plans and policie in a coordinated manner	S	

#### 2.3 PAMP Methodology

Walking is the fundamental mobility need of a society. It has significant health and social cohesion benefits to the community. Pedestrian facilities, like the provision footpaths and crossings are key factors that encourage walking. The provision of high quality walking facilities has the potential to reduce the number of private vehicle trips, especially for short distance local trips. Successful walkable environments facilitate greater public transport use, contribute to healthy communities through the encouragement of physical activity and can enhance both the economic and social aspects of an area. The development of this PAMP follows the guidelines provided in the document "How to Prepare a Pedestrian Access and Mobility Plan – An easy three stage guide," RMS, 2002. The PAMP guide was co-written by Arup and RMS to introduce a simplified PAMP approach to be adopted by councils and transport practitioners. This Guide offers a step by step approach to pedestrian planning and highlights the main issues to be considered at all stages of the PAMP. The methodology for this PAMP follows the How to Prepare a PAMP methodology as shown in Figure 2.

Alongside the RMS PAMP guide, key reference documents that are used in the development of this PAMP include:

• Planning Guidelines for Walking and Cycling, Department of Planning, 2004

This document highlights the strong link between land use planning and walking and cycling networks. The guidelines have been designed in relation to the NSW Government's Integrating Land Use and Transport Planning Policy and to also complement the RTA's policies and actions.

• Development and Active Living - Designing Projects for Active Living, Premier's Council for Active Living NSW, 2010

This document highlights the opportunity for facilities in the built environment (including pedestrian facilities) that can increase participation in physical activity and enhance the lives of our communities. This PAMP project is consistent with the Active Living principles highlighted within this document as they promote comfort for walkers; encourage traffic management devices that are pedestrian friendly and supports access provisions for all.

• Universal Access Principles

The development of the PAMP routes follows the principles of Universal Access. Universal Access Principles highlight the rights of all citizens in relation to all transport needs, including non-vehicle forms of transport.

### 2.4 How to read this document

This PAMP is presented in a format that includes the following:

- **Chapter 1**: Establishes the study objectives and methodology undertaken for this PAMP.
- Chapter 2 to Chapter 4: Presents an understanding of the existing situation through an analysis of the characteristics of the study area, a review of the existing transport services in the area, a documentation of site observations and a review of relevant state and local policy documents.
- **Chapter 5:** Presents an understanding of the existing pedestrian facilities usage, current issues and locations for improvement and future demand as outlined through the community consultation process.
- **Chapter 6**: Presents the PAMP routes as informed through the data gathering stages that were documented through Chapter 2 Chapter 5.
- **Chapter 7**: Presents the findings of the audit along the high priority PAMP route.

- **Chapter 8**: Presents an indicative potential future pedestrian demand for the study area to inform potential future crossing requirements for the study area.
- Chapter 9: Presents recommended actions to respond to:
  - Issues identified through the audit along the high priority PAMP route
  - Select locations where issues were identified through community consultation; and
  - Potential future crossing opportunities.

These actions have been assigned to the pedestrian issues along the high priority PAMP route presented in the Action Plan.

- **Chapter 10**: Presents a methodology for prioritising the actions identified in Chapter 9.
- **Chapter 11**: Presents estimate costs for the works identified in the actions to assign to the Action Plan.
- **Chapter 12**: Outlines a plan for implementation of the Action Plan and potential funding sources for the recommendations outlined in the Action Plan.
- **Chapter 13**: Presents the final conclusions and recommendations from the PAMP process for the Macquarie Park area.

#### Figure 2: Study Methodology



#### Macquarie Park PAMP

## **3** Characteristics of Macquarie Park

Macquarie Park is a significant business growth centre of Sydney. The area has a unique high concentration of research and global businesses specialising in communications, medical research, pharmaceutical and technology. Apart from the commercial offices, Macquarie University, Macquarie Hospital and Macquarie Shopping Centre are also the major trips attractors and generators of both local and regional travel trips. In its early development, Macquarie Park was a car dominant precinct with limited public transport access. However, since the opening of the Epping - Chatswood Rail Link in 2009, the accessibility of the precinct has significantly improved by the three new train stations. The recent draft revision of the *City of Ryde DCP Part 4.5 on Macquarie Park Corridor* and the traffic modelling studies for the Macquarie Park area further support the urgency of improving sustainable transport options. Council's public transport mode share target of 40% by 2031 underpins the policy of reducing car dependence in the area.

### 3.1 Topography & Geography

The Macquarie Park area is located within the Ryde Local Government Area, approximately 13 km to the northwest of Sydney City Centre. The study area is bounded by the M2 motorway in the northeast; Lane Cove Road in the east; Epping Road in the southeast and Culloden Road in the west.

The topography of Macquarie Park generally has steep ridgelines and valleys due to the high elevation and proximity to the Lane Cove River. While this may limit walking and cycling opportunities, the road and footpath network in the area is generally built on ridgelines. This provides more gentle changes in elevation when travelling along the footpaths.

### **3.2 Demographics**

The 2011 Census shows the residential population of Macquarie Park is approximately 3,135 persons, which is a smaller population than the surrounding Ryde LGA. This low population is due to the area being predominately employment lands. The Census data at 2011 shows a current employment population of 48,504 persons.

JTW data is derived from the Australian Bureau of Statistic's Census data. The JTW data uses the Method of Travel to Work Place (MTWP), industry and occupation at the travel zone geographical level.

MTWP 2011 Census data was used for the mode split analysis with the 2006 JTW data compared as a reference. The 2006 JTW mode split of employees and residents of Macquarie Park area are shown below in Figure 3 and Figure 4 respectively.



Figure 3: Mode Split JTW 2006 - Employed in Macquarie Park



Figure 4: Mode Split JTW 2006 – Residing in Macquarie Park

The 2006 JTW data shows a majority (86%) of people employed in Macquarie Park travel to the area by car. The majority of Macquarie Park residents also use their cars (46%) to get to work, with larger proportions of bus (25%) and walking (27%) commuters.

In comparison, the 2011 Census MTWP data over a similar area shows the employee movements since the opening of the three train stations in Macquarie Park as part of the Epping Chatswood Rail Link in 2009. 10% of commuters have changed their mode of travel from car as driver to train users, and a further 1% have changed mode of travel to bus. This is shown below in Figure 5. Note that these percentages do not show respondents that indicated "did not go to work" to be comparable to the JTW data.



Figure 5: Mode Split MTWP Census Data 2011 - Employed in Macquarie Park

#### **3.3 Strategic Directions in the Macquarie Park** Corridor

Macquarie Park is planned to continue to grow into a major business centre of Sydney. Under *Macquarie Park Plan Review (September 2012)*, future densification of development along Waterloo Road is supported to create a pedestrian friendly environment, with active street frontage, smaller block sizes and creation of an accessible pedestrian network.

"Over the next 25 years Council anticipates that growth in Macquarie Park will achieve over 1 million sqm of commercial floor space accommodating an estimated 45,000 additional employees as well as 23,000 additional students and staff at Macquarie University. It is expected that approximately 3,400 new dwellings, mainly apartments, will be constructed resulting in around 6,800 extra residents in Macquarie Park." Macquarie Park Plan Review, August 2012

"Macquarie Park will mature into a premium location for globally competitive businesses with strong links to the university and research institutions and an enhanced sense of identity. The Corridor will be characterised by a high-quality, well designed, safe and liveable environment that reflects the natural setting, with three accessible and vibrant railway station areas providing focal points. Residential and business areas will be better integrated and an improved lifestyle will be forged for all those who live, work and study in the area." Macquarie Park Corridor Vision, Development Control Plan 2010 Part 4.5.

Further analysis of the project future pedestrian demand is found in Section 8 of this document.

#### **3.4 Pedestrian User Groups & Facilities**

Pedestrian planning often considers a number of facility user groups based on age. These are classified as:

- Pre-school (ages 0-4)
- Infants (ages 5-8)
- Primary (ages 9-11)
- Secondary (ages 12-17)
- Young Adults (ages (18-25)
- Adults (aged 26-59)
- Elderly (aged 60+)

In Macquarie Park, the predominant pedestrian groups, with respect to major attractors to the Macquarie Park area, may be categorised as students, workers and local residents/shoppers. They are primarily aged between early twenties to late fifties. These different user groups affect the travel patterns and times for trip arrival/departures. It is typical for workers to arrive for 9am and leave the area at 5pm, while students and shoppers vary in arrival and departure times during the day.

#### **3.4.1** Pedestrian facilities

There are a number of pedestrian facilities located in the area. The crossing facilities and path facilities in the area are presented in Figure 7. These include pedestrian refuges at roundabouts and dedicated pedestrian crossing phases at traffic signals. A typical crossing at Eden Park Drive / Waterloo Road and a typical shared bicycle and pedestrian facility is shown in Photo 1 below.



Photo 1: Existing walking and cycling facilities

#### **3.4.2** Pedestrians with disability

The PAMP allows for the strategic planning of pedestrian improvements in an area. By undertaking this strategic approach, it will enable Council to work with and coordinate continuous paths of travel so a series of pedestrian infrastructure enhancements to provide a pedestrian network for all user groups.

Accessibility and connectivity are terms that have special relevance to people with disability. Improvements recommended in the capital works program have

particularly considered items that will improve connectivity for all users. (For example, a person with a walker might find it impossible to walk from a bus stop to a shopping centre because pram ramps are missing or badly aligned. The addition or realignment of one pram/wheelchair ramp could make it possible for this person to navigate the whole route so making it safer for all. Everyone, regardless of ability, benefits from the provision of correctly aligned ramps from the active healthy (including stroller users) to those with disability).

Everyone using this plan, from the designers of the first concept plans to the project managers organising the final construction, has an onus to consider different types of disability. A lack of consideration of this by anyone in the design and delivery chain makes it difficult for all who follow particularly the end users.

Building Codes and Australia Standards relating to persons with disability are becoming increasingly stringent and public attitudes are changing. If the National Disability Insurance Scheme (NDIS) is fully implemented, more people with disability will be supported in being more active and will become more visible. Thus planning and construction will need to focus on making the built environment far more functional for all in the future. Provision above the minimum standard may in many cases save higher costs of retrofitting or even demolition to meet potential higher future requirements. (For example, a wheelchair user and accompanying carer needs more space to turn and pass than two people walking side by side. Groups of wheelchair users travelling together would require more space again).

It is never possible to make everywhere accessible. There will always be people who have disability that cannot be catered for via infrastructure or offered an alternative service to compensate. Using the term 'fully accessible' may seem offensive to those who cannot access that facility. Council needs to aim at a reasonable compromise that accommodates the most people possible (including those with disability) as effectively as possible within available budgets. As further improvements are made, more people with disability will benefit. As access improves people with a disability may identify further infrastructure issues that they would like rectified.

Compliance to Australia Standards including Access to Premises Standards may not be sufficient to give people with disability the ability to move from place to place through streets using their aids (e.g. walking sticks, white canes, magnifiers, hearing aids, mobile phones, walking frames, and wheelchairs) as ability varies according to the specific disabilities users have. There is an added responsibility which is far harder to define, that of providing access which is considered acceptable to any person with disability of any type which does not cause 'unreasonable hardship' to the provider including Council. It is a defence to a complaint made under the Disability Discrimination Act 1992 about insufficient provision for access that it would cause unreasonable hardship to make the provision sought.

Different people with different types of disability have different needs so they cannot be thought of as a homogenous group. Those with multiple disabilities will benefit from different adaptations. For example, a lift fitted to an overhead bridge needs buttons at a good height for people in wheelchairs so they can reach them. However if the person also has vision impairment the visual floor level indicator may be useless and audio information is also required. Fitting one or the other

may assist a group with a specific disability but exclude people with multiple disabilities.

The *Disability Discrimination Act 1992* (DDA) makes it unlawful to deny or limit physical access to a person with a disability, unless it would result in "unjustifiable hardship" for the organisation. New buildings are required to conform to specifications for physical access in the Australian Standards 1428 and the Building Code of Australia. Where complaints are raised under the DDA Act they go through a conciliation process run by the Australia Human Rights Commission.

#### **3.4.3** Relevant standards and facility guidelines

Australian Standards and relevant RMS guidelines have been reviewed for storage and access needs for pedestrians with mobility impairments and other disabilities. The Standards and Guidelines are subject to revision by Australian Standards, Austroads and other authorities, and should be regularly updated against the latest source documents.

The definition of an accessible path is provided in AS 1428.1 - 2009.

"A continuous accessible path of travel that shall not include a step, stairway, turnstile, revolving door, escalator, moving walk or other impediment."

(AS 1428.1 – 2009, page 9).

A general facility standards guideline for storage and access needs for pedestrians with mobility impairments is presented in Table 1. These facility guidelines have informed the recommended actions within this PAMP.

Table 1: General facilities guidelines for mobility impaired pedestrians.

Facility and Guideline	Source
Path dimension	
<ul><li>1.8 m to 1.5 m (desired minimum) for wheelchairs to pass.</li><li>Allows for two wheelchairs to pass (1.8m comfortable, 1.5m minimum).</li><li>Narrower width (1.2m) can be tolerated for short distances.</li></ul>	Austroads 2009 Part 6A: Pedestrian and Cyclists Paths
Tactile Ground Surface Indicators	
According to AS1428.4- 2009, TGSIs are used to assist people who are blind or vision-impaired with their orientation. It suggested that a well- designed path with sufficient environmental cues will minimise the use of TGSIs. In the recent RTA memo (May 2010). On the use of TGSIs on kerb ramp, RTA has reiterated "If a kerb ramp is constructed in accordance with AS1428.1 and 1428.4.1, there is no need for TGSIs to be used".	AS1428.4- 2009
Kerb Ramps	
In the RMS memo (May 2010). On the use of TGSIs on kerb ramp, RMS has reiterated "If a kerb ramp is constructed in accordance with AS1428.1 and 1428.4.1, there is no need for TGSIs to be used".	RMS

## **3.5 Public Transport Network**

The area is well served by public transport, with three train stations and several bus stops located in the area. The public transport infrastructure and routes are also presented in Figure 6.

Figure 6 Map of Public Transport Infrastructure



#### 3.5.1 Bus Services

There are several bus services operating from the Macquarie Park precinct with services to the surrounding regions. The main roads carrying services in the corridor are Waterloo Road, Lane Cove Road, Epping Road and Herring Road. A major transport interchange is located at Macquarie University train station on Herring Road, and Macquarie Park train station that is the intersection of Lane Cove Road and Waterloo Road.

Bus operators that service the transport interchanges are Sydney Buses, TransdevTSL Shorelink, Hillsbus, Forest Coach Lines and Busways. Services. Table 2 below indicates a complete list of bus services to the Macquarie Park/University transport interchanges.

Route Number	Bus Routes (Destinations)	Operator
140	Manly to Epping	Sydney Buses
288	City (QVB) to Epping	Sydney Buses
290	City (QVB) to Epping	Sydney Buses
292	City (QVB) to Marsfield	Sydney Buses
293	Marsfield – Lane Cove Tunnel – City	Sydney Buses
294	City (QVB) to Epping	Sydney Buses
295	North Epping to Macquarie Centre	Sydney Buses
458	Burwood to Ryde	Sydney Buses
459	Strathfield to Macquarie University	Sydney Buses
506	City (Circular Quay) to Macquarie University	Sydney Buses
507	City (Circular Quay) to Macquarie University	Sydney Buses
518	City (Circular Quay) to Macquarie University	Sydney Buses
544	Auburn to Macquarie Centre	Sydney Buses
545	Parramatta to Chatswood	Sydney Buses
550	Parramatta to Macquarie Centre	Sydney Buses
M54	Parramatta to Macquarie Park	Sydney Buses
M41	Hurstville to Waterloo Park	Sydney Buses
740	Plumpton to Macquarie Park	Busways
197	Mona Vale to Macquarie University	Forest
562	Gordon to Macquarie University	Forest
565	Chatswood to Macquarie University	Transdev TSL Shorelink
572	Turramurra to Macquarie University	Transdev TSL Shorelink
575	Hornsby to Macquarie University	Transdev TSL Shorelink
611	Blacktown to Macquarie Park	Hillsbus
619	Castle Hill to Macquarie Park	Hillsbus
621	Castle Hill to Macquarie Park	Hillsbus
630	Blacktown to Macquarie Park	Hillsbus

Table 2: Bus Services which serve Macquarie Park

Route Number Bus Routes (Destinations)		Operator
628	Norwest to Macquarie Park	Hillsbus
651	Castle Hill to City (QVB)	Hillsbus

Typical bus stops are shown in Photo 2 and Photo 3 below. This bus stop is located at the Macquarie Park interchange and provides Hillsbus services to Blacktown via the M2 outside peak hours. Bus routes and stop locations are displayed in Figure 6.



Photo 2: Bus stop along Waterloo Road



Photo 3: Bus Interchange on Herring Road.

#### **3.5.2** Train Services

Macquarie Park has a train line on the Northern line through the precinct with three train stations: Macquarie University, Macquarie Park and North Ryde. Cityrail operates four train services per hour, operating as a loop service between Epping to Hornsby via Strathfield and the city. As the railway stations are located under major road intersections, there are generally two pedestrian accesses on opposing corners of the intersections from the stations, as shown in Photo 4. These accesses provide additional pedestrian connectivity underneath the road level.



Photo 4: Macquarie Park Train Station

### 3.6 Cycling

There are a series of cycling opportunities in the area. Cyclists are able to use the M2 Motorway (after construction is complete) and a number of shared off-road cycleway / walkways located adjacent to Talavera Road and Waterloo Road/Wicks Road. These routes join with the off-road cycleways on Epping Road and at Shrimptons Creek. Figure 7 below shows the cycleway map with these routes in detail.

### 3.7 Walking

Footpaths are generally provided in the study area, except for sections of Culloden Road between Waterloo Road and Epping Road on the Macquarie University side; and along Epping Road east of the pedestrian overbridge outside the Domayne store.

Signalised crossing facilities are provided at major intersections along Herring Road, Talavera Road, Epping Road and Lane Cove Road. However, not all arms of each intersection are provided with a signalised pedestrian crossing, such as the south side of the intersection of Waterloo and Lane Cove Road. Two pedestrian bridges are provided along Epping Road. Figure 7 presents an overview of the pedestrian facilities in the study area. Figure 7: Pedestrian Facilities in Macquarie Park.



Source: Shared use path data source CoR Footpath Project Sheet 2 of 3.

## 4 Strategic Planning Context

Council's strategic plans, transport and traffic studies, and state wide policies provide a basis for understanding pedestrian issues in Macquarie Park and future direction of planning and development. The implications of these plans to both existing and future pedestrian facilities provision are analysed below.

## 4.1 Local Planning Context

Local Context	Implication on PAMP				
Space Syntax Macquarie Park Baseline Movement Economy Report 2009	The study recommends fine-grained blocks with small block size to improve pedestrian accessibility, reduce walking time, and promote active frontages of buildings. The study identified two potential locations for village development: Shrimpton Creek (north of Byfield Street) and northern side of Waterloo Road between Khartoum and Lane Cove Road.				
	Recommended width of pedestrian pathways, whether in pedestrian only ways or as paths along streets is 3.5m. Shared pedestrian paths with bicycles are not recommended. Lighting along all paths is required. Street furniture, such as seats and benches, should be located at regular intervals				
	<b>PAMP implication:</b> Review of facilities provision based on the above recommendations. PAMP route to cater for identified growth in the area.				
City of Ryde Integrated Transport and Land Use Strategy (RITLUS) 2007	The strategy has developed centre specific opportunities in improving pedestrian access in the Macquarie Park centre. This PAMP study is a direct outcome of the RITLUS to address the pedestrian issues and improve walking facilities in the Macquarie Park area. Identified opportunities:				
	Improved safety at pedestrian crossings –separate pedestrian signal phase, pedestrian crossing on all arms of intersection, and kerb ramps designed correctly to the full width of crossing. Walking and cycling treatment- kerb ramps and refuges provision. Accessibility audits and PAMP development. The Macquarie Park centre report identified issues.				
	Key local actions:				
	• Detailed analysis of pedestrian involved crashes and design of mitigating measures including the improvements of pedestrian infrastructure, particularly at crossing points				
	• Investigate opportunities to provide pedestrian crossing opportunities on Epping Road, Herring Road and Lane Cove Road				
	• Identify areas where kerb ramps are needed, or tactile paving need upgrading for mobility impaired pedestrians, especially wheelchair users				
	• Potential upgrades and repair of footpaths				
	<b>PAMP implication:</b> Review crossing opportunities as proposed in RITLUS. PAMP will also analyse the most recent crash clusters and provide recommendations in the Action Plan at areas of high priority. PAMP work program development to review overall access of the				

Local Context	Implication on PAMP						
	area.						
Macquarie Park Public Domain Technical Manual (2008)	The manual provides guidelines on footpath paving, lighting, footpath width, typical cross sections and amenities across the Macquarie Park area.						
		Footpath	Seating	Lighting			
	Waterloo Road	Min. 3m to 4.5m wide shared path on northern side of Waterloo Road, type A stone paving. Min. 3m to 3.7m wide footpath on southern side of Waterloo Road, type A stone paving.	Restricted to station entrances, bus stop and within parks/plazas Seating to be benches	Located within adequate clearance of trees, poles set 600mm from back of kerb and spaced evenly. Lighting Type 1, 9.6m high S1A smartpole with outreach traffic arms			
	Lane Cove Road	Min. 3m to 4.5m wide, shared path on the eastern side of Lane Cove Road, type A stone paving. Min. 3m to 3.7m wide footpath on Western side of Lane Cove Road, type A stone	Benches at bus stops only	Located within adequate clearance of trees, poles set 600mm from back of kerb and spaced evenly. Lighting Type 1, 9.6m high S1A smartpole with outreach traffic arms			
	Epping Road	Min. 3m to 3.7m wide on the northern side of Epping Road, type A stone paving	Benches at bus stops only	Located within adequate clearance of trees, poles set 600mm from back of kerb and spaced evenly. Lighting Type 1, 9.6m high S1A smartpole with outreach traffic arms			
	Herring Road	Min. 3m to 4.5 m wide, shared path on eastern side of Herring Road, type A stone paving. Min. 3m to 3.7m wide footpath on western side of Herring Road, type A stone paving.	Benches at bus stops only	Located within adequate clearance of trees, poles set 600mm from back of kerb and spaced evenly. Lighting Type			

Local Context	Implication	on PAMP		
				1, 9.6m high S1A smartpole with outreach traffic arms
	Type 2 Streets	Min.3m wide footpath to 4.5m width in between raingardens sections, type B stone paving Version 2 is a shared cycle path one side	Benches located in pairs on street either side of street tree Located at min. 200m intervals at bus stops, train stations and drop off points	Located within adequate clearance of trees, poles set 600mm from back of kerb and spaced evenly. Lighting Type 2, 9.6m high S1B smartpole
	Type 3 Streets	Min. 2m wide footpath, up to 3.8m width in between raingarden sections allowed on one side, type B stone paving	Benches located in pairs on street either side of street tree with adequate clearance to parking spaces Located at min. 200m intervals at bus stops, train stations and drop off points.	Located within adequate clearance of trees, poles set 600mm from back of kerb and spaced evenly, pedestrian lighting attached to poles. Lighting Type 2, 9.6m high S1B smartpole
	Type 4 Streets	Min. 1.8m wide, type C concrete unit paving	Same as Type 3	Located within adequate clearance of trees, poles set 600mm from back of kerb and spaced evenly. Lighting Type 3, 5m high S2D smartpole
	work progra	in recommendations.	nes would be use	ed for PAMP
Macquarie Park Transport Management and Accessibility Plan TMAP (2002)	The Macquarie Park TMAP was developed to guide development and infrastructure provision in the area for the fifteen to twenty years period. The study assessed various development scenarios and their impacts on transport and access of Macquarie Park.			
	The key per set at 20% r Work data). pedestrian a focused on t	formance indicator was eduction from 86% car The mode shift would ctivity. The main dema the rail stations. At Ma	s mode split targe mode share (199 result in significand for pedestriar couarie Universit	et. The target was D6 Journey to ant increases in a facilities will be av station, there

Local Context	Implication on PAMP	
	will be a large demand to cross Waterloo Road and Herring Road to Macquarie Shopping Centre. There will also be a large demand at the Macquarie Park station for crossing Lane Cove Road and Waterloo Road to offices and work centres within walking distance of the station.	
	New signalised pedestrian crossing between Macquarie University and bus interchange precinct on Herring Road. Upgrade pedestrian footbridge on Epping Road west of Lane Cove Road. Require Workplace Travel Plans for all new developments and tenants. Implement comprehensive pedestrian infrastructure upgrade. Resolve station access issues for pedestrians and cyclists	
	PAMP implication:	
	It is understood that a sieres of recommendations from the TMAP have been adopted. There are a number of outstanding recommendations that have not been adopted such as the grade separate of Lane Cove Road / Waterloo Road or the narrowed boulevard treatment for Waterloo Road. This has made these roads congested and difficult to cross for pedestrians.	
	The PAMP will develop a pedestrian facilities network to promote walking and public transport usage as per the TMAP recommendations.	
Macquarie Centre Transport Access Guide	This guide provides general information on transport facilities and public transport in the Macquarie Park area. The guide provides a map with bus routes and access facilities. It also specifies public transport routes and other useful information such as ticketing.	
	<b>PAMP implication:</b> PAMP audit will further identify additional facilities to facilitate way-finding.	
Macquarie Park Transport Working Group Issues Paper	This document summarises the transport issues in the vicinity with a status as of July 2011. Some key issues are the pedestrian environment (safety, comfort, amenity) with reference to:	
	- Unsafe conditions for pedestrian crossing at Epping and Waterloo Roads,	
	- uncontrolled pedestrian crossings,	
	- high speed limit (60km/h) which will be reduced to 50km/h in most areas as per RMS "Review of Speed Limits Epping Road and Macquarie Park Commercial Precinct" letter,	
	- pedestrian/vehicle conflicts at Herring Road,	
	- long pedestrian crossing times at major roads including at Lane Cove Road outside Macquarie Park Station – crossing takes up to 4 min 35s (see Section 7.10 of the PAMP for discussion on waiting times at other signalised intersections),	
	- overcrowding on narrow footpaths (Optus conducted study for capital works program),	
	- general levels of amenity and liveability (urban planning and land use changes proposed),	
	- inadequate wayfinding,	
	- covered walkways to stations,	
	- data collection and auditing for patronage statistics at MQU,	
	- sustainable transport services need to be progressed (such as TMA, workplace travel planning and flexible working),	
	- public transport (integration, services, facilities) with issues of resident access and parking at stations,	
	- variable public transport demand issues with MQU students.	

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Local Context	Implication on PAMP
	Bike infrastructure and facilities need attention was addressed with CoR Bike Plan 2010.
	<b>PAMP implication:</b> The mentioned pedestrian related issues and recommendations are investigated by the PAMP.
North Ryde Station Precinct Project Transit Oriented Development State Significant Development Application	The following pedestrian connections are proposed in this document: • A pedestrian/cycle bridge across Delhi Road to the Station Site South, including any associated footpaths/cycle connections. The bridge will be 3m wide to allow for shared path of both pedestrians and cyclists.
	• Pedestrian and cycle connections through the Precinct from Riverside Business Park and the North Ryde Station through to Wicks Road.
	• Improvements to pedestrian and cycle infrastructure external to the Precinct to integrate with existing pedestrian and road infrastructure in North Ryde and Macquarie Park.
	• Pedestrian and cycle infrastructure on both sides of primary roads such as additional bus-stops. Associated pedestrian connections will be investigated further in consultation with the STA for the purposes of the development application.
	<b>PAMP implication:</b> These future linkages to the existing network are considered in the PAMP. However, the specific planning and project controls that will apply to the precinct are still being determined and have not yet been confirmed. The timing and certainty of the delivery of the necessary infrastructure required to ensure that all pedestrian needs and desire lines are addressed has not yet been determined for the North Ryde Station Precinct. When the North Ryde Station Precinct planning and project controls have been confirmed and the project implemented, the Macquarie Park PAMP will need to be revisited and updated to reflect updated pedestrian needs and desire lines and ny new issues identified.
Macquarie Park Special Rate Levy Summary of Projects	This document outlines projects and budgets for the next five years, with intended outcomes of prosperity, liveable neighbourhoods or connections. The following major pedestrian upgrades and budgets are proposed of the next five years:
	• This PAMP study in 2012-13
	Footpath construction of Waterloo Road (east)
	Design and Installation of wayfinding signage
	• Shrimpton Creek connection and embellishment
	<ul> <li>Upgrade of Elouera Reserve</li> <li>Public domain upgrade along Lane Cove Road WS – Talavera to Waterloo Roads</li> </ul>
	• Development of a Macquarie Park precinct web site
	• Establishment and continued funding of Transport Management Association for Macquarie Park
	• Establishment and implementation of the Green Star Communities Project
	<b>PAMP implication:</b> These upgrades would be noted in the work program development stage of the study.
Macquarie Park LEP 2010 and planning controls	Under the provisions of Ryde LEP 2010 and Part 3A planning approvals:
review	• Macquarie Park is zoned for additional 1 million square metres of commercial floor space which could accommodate 45,000 additional

Local Context	Implication on PAMP
	workers and 23,000 additional students and staff at Macquarie University over the next 25 years. (It is noted that this timing needs to be updated to reflect the timing of the Macquarie Park Concept Plan)
	• Approximately 3,400 dwellings are also projected within the same time frame accommodating up to 6,800 new residents.
	• Council has completed a Pedestrian Movement Study and commissioned other studies in relation to open space and traffic
	• Typical profiles for various street types were proposed (with suggested widths of footpaths etc.) are specified in the existing Macquarie Park Public Domain Manual.
	<b>PAMP implication:</b> The PAMP would consider the impact of considerable pedestrian activity increase on footpath and crossing facilities provision.
Macquarie Park Directional/ Wayfinding Signage Study Investigation by City of	The City of Ryde has identified new proposed locations for additional wayfinding signage. New proposed signage to be located at the corners of the following intersections/roads:
Ryde	Southwest of Delhi Road and Julius Avenue West
·	North of Epping Road and Wicks Road     North & West of Epping Road and Lang Cove Road
	• North of Enning Road and Herring Road
	• West of Lane Cove Road and Talayera Road
	South of Talayera Road and Khartoum Road
	• South and West of Herring Road and Talavera Road
	• West of Byfield Street and Waterloo Road
	• South of Waterloo Road and Coolinga Street
	Northeast of Lyonpark Road and Giffnock Avenue
	North and South of Khartoum Road and Waterloo Road
	• North-side of Epping Road between Lyonpark Road and Herring Road (located at bus stop)
	<b>PAMP implication:</b> The PAMP audit has further identify additional locations for wayfinding signage installation. These locations will be recommended where appropriate for the provision of additional appropriate directional and safety signage.
Macquarie Park PMD Trial Research project	City of Ryde in partnership with Macquarie University and assistance from Transport for NSW have launched in 2012 a new research project that is trialling the use of 'personal mobility devices' (PMDs) on the Macquarie campus. PMDs are defined as motor assisted, low speed, small and lightweight pedestrian transporters designed to transport one person on footpaths, shared use paths, cycleways and trails. The trial investigates the feasibility of using PMDs in Macquarie Park for short distance trips and for transfer between transport modes as a low cost novel solution to traffic congestion.
	The project will inform future policy decision relating to implementation of the PMDs on a larger scale. If the trial is successful and PMDs are legalized, the pedestrian activity will considerably increase on footpaths and crossing facilities.
	<b>PAMP implication:</b> The implementation of PMDs in Macquarie Park would enable greater connectivity across Macquarie Park area

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enabling greater accessibility to the transport nodes and key nodes of activity. The implementation of PMDs also has the potential to
reduce traffic congestion in the area and enable greater crossing opportunities in the area.
e a r

## 4.2 Local Government Area Wide Strategy

LGA Context	Implication on PAMP	
Asset Plan for the Resource Plan 2012/2022	Roadside and Public Spaces Asset Plan for the road reserve for pedestrians, cyclists and public usage for the entire Council area includes the following.	
	Over the next 4 years relevant actions from Council's Action Plan include:	
	• Priority for footpath and kerb repairs to locations identified in Councils audit with a condition rating of 4 or 5 (5 point scale)	
	• Complying kerb ramps for crossing near intersections	
	• Bus stops retrofits for disability standards compliance (complete by 2022)	
	• Annual footpath inspection program in priority areas and full LGA condition survey in 2011	
	• Progressively add seats at every bus stop	
	Over the longer term to 10 years, 25 years relevant actions from Council's Action Plan include:	
	• Continued to first 4 years	
	Actions to be completed through Others means - DCP, VPA's, S94, LDA consents	
	• Macquarie Park extra roads, footpath upgrades	
	<b>PAMP implication:</b> Priority and responsibilities for work would be used for PAMP work program development.	
Footpath Construction Expansion Program/ Footpath Construction Renewal Program/ Road	Footpath construction budget 2011-2015 approximately \$4.2 million across City of Ryde. Constructing and repairing concrete footpaths throughout Ryde to maintain high quality public pedestrian pathways.	
Kerb Renewal Program -	Footpath construction in the study area includes:	
Four Year Delivery Plan	• 2011-12: Delhi Road (north side granite paving to Plassey Road)	
2011 - 2015	• 2012-13: 23-25 Waterloo Road	
	<b>PAMP implication:</b> These footpath construction works have been constructed and finished prior to PAMP audit. This PAMP will assist in identifying new pedestrian facilities to be provided in Macquarie Park area which includes footpath construction, replacement, kerb ramps and crossing facilities through work program development.	
City of Ryde Development Control Plan 2010, Part 4.5 Macquarie Park Corridor	The plan provides a framework to guide future development in the Macquarie Park Corridor. The document specifies built form controls for all development within the Corridor, and sets in place urban design guidelines to achieve the vision for Macquarie Park as a vibrant community, as a place to live, work and visit.	
	The Street Network Structure Plan was development to promote pedestrian activity and improve pedestrian network connectivity.	
	<b>PAMP implication:</b> This PAMP will further enhance pedestrian accessibility of the area and will guide future updates of the DCP.	
City of Ryde Bicycle	This plan outlines the following:	
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Strategy and MasterPlan	• A bicycle network plan	
2007	• 139km network, with development costs of \$16,387,656,	
	• signage and network mapping,	
	• a staged schedule of works,	
	• an on-going monitoring system,	
	• recommendations for improved bicycle access and integrating the ongoing network,	
	• provide two-way bicycle access on local one-way streets	
	• Continue the Council program of removal of unsafe drainage grates,	
	• Recommend policies for cyclist provision during road works.	
	A bicycle use support plan consisting of a range of programs and initiatives designed to:	
	• Keep residents and workers informed on routes,	
	• Promote education and training to increase their skills,	
	• Encourage the community to get involved in events,	
	• Encourage travel and tourism within area,	
	• Improve and expand level and quality of bicycle parking,	
	• Support economic viability of businesses and residential developments	
	• Require and encourage organisations to provide bicycle parking and end of trip facilities	
	• Develop strategies to reduce bicycle theft	
	Improve bicycle access to public transport	
	• Improve integration of cycling provision and support	
	• Improve and extend parking provisions at public transport stops	
	• Improve station accessibility and safety around public transport stops	
	<b>PAMP implication:</b> This PAMP will further enhance accessibility of the area and will guide future updates of the bike plan. The audit reviewed the shared paths along the high priority routes and recommendations have been made in Section 8.9.	

# 4.3 State Wide Documents

Regional and State Context	Implication on PAMP
Development and Active Living - Designing Projects for Active Living, Premier's Council for Active Living NSW, 2010	<ul> <li>This document highlights the opportunity for facilities in the built environment (including pedestrian facilities) that can increase participation in physical activity and enhance the lives of our communities.</li> <li><b>PAMP implication:</b> This PAMP project is consistent with the Active Living principles highlighted within this document as they promote comfort for walkers; encourage traffic management devices that are pedestrian friendly and supports access provisions for all.</li> </ul>
Transport NSW Disability Action Plan 2012-2017	Transport for NSW funds specific programs to deliver pedestrian facilities like bridges over busy roads, pedestrian crossings, fencing and shared paths that are used by many pedestrians (as well as cyclists) for transport, exercise and recreation. \$1.32 million is allocated annually to provide pedestrian fencing. Public education campaigns also target key risk groups such as older road users and the safe

Regional and State Context	Implication on PAMP
	operation of motorised wheelchairs and mobility scooters. The NSW Government currently expends just under \$600,000 each year on pedestrian education programs.
	The mobility and safety of pedestrians at public transport interchanges is an area of increasing focus. There is an expectation that mobility plans are prepared for all transport interchanges at the design phase to ensure that customers can move safely between modes of transport, such as leaving a station to catch a bus or taxi.
	<b>PAMP implication:</b> The PAMP can recommend consideration to apply funds for some of the identified PAMP work along Lane Cove Road, Epping Road and at the Herring Road interchange.

#### 4.3.1 Urban Activation Precincts

The NSW Government's stated aims for the Urban Activation Precincts (UAP) are to "aim to deliver more homes in places with access to infrastructure, transport, services and jobs. The Department of Planning and Infrastructure has identified two UAPs within the City of Ryde, the North Ryde Station Precinct and the Herring Road Precinct." These two precincts are shown in Figure 8. The North Ryde Station Precinct is currently on public exhibition and the Herring Road UAP is still to be subject to public consultation. (Note: The City of Ryde is proposing a slightly different area for the Herring Road UAP).

Should these UAPs proceed, Growth Infrastructure Plans would be developed for each precinct with limited funding of through the Precinct Support Scheme available to assist local councils to upgrade local infrastructure and urban environments. A pilot allocation of \$50 million is to be shared between the councils responsible for each precinct. Approximately \$5 million per precinct is envisaged to be available to each precinct to fast track necessary infrastructure, although it is not possible to know which infrastructure this would be applied to at this stage. The Housing Acceleration Fund may provide additional funding sources.

#### Figure 8: UAPs in City of Ryde area.



## 4.4 **Future Development Application Approvals**

The future development applications provide an indication of the location and potential pedestrian activity concentration in Macquarie Park. Figure 9 shows that most of the development area is focused on Waterloo Road, Talavera Road and Herring Road. Footpath and crossing provision at these places would need to be designed to cater for the potential high pedestrian flow resulted from the higher density development. The identified roads would also form the key pedestrian routes in the area.

Major developments include:

- The Macquarie University Concept Plan which includes consideration of internal (i.e. intra-campus) networks and some external upgrades to Culloden Road intersection and Herring Road/Waterloo Intersection.
- North Ryde Station Precinct, which will provide a new shared overpass of Delhi Road and M2 Motorway to connect Waterloo Road to the North Ryde Railway Station. Other upgrades include a new spine street from Waterloo Road to Epping Road with associated pedestrian works.
- Macquarie Shopping Centre Redevelopment including a new bus interchange and upgrades to the crossing between Macquarie University and Macquarie Shopping Centre.

Figure 9: Development Application Submissions Approvals 2007-2012



# 5 Pedestrian Data Review and Collection

Pedestrian trips and movement data informs the PAMP development on major attractor generators in the study area, existing movement pattern and volume and hazardous locations.

# 5.1 **Pedestrian Trip Generators and Attractors**

Macquarie Park is a specialised centre with a mixture of land uses in the vicinity. The primary land use in the corridor is commercial core, with surrounding business park. These land uses are mainly located in the central and southwest areas of the corridor around Waterloo Road and between Delhi Road and Epping Road. Education and mixed uses form the remainder of the corridor, located to the northwest. Macquarie University is the major attractor between University Avenue and Culloden Road. There are also various mixed land uses of retail and residential located along Herring Road (Figure 10).

Macquarie shopping centre is a key pedestrian trips attractor in the area. The centre provides a wide range of goods and services that draws shoppers from both within and outside of the Ryde local government area. During lunch time, there is a high level of pedestrian activity around the centre from students in Macquarie University and workers in Macquarie Park.

Singtel Optus campus is one of the key single trip attractors/generators in the study area. Within their campus on Lyonpark Road, over 6000 Optus employees commute to work daily. During morning and afternoon peak periods, Optus staff resulted in strong pedestrian movement between both Macquarie Park and Macquarie University stations and Lyonpark Road. The lunch time peak period for pedestrian movement is skewed towards Macquarie Shopping Centre.

Surrounding the site, there is a large amount of varying residential densities to the south and west of the site. The residential areas are predominately low density with pockets of high density mixed use closer to Macquarie Park. North Ryde business park and Macquarie Park cemetery and crematorium form the eastern pocket of the study area along Delhi Road. See Figure 10 below for more detail of attractors and generators in the area.

Figure 10: Major Pedestrian Trips Attractors and Generators



# 5.2 Ryde LGA Pedestrian Crash and Injury Data

Crashes involving pedestrians in the Macquarie Park corridor over a recent five year period (2007-2011) were analysed. The number of crashes during this time period is shown below in Figure 11.





Key analysis of the pedestrian crash data:

- Over the latest five years of crash data, there were a total of 18 crashes involving pedestrians, including 17 injuries and 1 fatality;
- The fatality was on Epping Road between Herring Road and Lyonpark Road near the northern bus stop and occurred on Thursday 1 May 2008, at around 1pm with fine weather;
- There was an average of four crashes each year, with a gradual decline over the five year period;
- There were five crashes involved students travelling to or from school;
- The time of the crashes involving pedestrians are shown in Figure 12.



Figure 12: Time of Pedestrian Crashes

Figure 12 shows that the majority of crashes occur during the typical peak periods and in the middle of the day. This finding relates to the land use characteristics of the area, where high pedestrian activities are associated with the business park, university and shopping centre at around lunch period.

An analysis of crash data involving pedestrians identifies crash clusters (Figure 13). The notable crash clusters are located at the signalised intersections of:

- Herring Road and Waterloo Road (2 crashes with a further 4 crashes located N of the intersection around the exit from the Macquarie Centre car park)
- Epping Road and Herring Road (2 crashes)
- Epping Road and Balaclava Road (2 crashes)

The Herring Road / Waterloo Road crash cluster is located around the bus interchange, university entrance and Macquarie shopping centre area, where high pedestrian activities and conflicts of movement are recorded. The other two crash clusters involve crossing signalised intersections along Epping Road.

All crashes recorded are listed and analysed below in Table 3. Suggested treatments for the identified crash clusters along high priority PAMP routes are presented in the Action Plan in Appendix A and can be found by following the ID reference in the outlined in the table below.

Location	Location Description	Crash Type (RUM)	Crash Description	Time of Crash	Action Plan Reference for Treatment
Herring Road and Waterloo Road	Waterloo Road Intersection E arm crossing	Ped – Near Side (00)	Ped crossing Waterloo Road signals with SB left turning vehicle collision with pedestrian	13:20	Refer to ID 138 in Action Plan
	Waterloo Road Intersection N arm crossing	Ped – Far Side (02)	Ped crossing Herring Road signals – collision with NB vehicle	13:00	Refer to ID 138 in Action Plan
Herring Road	Macquarie Centre exit driveway (zebra crossing)	Ped – Driveway (07)	Ped crossing zebra – collision with exiting vehicle	12:15	Refer to ID 112 in Action Plan
		Ped – Driveway (07)	Ped crossing zebra – collision with exiting vehicle	10:10	Refer to ID 112 in Action Plan
		Ped – Driveway (07)	Ped crossing zebra – collision with exiting vehicle	10:41	Refer to ID 112 in Action Plan
	30m N of signalised crossing	Ped Emerging (01)	Ped crossing from behind object from W side / poor visibility	13:15	Refer to ID 112 in Action Plan
Epping Road and Herring Road	Herring Road Signals W arm crossing	Ped – Near Side (00)	Ped crossing Epping Road at signals – collision with WB vehicle	0:10	Refer to ID 139 in Action Plan
	Herring Road Intersection S arm crossing	Ped – Near Side (00)	Ped crossing left slip from W corner of intersection	8:53	Refer to ID 139 in Action Plan
Epping Road and Balaclava Road	Epping /Balaclava Road Signals E arm crossing	Ped – Near Side (00)	Ped crossing Epping Road signals – collision with WB vehicle	18:39	Refer to ID 141 in Action Plan
	Epping /Balaclava Road Signals E arm crossing	Ped Emerging (01)	Ped crossing Epping Road signals – collision with WB vehicle	17:00	Refer to ID 141 in Action Plan
Epping Road	170m E of Culloden Road on carriageway	Ped – Far Side (02)	Ped crossing from central median crossing from S	17:30	Not on a high priority route
	200m E of Herring Road on carriageway (the fatality recorded)	Ped – On carriageway (03)	Ped crossing the carriageway with no median – collision with EB vehicle	13:10	Not on a high priority route
	Epping Road carriageway (located at Whiteside Street)	Ped – Far Side (02)	Ped crossing the carriageway with no median – collision with WB vehicle	9:10	Not on a high priority route

#### Table 3 Investigation of Crashes

Location	Location Description	Crash Type (RUM)	Crash Description	Time of Crash	Action Plan Reference for Treatment
Lane Cove Road	Talavera Road Intersection E arm	Ped – Far Side (02)	Ped crossing Talavera Road signals – collision with WB vehicle	17:20	Refer to ID 133 in Action Plan
	McDonalds driveway	Ped – Driveway (07)	Ped crossing driveway – collision with WB exiting vehicle	15:00	Not identified as a crash cluster
	S of Waterloo Road signalised intersection	Ped – Far Side (02)	Ped crossing Lane Cove Road from E side – collision with NB vehicle	7:05	Not identified as a crash cluster
Wicks Road	115 Wicks Road driveway on E side of Wicks Road	Ped – Driveway (07)	Ped crossing driveway – collision with WB exiting vehicle	7:55	Not on a high priority route
Culloden Road	50m S of zebra crossing	Ped Emerging (01)	Ped crossing from behind object from E side / poor visibility	15:50	Not on a high priority route

WB – West Bound

EB – East Bound

NB – North Bound

SB - South Bound

#### **Implication to PAMP development:**

The PAMP study has investigated the crash cluster areas and factored treatments in the high priority routes into the recommendations presented in the Action Plan in Appendix A to improve the safety of these areas for pedestrians and road users.

Figure 13: Crashes involving pedestrians (2007-2011)



# 5.3 Review Existing Key Access/Safety Issues

The existing pedestrian issues extracted from Council's Customer Management System (CMS) for the past three years were analysed and presented in Figure 14. This figure shows that the majority of the issues raised by local residents and users of Macquarie Park are related to damaged footpaths. A footpath request was received on Rivett Road in North Ryde.

The physical audit along the high priority routes included an audit of the quality of the footpath.

It is to be noted that works on Local and Regional Roads that are eligible generally for 50/50 % RTA/Councils funding do not include new footpath construction. A review of the potential funding sources for pedestrian improvements identified through this PAMP is discussed in Section 133



Figure 14: Existing Pedestrian Issues Extracted from City of Ryde's Customer Management System and Document Management System

# **5.4 Initial Site Visit and Observations**

Arup conducted an initial site visit in September 2012 to understand the existing pedestrian issues, observe pedestrian desire lines, and pedestrian behaviour. Initial site visit findings are highlighted in Table 4.

Table 4: Key findings from Initial Site Visit







The large block sizes of development in Macquarie Park have resulted in intersection crossing points that are far apart (for example it is approximately 400m between Macquarie shopping centre carpark intersection to Byfield Road). The roundabouts along Waterloo Road facilitate traffic flow but not design with pedestrian safety in focus. Pedestrian were observed crossing Waterloo Road along various points using the median as a refuge. There is no crossing provision for north-south pedestrian movement on Waterloo Road, except at the shopping centre entrance, Herring Road and Lane Cove Road.

# 5.5 Pedestrian Trip Details

Pedestrian trip details inform the PAMP network through presenting the existing usage volume and movement direction. There is currently a vast source of pedestrian data available for Macquarie Park area. Arup analysed the most recent set of pedestrian data to form an overview of existing usage demand. Arup obtained pedestrian count data from both CoR and Macquarie University. Macquarie University have conducted major pedestrian count surveys around and within the campus.

Sample spot counts were also conducted by Arup on Wednesday 14<sup>th</sup> November 2012 as part of this PAMP study to verify and update previous data. Observations were conducted at various locations identified by CoR and through community consultation. Detail survey observations are provided in Appendix B.

Pedestrian count data from the area was gathered from the following sources:

- Macquarie University surveys, May 2012
- Miovision surveys, May 2012
- Arup surveys, November 2012.

Summary of Macquarie Park pedestrian count data is displayed in Figure 15.

The pedestrian count data highlights that there is a peak pedestrian movement period within Macquarie Park is during the commuter peak and the lunch period 12:00-14:00. In the AM and PM peak, high pedestrian movements are experienced around key transport nodes. These include the train stations of North Ryde Station, Macquarie Park Station, Macquarie University Station, and the major bus stops located at Macquarie University train station on Herring Road, and Macquarie Park trainstation that is the intersection of Lane Cove Road and Waterloo Road.

During the lunch peak, areas with a high level of pedestrian movement include Herring Road, Waterloo Road and Lane Cove Road accessing the key nodes of Macquarie Shopping Centre and the food outlets on the eastern side of Lane Cove Road. Table 5 summarises key observations of pedestrian movements in the study area.





#### Table 5: Key Observations

Key Observations	Issues
Pedestrian desire lines     Image: Contract of Byfield Road	Waterloo Road east of Macquarie shopping centre crossing. Existing traffic signal crossing is located away from the fire exit used by majority of the pedestrian at lunch hour.
Location: Lane Cove Road near McDonalds just south of Waterloo Road	Strong desire line across Lane Cove Road (Hotel path to food outlets)
Lack of adequate pedestrian crossing facilities The second secon	No crossings/ refuges provided to cross Waterloo Road between Herring Road and Lane Cove Road, despite clear pedestrian desire lines near the bus stops and roundabouts near Khartoum Road and Byfield Road.
Traffic speed	High traffic speed and constant flow of
Location: Waterloo Poad	traffic during peak periods on Waterloo Road. Difficult to cross the Waterloo Road with combination of lack of facilities and high traffic speed.
Location. Watchou Koau	

Key Observations	Issues
High pedestrian demand	Pedestrian crossing connecting Macquarie
	shopping centre and the university has a high pedestrian flow in the study area, followed by Byfield Road area.
	The crossing with zebra and signalised crossings is confusing for pedestrian.
Location: Macquarie shopping centre crossing	

These pedestrian volume data informed the PAMP route development and priority weighting based on movement volume. It provided an overview of location with high pedestrian activities.

The pedestrian trip details discussed above provide a basis for an understanding of pedestrian desire lines across the study area. Pedestrian desire lines for both the commuter peak and lunchtime peak are presented in Figure 16.

Figure 16 Pedestrian desire lines map



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# 6 Community Consultation

The main purpose of the community engagement process is to collect information on existing pedestrian facilities usage, current issues, locations for improvement and future demand. The information collected is then fed into the PAMP route development, route audit and work program development.

The key to a successful project is to have comprehensive interrelated engagement processes to optimise participation, enrich feedback and strengthen community ownership. The process of community consultation adopted by this PAMP study is described below.

# 6.1 Identification of Stakeholders

The study team identified the following key stakeholders for the PAMP study in consultation with CoR.

Area	Target Groups	
Within the study area	All commercial tenants and their employee	
	Macquarie university staff and students	
	Macquarie shopping centre patrons and tenants	
	Local residents	
	Visitors of the area	
Surrounding area	Residential area south of Epping Road	
Key stakeholders	City of Ryde Council	
	Macquarie Shopping Centre;	
	Macquarie University;	
	CityRail;	
	Macquarie Park Transport Management Association;	
	Optus;	
	Bike group;	
	NSW Roads and Maritime Services;	
	Transport operators (bus companies and taxi operators);	
	NSW Police; and	
	Transport for NSW	
	Community Liaison Group for North Ryde Station Precinct	
	Guide Dogs NSW	
	Vision Australia	
	MS Australia	
	Muscular Dystrophy Society	
	Deaf Society NSW	
	Arthritis Foundation of NSW	
	Former City of Ryde Access Committee members	

Table 6: Identification of Stakeholders

# 6.2 Methods of Engagement

The community engagement stream is a core of the PAMP process. The community consultation process for this PAMP included a series of engagement methods. The engagement methods and relevant aims within the PAMP process are presented in the table below.

Engagement	Stage and purpose for the PAMP	
Online collaborative mapping	Identification of pedestrian issues and development of PAMP route.	
Online community questionnaires		
Stakeholder focus group workshop		
Access Advisory Committee meeting	Information on the progress of the PAMP and feedback on recommended actions within the PAMP.	
Bicycle Advisory Committee meeting		
Public exhibition of the draft PAMP	Feedback on draft PAMP and recommended actions within the PAMP.	

## 6.3 Media and Web Site Coverage

The PAMP consultation link was promoted through CoR's "Have Your Say" web page link, My Place database, council newsletter, Northern District Times and emails to key community groups and stakeholders.

Survey link: http://www.ryde.nsw.gov.au/Council/HaveYourSay

Survey period: three weeks 10th October -2nd November 2012

# 6.4 Collaborative Mapping

Collaborative mapping is a form of community consultation that Arup has utilised successfully on a series of recent projects. Collaborative mapping provides an online platform to express issues with an easy to use website. The online platform exposes the PAMP to a wide range of age and demographics that is easy to use and provides ease when collecting the data. With collaboration at the core of this form of consultation, the interactive map shows where others have commented and allows the community to build up an issues map together. The platform allowed for a focused discussion and most importantly allowing the community to feel much more involved in the project and understand other's views on the project.

The Macquarie Park PAMP collaborative map was available for residents, relevant stakeholders, local users and users outside the local government area or study area to respond. A total of **153 responses** were received. It is noted that this presents relatively small sample size compared to the residential and employment population of Macquarie Park.

The biggest concentration of answers from the collaborative mapping was regarding "safety". The key locations of concern are the Byfield Road/ Waterloo Road roundabout, Lane Cove Road and Herring Road. Issue locations identified in the collaborative map have been summarised and are presented in Section 5.7.



Figure 17: A snapshot of the collaborative mapping results

further information please contact City of Ryde Council's Senior Sustainability Co-ordinator on 9952 8222 or by email to cityofryde@ryde.nsw.gov.au.



Figure 18: Issues from Collaborative Mapping

# 6.5 On-line Questionnaire Survey

Arup designed an on-line questionnaire to capture the key issues relevant to walking within Macquarie Park, using CoR My Place community engagement program. The questionnaire supplemented to the collaborative maps, provide additional data on pedestrian trip purpose, usage period and non-spatial specific data. The link to the questionnaire was embedded in the collaborative map. Sample of the questionnaire is attached in Appendix C.

The on-line questionnaire asks the community:

- What times are you walking?
- What is the main trip purpose?
- What are the major factors that inhibit walking in the study area?
- What facilities (and where) could be provided in the study area to improve safety, access and mobility?
- What are the current and future pedestrian demand and needs?

A total of **69** completed on-line questionnaires were received.

Key findings are presented in section below.

#### 6.5.1 **Purpose of Travel**

Respondents were required to answer the reasons for walking within the study area. A high proportion of respondents walk for shopping and commuting reasons. The results in Figure 19 below showed that people walk for other reasons as well including health benefits.



Figure 19: Reasons for Walking

#### 6.5.2 User Profile

The large majority (78%) of respondents were aged 26-55. This age group indicates an active group for walking. Other groups were 56-65 and 18-25 which were both 9%. This is summarised below in Figure 20.



Figure 20: Age Range of Respondents

#### 6.5.3 Day of Use

Respondents were also asked what day of the week they generally walk. The majority of respondents indicated that they usually walk during weekdays as shown below in Figure 21.



Figure 21: When Do You Walk: Day of Week

#### 6.5.4 Time of Use

Respondents were asked to indicate the time periods they walk. The graph below shows the responses in general time periods. The peaks occur during lunchtime, AM peak and PM peak of 12-2pm, 7-10am and 4.30-5.30pm respectively. There is approximately double the volume than other periods in between.



Figure 22: When Do You Walk: Time of Day

#### 6.5.5 **Pedestrian Environment**

The following question indicates respondent's general perception of the walking environment. The respondent's answers were ranked in terms of satisfaction. Nobody responded with unsatisfactorily for the pleasantness; however there was some dissatisfaction about safety. Overall respondents were fairly positive over the walking environment. Reasons for dissatisfaction were:

- Not enough crossing opportunity
- Dangerous (difficulty crossing roads and speeding drivers)
- Unpleasant environment (cars/noise/shelter)
- Dangerous (not enough lighting and crime, etc.)

Respondents results are graphed below in Figures 22-24.



Figure 23: Pleasantness of Walking in Macquarie Park



Figure 24: Convenience of Walking in Macquarie Park



Figure 25: Safety of Walking in Macquarie Park

#### 6.5.6 Pedestrian Crossings

The majority of respondents (54%) indicated that the current crossings in Macquarie Park are not in convenient locations. This is also expressed in earlier questions of the questionnaire. Pedestrian crossing locations identified in this section of the survey are presented in Section 5.7.



Figure 26: Crossing Convenience

#### 6.5.7 Barriers to Walking

Respondents were asked to comment on the main barriers to walking in Macquarie Park. There was a fairly even spread of issues across all the study area. The five main barriers to walking identified by the survey include:

- Lack of pedestrian crossings
- Motorist behaviour
- Personal safety/security concerns
- Poor lighting
- Pedestrian safety at crossing locations

These results are summarised below in Figure 27.



Figure 27: Barriers to Walking

#### 6.5.8 Hazardous Locations

Respondents were asked to identify whether there were hazardous locations in the study area. Hazardous locations identified in this section of the survey are presented in Section 5.7.

#### 6.5.9 Suggested Improvements

Respondents were asked what they would improve to enhance their walking experience in Macquarie Park. The main suggested improvements to walking in the area were considered as identified from the survey were:

- Increased pedestrian crossing opportunities
- Improved lighting and security
- Footpath widening

The suggested improvements from the survey are shown below in Figure 28



Figure 28: Suggested Improvements to Walking

#### 6.6 Key Stakeholder Workshop

An important component of the PAMP development was the key stakeholder focus group workshop involving the key stakeholders in the PAMP process. The group format provided an opportunity for the generation and exchange of ideas between the attendees. The Focus Group helped identify pertinent issues to the PAMP and helped to focus PAMP priorities and actions.

Stakeholder workshop was held on 5<sup>th</sup> November 2012 with18 stakeholders attended the workshop. Detail meeting note is provided in Appendix D. The workshop was divided into three main parts: pedestrian issues identification, pedestrian route priority weighting table discussion, and work program priority weight table discussion.



## 6.6.1 Key Issues Identified Through Workshop

The key issues identified by stakeholders are summarised in Table 7 below. The route and program prioritisation method would be discussed in the relevant section in the report.

Issues	Description		
Safety	<ul> <li>Pedestrian crossing opportunities (particularly along Waterloo Road and at Byfield Street and Lyonpark Road)</li> <li>Recognise and cater for 'safe j-walking'</li> <li>High traffic speed, need to reduce speed limits</li> <li>Busy transport interchanging area</li> <li>Conflict between buses and pedestrians at shopping centre on Herring Road particularly at lunchtime</li> <li>Waterloo Road – Shopping Centre as a key destination</li> <li>Significant volumes at lunchtime</li> <li>Lack of defined crossing</li> <li>PM peak – access to bus and train</li> <li>Waterloo and Khartoum Road need traffic lights</li> <li>Footpath width insufficient to cater for AM peak clustered arrival</li> <li>Shared paths need adequate width to safely cater for all users.</li> </ul>		

Issues	Description		
Access	• Large block sizes restrict route choices, crossing opportunities and increase walking time ( particularly for Talavera to Waterloo and Giffnock to Waterloo)		
	• Future development would create additional pedestrian facility demand (Particularly North Ryde Station Precinct and Shopping Centre and also with potential Park and Ride Facility associated with F3 to M2 link)		
	• Lane Cove Road acts a barrier to walking between east and west of the road. There is no mid-block pedestrian crossings at southern end of precinct		
	• Poor access for visually impaired person – no defined/signed/safe routes within the area and lack of audible crossing indicators		
	• No route connect across the park through Shrimpton creek		
	Tactile Ground Surface Indicators (TGSIs) are not enough and worn		
	• Lack of covering and awnings (i.e. all weather access) particularly around Macquarie University Station		
	Access to Waterloo and Talavera Road bus stops		
	• Pedestrian facilities need to enable people to get where they want to go (match desire lines)		
Information	• Need information signs for bus stops i.e. when coming out of shops		
	• Need large print/ braille signage for visually impaired users		
	• No clear information on how to use the shared footpaths – access priority, conflicts, courtesy etc.		

Location specific issues identified through the workshop are summarised and presented in Section 6.7.

These identified issues formed part of the PAMP information database towards pedestrian issues identification, route identification and potential improvement to the pedestrian network.

# 6.7 Summary of issue locations

A series of location specific issues were collected as part of the collaborative mapping, community questionnaires and focus group workshop. The issue locations have been grouped under the following key issues and mapped in Figure 29:

- Lack of pedestrian crossing/ need for increased pedestrian crossings
- Pedestrian safety at all crossing
- Pedestrian safety at other locations
- Motorist behaviour
- Poor lighting/ request for improved lighting
- Widen footpath.

The majority of respondents from the questionnaire and the collaborative map identified the following main locations of concern:

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- Waterloo Road (between Herring Road and Khartoum Road, particularly at the Byfield Street and Khartoum Road roundabouts)
- Herring Road (around Macquarie Centre and Ivanhoe Place)
- Rivett Road (near Lucknow Road and Julius Avenue)
- Lane Cove Road (between Talavera Road and Waterloo Road)

Respondents also indicated the following general concerns from the questionnaire:

- High traffic speeds and motorist behaviour: Byfield Street roundabout, Culloden Road, Lyonpark Road
- New crossings: along Waterloo Road midblocks, Lane Cove Road near food outlets, Lyonpark Road
- Wider footpaths and better connections: Footpath provision linking train station to the offices, also need footbridge on Epping Road (near Pittwater Road intersection) to access bus stop.





# **1.1 Public exhibition**

The draft Macquarie Park PAMP was placed on public exhibition from Tuesday 26<sup>th</sup> March to Tuesday 23<sup>rd</sup> April 2013.

Placing the draft PAMP on public exhibition is part of the community engagement stream of the PAMP process. The community engagement stream is recognised as a key component of the PAMP as it enables community and stakeholder input to inform the PAMP issues and recommendations.

Comments on the draft Macquarie Park PAMP allowed for further feedback from the community to finalise the draft PAMP for the Macquarie Precinct. As a result of the public exhibition, elements of the Action Plan were refined, including the addition of a few crossing issue locations.

A total of 7 responses were received during the public exhibition period. Issues raised within the submissions during the public exhibition aligned with the existing recommendations in the draft PAMP report (displayed as submission existing in Figure 30) and some submissions raised new issues (displayed as submissions\_new in Figure 30).

A review of the submissions is found in Appendix F of this report.

# **1.2** Access Committee meeting

The Access Advisory Committee meeting was held on the 13<sup>th</sup> March 2013 at City of Ryde. The purpose of this meeting was to seek comments from the Access Advisory Committee on the draft PAMP and to confirm PAMP recommendations proposed in the draft PAMP.

Responses from the Access Committee meeting suggested that the Committee was very happy with the consultation process to date and have understood how their inputs from the engagement methods have been integrated into the draft PAMP report.

The issues identified during the meeting are found in Appendix F of this report. Issues raised within this meeting aligned with the existing recommendations in the draft PAMP report (displayed as submission existing in Figure 30) and some discussions raised new issues (displayed as submissions\_new in Figure 30).

# **1.3** Bicycle Access Committee meeting

The Bicycle Advisory Committee meeting was held on 15<sup>th</sup> April 2013. The purpose of this meeting was to seek comments from the Bicycle Access Committee on the draft PAMP and to confirm PAMP recommendations proposed in the draft PAMP.

The issues identified during the meeting are summarised in Appendix F of this report. Issues raised within this meeting aligned with the existing recommendations in the draft PAMP report (displayed as submission existing in Figure 30) and some discussions raised new issues (displayed as submissions\_new in Figure 30).


Figure 30: Submission issues captured from Public Exhibition, Bicycle Access Committee meeting, Access Advisory Committee meeting.

# 7 **PAMP Routes**

# 7.1 Route Development

The development of the PAMP routes with priority categories enables Council to best allocate limited resources within competing pedestrian opportunities and facilities. The PAMP routes development is informed by the information base built for the PAMP study and comment received from the community during the consultation stage.

# 7.2 Route Prioritisation Methodology

A tailored PAMP route prioritisation method for CoR was developed in consultation with Council staff, stakeholders, and with reference to the RMS's "How to Prepare a PAMP" guide and the example scoring system outlined in the *Memorandum of Understanding*. Information from existing facilities data, consultation, zoning plans and future development were integrated into the route prioritisation methodology. The set of prioritisation criteria was developed to assist Council to consistently assign routes a priority within a hierarchy of high, medium or low priority pedestrian access routes.

The pedestrian routes were prioritised based on indicators such as estimated pedestrian volumes, links to pedestrian trips attractors and generators, identified hazardous locations through community consultation and accident statistics, missing link and planned future key pedestrian routes.

The six route prioritisation criteria used to develop the PAMP routes were developed in consultation with key stakeholders of Macquarie Park and CoR. These criteria are intended to provide a means of determining the priority of routes which need to be completed to form a connected pedestrian network.

Route Prie	oritisation Criteria Weightings	Criteria	Weight
1	Estimated pedestrian volumes (pedestrians	>250	11-15
	/hour)	150-250	6-10
		50-150	1-5
		<50	0
2	Links to within 500m of key pedestrian generators and attractors or community facilities such as Train Stations, Shopping Centre, Universities, Schools, Childcare, Aged Care or disabled services centre Links to within 500m of other pedestrian generators and attractors such as offices, multistorey residential development, cafes or bus stops.		6-10 1-5

#### Table 8: PAMP Route Prioritisation Criteria

Route Prie	oritisation Criteria Weightings	Criteria	Weight
3	Identified hazardous location by the community or from accident analysis	High Medium Low None	16-20 11-15 6-10 0
4	Identified by the community as a key pedestrian route	Yes/No	1-5
5	Missing link connecting key existing pedestrian routes	Yes/No	1-5
6	Planned future key pedestrian routes	Yes/No	1-5

## 7.3 **PAMP Route**

The PAMP route network was developed and assigned using the criteria set out in (Table 8). High, medium and low priority routes were assigned by assessing the score of each route against the weighting criteria.

Table 9: Priority	Ranking
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<b>Route Priority</b>	Score Range		Priority
Low	0	21	L
Medium	22	38	М
High	39	60	Н

The PAMP adopts a network approach to the development of the PAMP routes as it focuses on identifying a continuous and comprehensive network for the current state of the Macquarie Park area to connect the high pedestrian activity areas and generators. The PAMP route also identifies a series of key intersections. These key intersections form links between Macquarie Park and key pedestrian networks outside the study area.

It is highlighted that the PAMP network is designed to be a flexible network, where Council is able to adapt and update the network where relevant to suit new developments to continue to be relevant to the Macquarie Park context.

#### Figure 31: PAMP Routes for the Existing Network



# 8 PAMP Routes Audit

# 8.1 The Audit Process

Physical field audits were conducted by Arup in November 2012 along the existing high priority routes identified in Section 6 using a tailored audit checklist. The audit checklist was developed from the pedestrian facilities standards in AS 1428.1, AS 1428.2, AS 1428.4.1 and Austroads standards.

The key focus of the physical audits is to identify locations of kerb ramps and footpath deficiencies, crossing opportunities and footpath connections to key trips attractors and generators. Factors considered in the audits are detailed below.

- Footpaths provision (are footpaths absent?);
- Footpath quality (are footpaths damaged, cracked or uneven path, narrow, or have trip hazards?);
- Kerb ramp provision (are kerb ramps absent? Do existing kerb ramps conform to Australian Standard design?);
- Obstruction / barriers along path (are there poorly placed trees, bus shelters, signage or seating?);
- Pedestrian crossing facilities (are there locations where additional crossing facilities are required or existing are in need of upgrade?);
- Lighting (is additional lighting required?); and
- Signage fixtures (is additional signage required?).

A full list of the issues arising from the footpath audit is included in the Action Plan in Appendix A. Each issue has a unique ID number that links the issues maps to the Staged Work Plan. These issues maps are shown further below in Figure 32-Figure 36. Photos of the audited issues have been collected, and selected photos have been presented in this report.

## 8.2 General Physical Field Audit Findings

The physical field audit suggests that the pedestrian facilities in the form of footpaths and kerb ramps are mostly present across the high priority PAMP route. Footpaths and kerb ramps around the new rail stations in the study area are generally of high quality, as shown in Photo 5.



Photo 5: Existing pedestrian facilities in Macquarie Park.

As highlighted through existing documents, consultation and initial site visits pedestrian crossing issues were identified through the audit as a key issue for the study area. Roundabouts in the area present unsafe pedestrian crossing environments as shown in Photo 6. Large blocks and multiple lane roads also result in limited crossing opportunities for pedestrians as shown in Photo 7.



Photo 6: Roundabout Waterloo Road and Khartoum Road presents a poor crossing location for pedestrians.

Photo 7 Waterloo Road near Macquarie Shopping Centre entry (photo looking northwest along Waterloo) has no pedestrian crossing along the west arm of the existing traffic signals for pedestrians to cross Waterloo Road.

Further deficiencies in the existing pedestrian network identified through the physical field audit are presented below.

# 8.3 Footpath Audit Findings

Locations of footpaths that were missing, narrow or uneven and cracked were identified from the consultation process and the physical audit. All locations of these issues are shown in Figure 32 below.

The audit identified the following footpaths that were missing or discontinuous:

- Paul Street North (south side) from Lyonpark Road to Epping Road pedestrian overpass
- Lane Cove Road (east side, around M2 overpass) from south of Eden Garden to M2
- Wicks Road (both sides north of Waterloo Road)
- Julius Avenue (south side) from Rivett Road to Delhi Road
- Rivett Road (east side) from Julius Avenue to Microsoft Building

Selected photos of the issues are shown in Photo 8 to Photo 11.



Photo 8: Paul Street North (south side)



Photo 9: Julius Avenue



Photo 10: Wicks Road (both sides of Waterloo Road)



Photo 11: Lane Cove Road (east side, on M2 overpass looking south)

The footpath quality was assessed during the audit. The general condition of the footpaths was good, although there were several locations where the footpath was identified as uneven or cracked. The footpath is generally uneven due to poor integration with manholes or poor repair after servicing. Cracks and uneven footpaths also appear due to poor drainage and nearby tree roots. Locations where footpaths were in generally poor condition were:

• Julius Avenue

- Talavera Road
- Khartoum Road
- Lyonpark Road
- Herring Road



Photo 12: Talavera Road (ID 83 in Action Plan)



Photo 14: Lyonpark Road (ID 64 in Action Plan)



Photo 13: Talavera Road (ID 81 in Action Plan)



Photo 15: Herring Road (ID 33 in Action Plan)

The width of the footpath was observed during the audit process against standards to the minimum required width of 1.2m. The widths were also assessed from the consultation process and observations during the audit (i.e. for evidence where grass was worn on the sides of the footpath or large volumes of passing pedestrians. Locations where footpaths were observed to be narrow compared to large volumes of passing pedestrians included:

- Waterloo Road (between Macquarie Centre and Byfield Street) observed existing footpath approximately 1.2m width, possible upgrade to 3m width as per Public Domain Manual
- Giffnock Avenue, observed existing footpath approximately 1.2m width, possible upgrade to 3m width as per Public Domain Manual
- Coolinga Street, observed existing footpath approximately 1.2m width, possible upgrade to 3m width as per Public Domain Manual guidelines for Giffnock Avenue
- Lane Cove Road (between Talavera Road and Waterloo Road), observed existing footpath approximately 1.2m width, possible upgrade to 3m width as per Public Domain Manual

Selected photos are shown in Photo 16 and Photo 17 showing footpaths that need widening along their entire length as mapped in Figure 32.



Photo 16: Giffnock Avenue (ID 3 in Action Plan)



Photo 17: Waterloo Road (between Lane Cove Road and Coolinga Street) - (ID 5 in Action Plan)

#### Figure 32: Footpath Issues along high priority routes



# 8.4 Kerb Ramp Audit Findings

The kerb ramps in the study area were assessed against AS1428.1-2009 standards during the physical audit. Kerb ramp issues that were observed during the audit included:

- A lip or step between kerb ramp and road of larger than 5mm.
- Steep grades on kerb ramps- if grade exceed 1:10.
- Direction of kerb ramps- ramp faces intersection not pedestrian crossing point
- Missing kerb ramps.

Items assessed included the lip/step between surfaces, the grades and the direction the ramps faced. Kerb ramps that were missing were also checked during the audit process. The locations of kerb ramp issues are mapped on Figure 33.

Selected photos of these issues are found below.



Photo 18: Kerb ramp missing on Herring Road and Ivanhoe Place



Photo 19: Steep kerb ramp on Talavera and Lane Cove Road



Photo 20: Kerb ramp not facing crossing (not to standards) Khartoum and Talavera Road



Photo 21: Lip/ step on kerb ramp on Herring Road and Epping Road

#### Figure 33 Kerb Ramp Issues



## 8.5 Signage Fixtures Audit Findings

City of Ryde has recently implemented new wayfinding signage around the train stations as shown in Photo 22. These signs provide location maps and key pedestrian attractors and generators in the area.

City of Ryde has proposed a series of additional locations to implement new wayfinding signs (as part of the *Macquarie Park Directions / Wayfinding Signage Study* discussed in Section 3.1). These locations were reviewed during the physical audit. The audit revealed that all proposed locations for additional wayfinding signage were appropriate for new signage fixtures.

Additional locations for wayfinding signage were also identified through the audit. New locations for wayfinding signage were mainly identified at locations on the edge of the study area at key intersection and linkage points, for example at Delhi Road on the edge of the study area (Photo 23) and on Lyons Park Road near Epping Road (Photo 24).



Photo 22: Wayfinding signage near Macquarie University.

Photo 23: No wayfinding signage at Dehli Road east, at the edge of the study area.



Photo 24: Limited wayfinding on Lyons Park Road near Epping Road

Additional locations for wayfinding signage should be considered with the implementation of the fine grain network as proposed by the DCP.

## 8.6 Bus Stop Issues Audit Findings

Bus stops along the high priority PAMP routes were considered within the physical audit to audit whether bus stops had the following characteristics:

- Bus stop shelter;
- Seating;
- Bus stop signage;
- Paved to the kerb.

These characteristics are consistent with the recommended bus stop layout as outlined by the Australian Human Rights Commission (as shown in Appendix E).

Bus stops in the area were generally observed to be of high quality, particularly around the station entrances.

Several bus stops along the study area were identified as either requiring shelter and/ or seating, for example along Waterloo Road near Cottonwood Crescent (shown in Photo 25). The bus stop issues audit findings locations are shown in Figure 34.



Photo 25: Bus stop along Waterloo Road does not have shelter or seating provision. The bus stop is not paved to the kerb as outlined in the STA's Bus Stop Style Guide.

Priority of upgrades to bus shelters has been considered over a series of criteria as outlined in Section 11.

There is significant crowding at some bus stops within Macquarie Park. In particular:

• The bus stop on Southern Side of Waterloo Rd, North of Khartoum is subject to significant PM peak hour crowding – to be responded to in extended footpath.

It is understood that bus shelter design may be upgraded in 2018. During this process, it is recommended that bus shelter design consider design for constrained locations.

## 8.7 Awning Fixtures Audit Findings

Awning fixtures were generally observed to be present at bus stop facilities and directly surrounding train stations. The physical audit highlighted that there was limited provision for awnings beyond these locations. It is noted however that the implementation of awning fixtures throughout the whole route network is unrealistic and unfeasible, and the existing awning fixtures provided by bus stops, train stations and at entrances to buildings is sufficient.

Implementation of awning fixtures could be considered through fine grain network in association with active street frontages as proposed by the DCP.

## 8.8 Street Lighting Audit Findings

Through the physical audit, street lighting was observed to be present along the high priority PAMP route.

Selected locations were identified as areas that may require additional lighting or lighting upgrade. An example of a location with a lighting issue is Lyonpark Road near Giffnock Avenue (Photo 26). In this location, street lighting was covered by dense foliage and creates a potentially dark environment. The western side of Lyonpark Road is considered to have sufficient lighting and therefore an action at this location (ID number 229) is not warranted at this stage.



Photo 26: Dense trees on Lyons Road near Giffnock Avenue create a dark environment.

Locations identified during the consultation process as areas of concern in regards to lighting have also been included in the work program. These locations include:

- Talavera Road (north of Herring Road and south of Talavera Road)
- Herring Road (near Ivanhoe Place and between Waterloo Road and Talavera Road)
- Waterloo Road (between Khartoum Road and Coolinga Road)
- Culloden Road (near Waterloo Road)

The *Macquarie Park Public Domain Technical Manual* presents treatments and guidelines in relation to lighting type and arrangement including:

- Located with adequate clearance from street trees.
- Underground cables to ensure good street tree canopy spread.
- Face of pole set back 600mm from back of kerb.
- Where possible, align light poles, and evenly space along length of street.
- Set out of lighting to authority requirements.

It is further suggested, that were localised lighting issues are identified, consideration should be given to additional lighting at this location, for example the installation of additional Lighting Type 3 (LT3) from the *Macquarie Park Public Domain Technical Manual*.

It is noted that the physical audit was conducted during the day, and hence a full night audit is recommended.

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#### Figure 34 Bus stop, lighting and signage issues



## 8.9 Shared Pedestrian and Cycle Paths Audit Findings

There are several off-road marked shared pedestrian and cycle paths running through Macquarie Park. These locations were shown previously in Figure 7 and include:

- Epping Road (from North Ryde across Lane Cove River and 6km east to Naremburn)
- Shrimptons Creek Cycleway (from Macquarie Centre and under Epping Road)
- Waterloo Road (from Eden Park Drive to Herring Road)
- Culloden Road (between Waterloo Road and Talavera Road)
- Talavera Road (between Culloden Road and Ryde Road)

The physical audit revealed that these shared paths along the high priority routes are generally in good condition, with line marking and signage along the paths.

An analysis of pedestrian and cyclist crash data from the past five years (as discussed in Section 5.2) also highlights that there have been no reports of pedestrian and cycling crashes in the area.

Observations during the physical audit highlighted that, at bus arrival times, high pedestrian volumes were experienced along shared pedestrian routes, for example at Waterloo Road, shown in Photo 27. At times beyond bus arrivals, shared pedestrian and cycling paths were observed to be sufficient width (shown in Photo 28).

Locations identified during the consultation process as areas of concern in regard to shared pedestrian and cycle paths have also been included in the work program. These locations (where width was considered insufficient) include:

- Section of Waterloo Road from Macquarie Centre to Byfield Street
- Section of Waterloo Road from Lane Cove Road to Eden Park Drive

An analysis of the bicycle route network in the study area also suggests the following locations for consideration of adding shared paths or upgrading existing paths to shared paths:

- Lyonpark Road from Paul Street North to Giffnock Avenue (including the existing pedestrian connection from Giffnock Avenue to Waterloo Road)
- Section of Herring Road from Waterloo Road to Talavera Road

Throughout the PAMP process, Epping Road was not identified as a high priority route and specific actions have therefore not been proposed at this location. It is recommended that conflicts between pedestrians and cyclists along the shared pedestrian path on Epping road should be considered in future bicycle planning in consultation with RMS.

It is suggested that separated dedicated cycle ways could be considered at these locations to provide a clear pathway for cyclists and limit potential cycling and pedestrian conflicts. It is noted that these locations should be further reviewed through the bike plan strategy process.



Photo 27: High pedestrian movements along shared pedestrian and cycling path along Waterloo Road.



Photo 28: A majority of the path, shared pedestrian and cycling paths were observed to be sufficient width.

#### Figure 35: Shared pedestrian and cycling path issues.



## 8.10 Signal Phasing Audit Findings

Signal phasing was observed at the high priority PAMP key intersections during the physical audit. Long waiting times of up to 4 minutes were experienced at the following locations (shown in Figure 36):

- Lane Cove Road and Waterloo Road
- Lane Cove Road and Epping Road interchange ramps
- Lane Cove Road and Talavera Road
- Epping Road and Balaclava Road
- Epping Road and Herring Road
- Epping Road and Wicks Road
- Epping Road and Pittwater Road

Signal phasing is relevant because it reduces the attractiveness of walking as a transport option. Long signal phases also make pedestrians more likely to undertake risky crossing behaviours outside of the official signal crossing times.

Improvements to signal phasing to reduce pedestrian waiting times and ensure adequate crossing time is recommended by the Action Plan be pursued with RMS. It is important to note however, that signal phasing amendments will need to be assessed in consideration of available capacity and level of service required for relevant intersections.

# 8.11 Crossing Facilities Audit Findings

A series of pedestrian crossing issues were identified during the audit. Locations of pedestrian crossing issues that were identified through the consultation process and which occurred along high priority routes were included in the physical audit. Locations to enhance pedestrian interchange and integration with other transport modes were also included in the physical audit.

Locations of pedestrian crossing issues are displayed in Figure 36 and are detailed in the Table 10. Refer ID number to Appendix A. The possible solutions are found in Section 10.4.

ID number	Location	Issue	Comment/ Notes
112, 116	Macquarie Centre crossing Herring Road.	Inconsistent crossing treatments at bus interchange with zebra crossing, stairs and signalised pedestrian crossing.	It is understood that Transport for NSW is investigating improved pedestrian crossing works as part of the Macquarie Centre bus interchange upgrade
118	Waterloo Road near Macquarie Centre entry (photo looking northwest along Waterloo Road)	There is no signalised pedestrian crossing on the west arm of the existing traffic signals near Cottonwood Crescent. A strong pedestrian desire line from bus stop users on Waterloo Road, north to cross Waterloo Road was observed.	

Table 10: Crossing facilities audit findings issues

ID number	Location	Issue	Comment/ Notes
113	Waterloo Road near Byfield Road.	A strong pedestrian desire line to cross Waterloo Road near Byfield Road was observed during the physical audit. No crossings or refuges are provided to cross Waterloo Road at this location. There are limited mid-block crossing opportunities along Waterloo Road between Herring Road and Khartoum Road.	
119, 120	Waterloo Road and Khartoum Road	The existing roundabout at Waterloo Road and Khartoum Road intersection presents limited safe crossing opportunities for pedestrians.	
117	Lyonpark Road and Byfield Road	A strong desire line to cross Lyonpark Road at this intersection was observed. The roundabout at this location presented limited safe crossing opportunities for pedestrians.	The future fine grain network provides an opportunity to suggest a proposed new road south of this location.

ID number	Location	Issue	Comment/ Notes
121,122	Lyonpark Road and Paul Street	The roundabout at this location presented limited safe crossing opportunities for pedestrians.	The future fine grain network provides an opportunity to suggest a proposed new road connecting Lyonpark Road and Herring Road at this intersection.
114, 127, 133	Lane Cove Road	Pedestrians were observed crossing Lane Cove Road.	Previous consultation with RMS suggests there is insufficient capacity along Lane Cove Road to warrant a signalised pedestrian crossing. Policy directions could be explored at this location to improve pedestrian safety at this location.
114, 125,126	Waterloo Road and Wicks Road.	There are no formal pedestrian crossing facilities at any of the arms of the Waterloo and Wicks Road intersection.	It is understood that Transport for NSW is undertaking crossing facility upgrades at this point as part of the North Ryde Precinct Redevelopment.

ID number	Location	Issue	Comment/ Notes		
129	Epping Road and Pittwater Road.	There is limited connectivity to the bus stops located on Epping Road near Pittwater Road.	Pedestrian capacity along this warrant is unlikely to meet warrants for an overhead crossing. The cost benefits of an additional crossing underground crossing is unlikely to meet Council requirements.		
130	Julius Avenue	Limited pedestrian crossing facilities at this location.	A pedestrian refuge at this location has gone to traffic committee previously and was not approved due to poor sight distances and conflict with driveways etc. Further traffic calming measures should be considered at this location to allow for safe crossing.		
123	Giffnock Avenue and Lyonpark Road	No crossing opportunity from south of Giffnock Ave to Waterloo connection path			

ID number	Location	Issue	Comment/ Notes
132	Herring Road and Ivanhoe Place	No crossing to Moorling College either side of roundabout	
124	Coolinga Street and Giffnock Avenue	No crossing opportunity from north of Giffnock / west of Coolinga until Waterloo Road	
128	Culloden Road and Waterloo Road	No safe crossing opportunity on Gymnasium Road	
131	Herring Road and Windsor Road	Poor crossing point no kerb ramps in refuge or north side of road.	

#### Figure 36: Crossing facility audit findings



# 9 Potential Future Pedestrian Demand

The growth planned for Macquarie Park has the potential to impact the pedestrian routes, facilities and requirements for the area. This section presents an indicative potential future pedestrian demand for the study area to inform potential future crossing requirements for the study area.

An indication of the potential future pedestrian demand for the study area has been gathered through analysis of:

- 2011 Method of Travel to Workplace Census Data (employee method of travel to work trips and residential method of travel to work trips).
- Proposed pedestrian network (Macquarie Park Plan Review, August 2012)
- Proposed Floor Space Ratio (Macquarie Park Plan Review, August 2012)
- Development Applications in the area (City of Ryde, Department of Planning and Infrastructure)

The maps below present potential future pedestrian demand for the study area, across three stages:

- 1. Potential Future Pedestrian Demand 0 5 years (Figure 37)
- 2. Potential Future Pedestrian Demand 5 10 years (Figure 38)

Potential Future Pedestrian Demand 10 – 20 years (Figure 39)

## 9.1 Indicative additional population

The indicative additional population consisting of employees, residents, students and staff is displayed in Table 11. Note that this is added to existing transport demand in deriving a projected mode share using the method described in section 8.2 below.

Table 11: Indicative additional population for Macquarie Park (source: architectus Macquarie Park Plan Review Issues Paper, 2012)

Stage	Additional employees	Additional residents	Additional students and staff
0-5 years	10,500	2,000	5,000
5 – 10 years	25,000	3,500	10,000
10 - 20 years	45,000	6,800	23,000

## 9.2 **Projected mode share**

#### 9.2.1 Employees

The projected change in mode share for employees for years 2011, 2016, 2021, and 2031 was derived through using 2011 Census Data and the Macquarie Park mode share target of 40% by non-car modes.

2011 Census Data for those travelling to Macquarie Park and North Ryde SLA provided an understanding of the current mode share, and the mode splits were then assigned for years 2016, 2021 and 2031 towards Macquarie Park's mode share target of 40% by non-car modes and assigned to the indicative additional population outlined in Table 11. The employee mode share and additional employee population for 2016, 2021 and 2031 are shown in Table 12, Table 13 and Table 14.

The projected mode share for employees guided an understanding of the distribution of pedestrian demand throughout the pedestrian network for years 2016, 2021 and 2031.

#### 9.2.2 Residents

There is currently limited data for mode share data for residents in the Macquarie Park area. The Macquarie Park and Marsfield SLA mode share for residents Method of Travel to Work has therefore been applied to the study area. It is assumed that there would be minimal change in mode share across the years 2016. 2021 and 2031. The projected mode share distribution has been assigned to the additional residential population outlined in Table 11. This is shown in Table 15.

#### 9.2.3 Students

It is assumed that additional students in the area would be walking within a localised catchment within the study area, that is, within Macquarie University and between Macquarie University and Macquarie Centre. As such, it is considered that the change in the student population would not have a significant effect on the pedestrian movements in the study area, and therefore a mode share analysis has not been conducted for students.

	2011 MTWP Data		2016 Target		Change	
Mode of travel	Number	%	Number	%	Number	%
Train	5996	12.4%	8815	15.0%	2819	26.8%
Bus	2575	5.3%	4114	7.0%	1539	14.7%
Car	33145	68.7%	37612	64.0%	4467	42.5%
Bicycle	413	0.9%	588	1.0%	175	1.7%
Walk	959	2.0%	1175	2.0%	216	2.1%
Motorbike	388	0.8%	588	1.0%	200	1.9%
Did not go to work	4341	9.0%	5289	9.0%	948	9.0%
Other	451	0.9%	588	1.0%	137	1.3%
Total	48268	100%	58768	100.0%	10500	100.0%

Table	12: Pro	oject	employe	e mode s	plit for	2016	(stage	0-5	vear)
							$\sim \omega$		/

Table 13: Projected employee mode split for 2021 (stage 5 – 10 years)

	2011 MTWP Data		2021 Target		Change	
Mode of travel	Number	%	Number	%	Number	%
Train	5996	12.4%	12456	17.0%	6460	25.8%
Bus	2575	5.3%	5861	8.0%	3286	13.1%
Car	33145	68.7%	43961	60.0%	10816	43.3%
Bicycle	413	0.9%	1099	1.5%	686	2.7%
Walk	959	2.0%	1832	2.5%	873	3.5%
Motorbike	388	0.8%	733	1.0%	345	1.4%
Did not go to work	4341	9.0%	6594	9.0%	2253	9.0%
Other	451	0.9%	733	1.0%	282	1.1%
Total	48268	100%	73268	100.0%	25000	100.0%

Table 14: Projected employee mode split for 2031 (10 - 20 years)

	2011 MTWP Data		2031 Target		Change	
Mode of travel	Number	%	Number	%	Number	%
Train	5996	12.4%	19586	21.0%	13590	30.2%
Bus	2575	5.3%	9327	10.0%	6752	15.0%
Car	33145	68.7%	49432	53.0%	16287	36.2%
Bicycle	413	0.9%	1865	2.0%	1452	3.2%
Walk	959	2.0%	2798	3.0%	1839	4.1%
Motorbike	388	0.8%	933	1.0%	545	1.2%
Did not go to work	4341	9.0%	8394	9.0%	4053	9.0%
Other	451	0.9%	933	1.0%	482	1.1%
Total	48268	100%	93268	100.0%	45000	100.0%

	2011 MTWP Data for Macquarie Park and Marsfield	2016 Targ	et	2021 Targ	et	2031 Targ	et
Mode of travel	%	Number	%	Number	%	Number	%
Train	11.6%	240	12.0%	420	12.0%	816	12.0%
Bus	13.5%	280	14.0%	490	14.0%	952	14.0%
Car	53.1%	1036	51.8%	1813	51.8%	3522	51.8%
Bicycle	0.6%	20	1.0%	35	1.0%	68	1.0%
Walk	8.4%	168	8.4%	294	8.4%	571	8.4%
Motorbike	0.6%	12	0.6%	21	0.6%	41	0.6%
Did not go to work	11.4%	228	11.4%	399	11.4%	775	11.4%
Other	0.8%	16	0.8%	28	0.8%	54	0.8%
Total	100%	2000	100.0 %	3500	100.0 %	6800	100.0 %

Table 15: Projected residential mode split for three stages

# **9.3 Potential footpath networks and pedestrian movements**

Potential footpath networks across three stages (0-5 years, 5 - 10 years and 10 - 20 years) have been developed through aligning the proposed pedestrian network (Macquarie Park Plan Review, August 2012) and the known Development Applications in the area (City of Ryde, Department of Planning and Infrastructure). These networks are displayed in Figure 37, Figure 38, and Figure 39.

Pedestrian movements for train and bus passengers moving between potential commercial and residential developments and train and bus nodes have been assigned based on available footpath network at each stage of the development

The indicative pedestrian movements have been used to inform the crossing opportunity recommendations in Section 9.4 Table 19.

Figure 37: Potential future pedestrian demand 0- 5 years



Figure 38: Potential future pedestrian demand 5 - 10 years



Figure 39: Potential future pedestrian demand 10 - 20 years



# 10 Recommended PAMP Staged Action Plan

Developing a prioritised Staged Action Plan within the PAMP helps to link pedestrian improvements to state and local government planning instruments and Council's requirements under Sections 94 of the Environmental Planning and Assessment Act 1979 (NSW). The Staged Action Plan places the PAMP action recommendations into a clear format that is required for Council and RMS funding approval processes.

The recommended PAMP Work Program is designed to be a 'living document' in the sense that Council will be able to make changes to and update the program where relevant to suit the Macquarie Park context.

### **10.1** General Action Recommendations

#### **10.1.1** Footpath Maintenance

Council should continue their footpath maintenance program to ensure that paths remain accessible and in good condition. Tree maintenance / streetscape maintenance program can ensure the pedestrian pathway is clear and unobstructed. 2m height and footpath width clearance envelope should be maintained along the footpath.

#### 10.1.2 Pedestrian Infrastructure Provision for New Development

Pedestrian infrastructure provision should be included as part of the new development and sub-division requirement. When new developments are proposed, developers are required to construct footpaths, driveways and potentially any directly associated crossing facilities as part of the development consent.

Voluntary planning agreements may also be used for the construction of pedestrian infrastructure. In addition to requirements for pedestrian infrastructure as a condition of consent, developers could also be required to contribute funding through the S94 Plan. When the S94 funding and future infrastructure plans are being updated they should reflect the recommendations of this PAMP.

#### **10.1.3 Bus Stop DDA Audit**

It is recommended that Council should undertake a comprehensive Bus Stop DDA Audit to be undertaken by Council and referred to the Access Advisory Committee for comment and discussion.

The Bus Stop DDA Audit aim is to review the compliance status of its bus infrastructure with the Disability Discrimination Act 1992 and the Australian Human Rights Commission guideline. The comprehensive Bus Stop DDA Audit would allow Council develop a program to align with bus stop compliance, staged as the following: 31 Dec 2012 55%; 31 Dec 2017 90%; 31 Dec 2021 100%.

Council has undertaken a DDA audit of the bus stops, and Council's proposed Management Plan for 2010 - 11 includes the upgrades of bus stops.

#### 10.1.4 Lighting

The usage of a pedestrian path at night time or during winter requires the path to be well lit. Path lighting enables pedestrians to perceive hazards and to orient their travel. It can also improve the perceived security by enabling pedestrians to recognise potential threats from other people and to be seen by oncoming traffic. It is recommended that a night lighting audit be conducted to ensure lighting is adequate in the area and contributes to a sense of safety for pedestrians and vehicles. Areas with accidents related to poor lighting, or identified through community consultation should be prioritised.

## **10.2 PAMP** Actions

Possible actions for council to be developed as part of the PAMP process are wide ranging and should be guided by the NSW Safe System Approach<sup>1</sup> that has an overarching objective of safe travel; that is, fewer fatalities and serious injuries on NSW Roads. The NSW Safe System Approach is shown in the table below.

	NSW Safe System Approach
Safe Travel	Fewer fatalities and serious injuries on NSW roads
Safe Speed	Speeds set at a level more forgiving of human error and reflecting risk to road users
Safer People	Positive road user behaviours that reduce the risk and severity of crashes
Safer Roads	Roads designed, constructed and maintained to reduce the risk of crashes and harm to people if a crash does occur
Safer Vehicles	Vehicles designed, constructed, and maintained to reduce the risk of crashes and harm to people if a crash does occur

Within the NSW Safe System Approach, most relevant to this PAMP is "Safer Roads". This PAMP study and the resulting action recommendations focus on the engineering actions and recommendations. The action recommendations are developed primarily through physical field audits undertaken on all the high priority routes identified in the PAMP network as well as through the literature review and consultation comments.

# **10.3** Specific Action Recommendations

The location of specific issues were identified in the audit and presented in the Staged Action Plan of Appendix A. The locations of all issues were also registered in a separate GIS database with coordinates. The main issues and general recommended actions are summarised in Table 16 below.

Table 16 Break down of issues and general recommended actions

Issues	Recommended Actions
No kerb ramp	Install new kerb ramp

<sup>&</sup>lt;sup>1</sup> RMS NSW: Source: www.rms.nsw.gov.au
Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design
Kerb ramp lip/step	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design
No path – Existing footpath	Install new footpath -1.8m wide
No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)
No path - Type 2 footpath	Install new footpath - Type 2 (Min. 3m wide footpath to 4.5m)
No path - Type 3 footpath	Install new footpath - Type 3 (2m wide footpath, up to 3.8m)
No path - Type 4 footpath	Install new footpath - Type 4 (1.8m wide)
Footpath uneven or cracked – Across all footpaths	Footpath grinding
Bus stop – No shelter, no seating	Bus stop upgrade to accessible (seat, shelter, paving)
Bus stop – No shelter	Install bus shelter
Long pedestrian waiting times at signals	Consultation with RMS to consider shorter waiting times for pedestrians. Further traffic modelling and investigation may be required.
Signage required	Install CoR Wayfinding Sign
Lighting required	Install pedestrian path lighting
Footpath obstruction - trees	Trim trees
Narrow path – Existing footpath	Remove existing and install new footpath – Type 4 (1.8m wide)
Narrow path - Type 1 footpath	Remove existing and install new footpath – Type 1 (Min. 3m to 4.5 m wide)
Narrow path - Type 2 footpath	Remove existing and install new footpath – Type 2 (Min.3m wide footpath to 4.5m)
Narrow path - Type 3 footpath	Remove existing and install new footpath – Type 3 (2m wide footpath, up to 3.8m)
Narrow path - Type 4 footpath	Remove existing and install new footpath – Type 4 (1.8m)
Cycling path conflict	Location should be considered in the Bike Plan, with potential path separation at this location
Cycling path potential connection	Further investigation required. Location to be considered with further investigation in bicycle strategy

Note that Types of footpaths refer to classifications from the Public Domain Manual.

Specific actions regarding crossing issues are presented in Table 19: Crossing opportunity recommendations.

# **10.3.1** Storage and access needs for pedestrians with mobility impairments and other disabilities

Along the high priority pedestrian routes in particular it is important that access is provided for pedestrians with mobility impairments and other disabilities.

The high priority pedestrian routes were found to provide restricted accessibility at the following locations:

- Roundabout splitter islands crossings at Waterloo and Khartoum do not provide adequate storage for wheelchair users and do not provide any audible crossing signal for visually impaired users or any visual crossing signal for hearing impaired users.
- Lack of any audible signal to cross Waterloo Rd between Lane Cove Rd and near Macquarie Shopping Centre.

#### **10.3.2 Policy recommended actions**

#### **Implementing Local Area Traffic Management Devices**

Austroads outlines a series of treatments aimed at Local Area Traffic Management. Where issue locations have been identified and formal crossing treatments are not warranted or deemed appropriate, appropriate Local Area Traffic Management Plan measures should be investigated for considered for application. A list of LATM measures and their relative effectiveness are shown in Appendix E.

#### Land Use Planning and Policy

Review land use planning and policy for the Macquarie Park area should be undertaken to ensure that a mix of services is provided for within the precinct. This would encourage pedestrian activity within the precinct. An example of an area where this would be relevant is Lane Cove Road. Advice from the RMS suggests that there are limited options for implementing pedestrian enhancements in this area in the form of additional signalised pedestrian facilities or overhead pedestrian bridges. A policy direction towards encouraging and enabling food outlets and other activities on the western side of Lane Cove Road would limit the need for pedestrians crossing to access services, especially during the lunch peak period.

#### **Review of Wayfinding Signage**

The wayfinding signage that City of Ryde has implemented provides a location map and notes key pedestrian attractors and generators in the area. It is recommended that the design of the wayfinding signage be reviewed with reference to the Guide Dogs Association guidance on signage to ensure the wayfinding signage is accessible for people with vision impairment. New signage can take advantage of QR codes as seen already on signage in Macquarie Park. People with disability with a special App can access this information. This allows for real time access to information, such roadwork obstructions, new routes, and diversions for pedestrians.

## **10.4** Crossing opportunity recommendations

Crossing facility issues have location specific recommended actions and are presented below. Recommendations have been determined based on the relevant RMS warrant for the crossing opportunity.

The relevant sources for RMS warrants include:

- RMS Roads & Maritime Services Austroads Guide Supplements. Austroads Guide to Traffic Management Part 6- Intersections, Interchanges and Crossings. RTA/PUB.11.020. 19 January 2011.
- RMS Technical Direction. Traffic Signal Design Guidelines. Section 2. Warrants are provided for signalised marked foot crossings at intersections, signalised marked foot crossings at mid-block intersections and other locations. RTA/PUB.11.020 February 2008.

For inclusion in the warrant calculation the following assumptions were made:

- The existing and potential additional pedestrian volumes were included in the warrant calculation where existing pedestrian volumes are available.
- Where existing pedestrian volumes are not available, the pedestrian volumes on each footpath and crossing opportunity locations have been determined by the potential additional patronage assigned to the future pedestrian network.
- Existing peak hour traffic volumes were included in the warrant calculation based on traffic data available (Miovision, 2011). We have not factored in potential additional peak hour traffic volumes. However we note that for future years, this would increase the warrant calculation.
- AM Peak
- Where lunchtime peak hour traffic volumes were not available, lunchtime peak hour traffic volumes are assumed to be half the combined AM/PM peak volumes.

The RMS has specific requirements relating to vehicular and pedestrian volumes where it will consider the installation of traffic signals and pedestrian signals at an intersection. These are commonly referred to as signal warrants. Section 2 of the RMS Traffic Signal Design Manual (updated December 2010) outlines a series of different warrants for the installation of traffic signals at intersections and for the installation of Signalised Mid-Block Marked Foot Crossings. These are summarised in Table 17 and Table 18.

Crossing opportunities identified through the PAMP are displayed in Figure 40.

Warrant	Requirements
Traffic Demand	For each of the four one-hour periods of an average day: (i) The major road exceeds 600 vehicles/hour in each direction; and (ii) The minor road exceeds 200 vehicles/hour in one direction
Continuous Traffic	For each of the four one-hour periods of an average day: (i) The major road flow exceeds 900 vehicles/hour in each direction; and (ii) The minor road exceeds 100 vehicles/hour in one direction; and (iii) The speed of traffic on the major road or limited sight distance from the minor road causes undue delay/hazards to the minor road vehicles; and (iv) There is no other nearby traffic signal site easily accessible to the minor road vehicles
Pedestrian Safety	<ul> <li>For each of the four one-hour periods of an average day:</li> <li>(i) The pedestrian flow crossing the major road exceeds 150 persons/hour; and</li> <li>(ii) The major road exceeds 600 vehicles/hour in each direction or, where there is a central median at least 1.2m wide, 1000 vehicles/hour in each direction</li> </ul>
Pedestrian Safety – high speed road	For each of the four one-hour periods of an average day: (i) The pedestrian flow crossing the major road exceeds 150 persons/hour; and (ii) The major road exceeds 450 vehicles/hour in each direction or, where there is a central median at least 1.2m wide, 750 vehicles/hour in each direction; and (iii) The 85 <sup>th</sup> percentile speed on the major road exceeds 75km/hr
Crashes	<ul><li>(i) The intersection has been the site of an average three or more reported tow-away or casualty traffic accidents per year over a three year period, where traffic signals could have prevented the accidents; and</li><li>(ii) The traffic flows are at least 80% of the appropriate flow warrants</li></ul>

Table 17: Warrants for Traffic Signals at Intersections. Source: RMS.

Table 18: Warrants for Signalised Mid-Block Marked Foot Crossings. Source: RMS.

Warrant	Requirements
a	For each of the four one-hour periods of an average day: (i) The pedestrian flow crossing the road exceeds 250 persons/hour; and (ii) The minor road exceeds 200 vehicles/hour in one direction
b	For each of the four one-hour periods of an average day: (i) The pedestrian flow exceeds 175 persons/hour; and (ii) The vehicle flow exceeds 600 vehicles/ hour in each direction or where there is a central median of at least 1.2 m wide, 1000 vehicles/hour in each direction; and (iii) There is no other pedestrian crossing or signalised marked foot crossing within a reasonable distance.

Note that the calculations presented in Table 19 below are indicative only. Pedestrian and traffic surveys that meet RMS requirements would be needed to be undertaken prior to determining the suitability of each treatment, to be undertaken at the timeframe recommended in Table 19.

ID Number	Location	Issue	Pedestrian and vehicle volume data	Could warrants be satisfied?	Recommendation
248	Talavera Road – 200m west of Khartoum Road (Future crossing point with fine grain network)	Predicted pedestrian crossing point to connect to new footpath associated with fine grained road network	AM - P=150, V=2,000, PV=300,000 Midday - P=200, V=1,200, PV=240,000 PM - P=150, V=2,000, PV=300,000 N.B. These warrants are based on predicted future pedestrian and traffic volumes at 10-20 years	Yes – Traffic Signals at Intersections (Pedestrian Safety warrant)	When the new fine grained road network connection is constructed in 10-20 years, modelling indicates that the warrant may be met for a new signalised pedestrian crossing. Consideration also needs to be given to the network wide traffic efficiency impacts resulting from the new signals
118	Waterloo Road / Shrimptons Creek	Existing desire line. No pedestrian crossing facility on western arm of existing traffic signals	NA Pedestrian counts not available V, P, PV: count not available.	Warrant calculation cannot be conducted as counts are not available. No	Investigate installation of additional pedestrian crossing signals on western arm of existing signalised intersection in consultation with RMS

#### Table 19: Crossing opportunity recommendations

ID Number	Location	Issue	Pedestrian and vehicle volume data	Could warrants be satisfied?	Recommendation
113	Waterloo Road / Byfield Street	Existing desire line and dangerous crossing location at roundabout	At the Byfield approach AM P=216, V=640, PV=138,240 Midday – P=294 V=300, PV=88,200 PM - P=126, V=890, PV=112,140 NB: These warrants are based on existing pedestrian and traffic volumes.	Warrant not quite met at present. Given how close the midday counts are to meeting warrants, it is suggested that additional pedestrian surveys be undertaken and growth is monitored and the warrant for a Traffic Signals at Intersection could be met in $5 - 10$ years.	Monitor growth. When warrants are met, consider providing a signalised intersection pedestrian crossing to replace existing roundabout (NB: Consideration also needs to be given to the network wide traffic efficiency impacts resulting from the new signals
249, 248	Talavera Road – 300m west of Lane Cove Road. (Future crossing point with fine grain network)	Future pedestrian crossing point to connect with footpaths associated with fine grain network	AM - $P=190$ , V=1,400, PV=266,000 Midday - $P=200$ , V=700, PV=140,000 PM - $P=190$ , V=1,570, PV=298,300 NB: These warrants are based on predicted future pedestrian and traffic volumes at 10-20 years	Yes – Traffic Signals at Intersections (Pedestrian Safety warrant)	When the new fine grained road network connection is constructed in 10-20 years, modelling indicates that the warrant may be met for new signalised pedestrian crossing. Consideration also needs to be given to the network wide traffic efficiency impacts resulting from the new signals.

ID Number	Location	Issue	Pedestrian and vehicle volume data	Could warrants be satisfied?	Recommendation
250	Waterloo Road 300m west of Lane Cove Road. (Future crossing point with fine grain network)	Future pedestrian crossing point to connect with footpaths associated with fine grain network	Crossing Waterloo Road AM P=750, V=1160, PV=870,000 Midday 2 hrs- P=300 V=900, $PV=270,000$ PM - P=750, V=2090, PV=1,567,500 NB: These warrants are based on predicted future pedestrian and traffic volumes at 10-20 years	Yes – Traffic Signals at Intersections (Pedestrian Safety warrant)	When the new fine grained road network connection is constructed in 10-20 years, modelling indicates that warrant may be met for new signalised pedestrian crossing. Consideration also need to be given to the network wide traffic efficiency impacts resulting from the new signals
251	Khartoum Rd - 200m north of Waterloo Rd (Future crossing point with fine grain network)	Future pedestrian crossing point to connect with footpaths associated with fine grain network	Crossing Khartoum Road AM P=50, V=940, PV=47,000 Midday 2 hrs- P=150 V=470, PV=70,500 PM - P=50, V=980, PV=49,000 NB: These warrants are based on predicted future pedestrian and traffic volumes at 10-20 years	No	Modelling indicates that in 10-20 years time, warrant still not met for signalised intersection based on predicted pedestrian volumes. However, actual growth should be monitored.

ID Number	Location	Issue	Pedestrian and vehicle volume data	Could warrants be satisfied?	Recommendation
117	Lyonpark Road just South of Byfield St	Pedestrian desire line and pedestrian/vehicle conflict at existing uncontrolled midblock pedestrian crossing	AM P=30, V=955, PV=28,650 Midday – P=78 V=500, PV=39,000 PM - P=30, V=1230, PV=36,900 NB: These warrants are based on existing pedestrian and traffic volumes	Zebra Crossing warrant PV>60,000, $P \ge 30$ , $V \ge 500$ (3 x 1hour periods/day), NB: In certain circumstances PV $\ge 45,000$ if justification provided. Pedestrian refuge warrant. Traffic Committee Practice is $P \ge 15$ over (3 x 1hour periods/day) and can't be installed on multilane roads	Warrant not met for zebra crossing with existing volumes, however warrant of $\geq$ 45,000 could be met in 5 – 10 years to align with the future pedestrian network.
119, 120	Waterloo Road/ Khartoum Road	Existing strong pedestrian desire line and identified hazardous location with high levels of pedestrian/vehicle conflict at existing roundabout. The current interim measures in place of intersection (with a refuge to the North of Waterloo Rd) are not ideal.	Pedestrian and traffic counts were not undertaken at this location due to crossing facilities being considered by RMS.	Signalised intersection has been approved in principle by the RMS. A concept design has already been developed for this intersection. However, still awaiting technical approval from RMS . There is ongoing discussion between RMS and Council in relation to the temporary and final options at this location.	Install signalised intersection with pedestrian phase on all four legs to replace existing roundabout as soon as possible. A signalised intersection is critically important to improve pedestrian safety at this location and provide connectivity between Macquarie Park and Macquarie University Station.

ID Number	Location	Issue	Pedestrian and vehicle volume data	Could warrants be satisfied?	Recommendation
112, 116	Macquarie Centre crossing Herring Road.	Existing strong pedestrian desire lines and identified hazardous location with high levels of pedestrian/vehicle conflict. Inconsistent crossing treatments at bus interchange with zebra crossing, stairs and signalised pedestrian crossing.	Pedestrian and traffic counts were not undertaken at this location due to crossing facilities being considered by Transport for NSW.	It is understood that Transport for NSW is investigating pedestrian crossing works as part of the Macquarie Centre bus interchange upgrade.	It is understood that Transport for NSW is investigating pedestrian crossing works as part of the Macquarie Centre bus interchange upgrade.
121,122	Lyonpark Road and Paul Street	The roundabout at this location presented limited safe crossing opportunities for pedestrians.	AM P=12 Midday – P=n/a PM - P=14 NB: These warrants are based on existing pedestrian and traffic volumes.	Further pedestrian counts would be required to confirm installation of pedestrian refuges in the short term. For pedestrian refuges warrant Traffic Committee Practice is $P \ge 15$ over (3 x 1hour periods/day) and refuges can't be installed on multilane roads	Install pedestrian refuges at existing island in the short term subject to confirming pedestrian volumes. Future fine grain network suggests a proposed new road connecting Lyonpark Road and Herring Road at this intersection. This presents an opportunity to provide a signalised pedestrian crossing at this location.

ID Number	Location	Issue	Pedestrian and vehicle volume data	Could warrants be satisfied?	Recommendation
133, 127	Lane Cove Road near McDonalds (between Talavera and Waterloo)	Existing strong pedestrian desire line and identified hazardous location. Pedestrians were observed crossing Lane Cove Road near McDonalds at lunchtime.	NA	Previous consultation with RMS suggests there would be an unacceptable increase in traffic delays along Lane Cove Road to warrant a signalised pedestrian crossing.	It is understood that signalised crossing at this location would not be approved along Lane Cove Road by RMS. Further pedestrian safety measures are therefore recommended to be investigated at this location in the short term, for example pedestrian fencing. Policy measures such as encouraging land use change on the eastern side of Lane Cove Road could be implemented to reduce the need to cross at this point. Cost/ benefits of an additional crossing pedestrian bridge crossings are unlikely to meet Council and RMS requirements. If road conditions change, further consultation should be conducted with RMS.
125,126	Waterloo Road and Wicks Road.	There are no formal pedestrian crossing facilities at any of the arms of the Waterloo and Wicks Road intersection.	Pedestrian and traffic counts were not undertaken at this location due to crossing facilities being considered as part of the North Ryde Precinct Redevelopment.	Intersection upgrades and pedestrian bridge to be installed as part of Transport for NSW North Ryde Precinct Redevelopment.	It is understood that Transport for NSW is undertaking crossing facility upgrades at this point as part of the North Ryde Precinct Redevelopment including: - Intersection upgrades and modifications at Wicks Road and Waterloo Road and Epping Road. - Pedestrian bridge over the Hills Motorway

ID Number	Location	Issue	Pedestrian and vehicle volume data	Could warrants be satisfied?	Recommendation
115, 140	Wicks Road and Epping Road.		Pedestrian and traffic counts were not undertaken at this location due to crossing facilities being considered as part of the North Ryde Precinct Redevelopment		It is understood that Transport for NSW is undertaking crossing facility upgrades at this point as part of the North Ryde Precinct Redevelopment.
129	Epping Road and Pittwater Road.	There is limited connectivity to the bus stops located on Epping Road near Pittwater Road. Pedestrians can cross using existing two phases of lights on W and S side of intersection but no direct formal crossing on E side of intersection.	Pedestrian counts not available.	No	It is not possible to provide a further signalised crossing arm on the E side of the existing intersection due to required level of service for this intersection. Pedestrian demand at this location is unlikely to meet warrants for an overhead crossing. Cost/ benefits of an additional crossing underground crossing are unlikely to meet Council requirements. Recommendation is to monitor situation and pedestrian behaviour. If required, install pedestrian fencing.
130	Julius Avenue just south of Richardson Place	Limited pedestrian crossing facilities at this location.	n/a	For pedestrian refuges warrant Traffic Committee Practice is P≥15 over (3 x 1hour periods/day) and refuges can't be installed on multilane roads	A pedestrian refuge at this location has gone to traffic committee previously and was not approved due to poor sight distances and conflict with driveways etc. Further traffic calming measures should be considered at this location to allow for safe crossing.

ID Number	Location	Issue	Pedestrian and vehicle volume data	Could warrants be satisfied?	Recommendation
123	Giffnock Avenue and Lyonpark Road	No crossing opportunity from south of Giffnock Ave to Waterloo connection path	n/a	For pedestrian refuges warrant Traffic Committee Practice is $P \ge 15$ over (3 x 1hour periods/day) and refuges can't be installed on multilane roads	Install pedestrian refuges at existing island.
124	Coolinga Street and Giffnock Avenue	No crossing opportunity from north of Giffnock / west of Coolinga until Waterloo Road	n/a	For pedestrian refuges warrant Traffic Committee Practice is $P \ge 15$ over (3 x 1hour periods/day) and refuges can't be installed on multilane roads	Install pedestrian refuges at existing island.
128	Culloden Road and Waterloo Road	No safe crossing opportunity on Gymnasium Road	n/a	n/a	Crossing opportunity to be considered with Macquarie University masterplan developments
131	Windsor Drive at Herring Road	Poor crossing point no kerb ramps in existing island or north side of road	Pedestrian volumes not available. Observations suggest low pedestrian volumes.		Further monitoring to determine if warrant for signalised mid block crossing would be met present or in future.
132	Herring Road and Ivanhoe Place	Hazardous pedestrian crossing conditions at existing roundabout	Pedestrian volumes not available. Observations suggest low pedestrian volumes.	Signalised pedestrian crossing to be considered with potential future development of the Macquarie University and Herring Road.	Signalised pedestrian crossing to be considered with potential future development of the Macquarie University and Herring Road.

ID Number	Location	Issue	Pedestrian and vehicle volume data	Could warrants be satisfied?	Recommendation
21 (including 102, 109, 180)	Epping Road north near Rivett Road at bus stop.	Intersection at Rivett Road and Lucknow Rd is hazardous for pedestrians. Pedestrian pathways on Epping Road are constrained due to slopes.	Pedestrian volumes not available.	N/A	Stairs to be installed set back from the intersection. Standard kerb ramps to be provided at all crossing points. Provide pedestrian island at Rivett Road/Lucknow St intersection.

**P** = Pedestrian volumes **V** = Vehicle volumes

#### Figure 40: Crossing opportunities map



## 11 Facilities Implementation Prioritisation

Prioritisation of the works has been considered on the nature of the works, location of the works and network connectivity. The works were assigned a priority of 1, 2 or 3 as shown in Table 20.

Table 20: Staged Action Plan Priority

Work Priority	Score	Priority	Stage of works
High	60-100	1	Short term works (0-5 years)
Medium	40-60	2	Medium term works (5-10 years)
Low	0-40	3	Long term works (10-20 years)

The details of the Staged Action Plan Prioritisation Criteria and weightings were developed in consultation with the key stakeholders and presented in Table 21. This prioritisation method and weighting was developed with reference to the RMS PAMP guide. Each of the issues identified through the PAMP were assessed against the criteria below to prioritise the works.

Table 21: Staged Action Plan Prioritisation Criteria

Work Program Prioritisation Criteria			
	CRITERION	Score	
1	Nature of Works		
	New pedestrian crossing facility (intersections/footbridges/underpasses etc)	8-9	
	Install new footpath, shared path or kerb ramp for missing links	6-7	
	Replacement/upgrade of facilities such as existing footpath or kerb ramp etc to remove hazards/improve safety	6-7	
	Widening of footpath to increase capacity	1-5	
	Other	1-5	
2	Proximity to Pedestrian Generators and Attractors		
	Train Stations, Shopping Centre, University or Schools within 500 m of travel	8-9	
	Train Stations, Shopping Centre, University or Schools within 250 m of travel	6-7	
	Offices, Multistorey Residential development, Cafes, Bus Stops within 250 m of travel	3-5	
	Offices, Multistorey Residential development , Cafes, Bus Stops within 500 m of travel	1-2	
	Greater than 500 m to the above pedestrian generators and attractors travel	0	
3a	Estimated pedestrian volume (2 way flow along particular footpath or crossing point) along pedestrian paths		
	Very high volume >250 pedestrians/hour (P)	16-18	

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	High volume 150-250 pedestrians/hour (P)	11-15
	Medium volume 50-150 pedestrians/hour (P)	6-10
	Low volume <50 pedestrians/hour (P)	0-5
3b	OR Estimated pedestrian/vehicle conflict volume (pedestrian per hour multiplied by traffic volume per hour) for pedestrian crossing locations across roads and driveways	
	Very High conflict V>850, P>200 and PV>250,000 across road (NB pedestrian underpass/overpass warrant)	16-18
	High conflict > 150 P, >600V and PV>90,000 across roads (NB signalised intersection warrant)	11-15
	Medium conflict >30 P >500V and >60,000 PV across roads (NB hourly pedestrian crossing warrant)	6-10
	Low conflict <30P, <500V and <60,000 PV	0-5
4	Identified hazardous area (from consultation issues or PAMP observation)	
	High (>3 identified hazards within 180m radius)	11-14
	Medium (2-3 identified hazards within 180m radius)	6-10
	Low (1 identified hazard within 180m radius)	1-5
	None	0
5	Identified pedestrian crashes	
	3 or more injury crashes, or 1 or more fatality crashes reported in five years	11-14
	2 injury crashes reported in five years	6-10
	1 injury crashes reported in five year	1-5
	0 crashes reported in five year	0
6	Community Needs/Disabled Access	
	Located adjacent to a university, train station, school, child care, aged care or disabled services centre.	11-14
	Without this pedestrian infrastructure a high priority pedestrian route will not be able to provide adequate disabled access	11-14
	Without this pedestrian infrastructure a medium priority pedestrian route will not be able to provide adequate disabled access	6-10
	Without this pedestrian infrastructure a low priority pedestrian route will not be able to provide adequate disabled access	1-5
	Not located adjacent to a university, train station, school, child care, aged care or disabled services centre.	0
7	Continuity (for existing or planned pedestrian routes)	
	Provides a link along high priority pedestrian route.	11-14
	Provides a link along medium priority pedestrian route.	6-10
	Provides a link along low priority pedestrian route.	1-5
	Does not provide a link between existing facilities.	0
	Maximum Score	100

## 12 Work Program Estimate Cost

The audit findings along with the issues raised through the consultation process were used to form the PAMP work program for the next 25 years (2013-2028).

## **12.1.1** Estimate Unit Costs

Cost estimates of the recommended works have been developed on the basis of indicative unit costs presented in Table 22 and Table 23. These estimates were developed based on discussions with CoR capital work engineers and recent cost estimates undertaken for councils throughout Sydney. These estimates were used as a guide only for the purpose of budget preparation.

Issues	Recommended Actions	Estimated Unit Cost	Reference (if applicable)
No kerb ramp	Install new kerb ramp (1.2m wide)	\$900	-AS 1428.1 -Austroads Pt 4&6A -City of Ryde
Kerb ramp non- standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design (1.2m wide)	\$1,000	-AS 1428.1 -Austroads Pt 4&6A -City of Ryde
Kerb ramp lip/step	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design (1.2m wide)	\$1,000	-AS 1428.1 -Austroads Pt 4&6A -City of Ryde
No path – (no type identified in Macquarie Park Public Domain Manual)	Install new footpath – 1.8m wide (concrete)	\$150 per sq metre	-City of Ryde -Macquarie Park Public Domain Technical Manual
No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide) (granite full width)	\$600 per sq metre	-City of Ryde -Macquarie Park Public Domain Technical Manual
No path - Type 2 footpath	Install new footpath - Type 2 (Min. 3m wide footpath to 4.5m) (granite with garden)	\$600 per sq metre	-City of Ryde -Macquarie Park Public Domain Technical Manual
No path - Type 3 footpath	Install new footpath - Type 3 (2m wide footpath, up to 3.8m) (granite with garden)	\$600 per sq metre	-City of Ryde -Macquarie Park Public Domain Technical Manual

Table 22: Indicative cost estimates of recommended works

Issues	Recommended Actions	Estimated Unit Cost	Reference (if applicable)
No path - Type 4 footpath	Install new footpath - Type 4 (1.8m wide) (permeable interlocking blocks)	\$250	-City of Ryde -Macquarie Park Public Domain Technical Manual
Footpath uneven or cracked – all types	Footpath grinding	\$25 per metre	
Bus stop – Upgrade to accessible bus stop	Bus stop upgrade to accessible (seat, shelter, paving, lighting)	Shelter with light: \$30,000 Seat on slab: \$2,500 DDA ramps, seat, slab, tactile: \$6,000	
Bus stop – No shelter	Install bus shelter only	\$30,000	
Bus stop – No shelter, no seating, not paved to kerb	Bus stop upgrade to accessible (seat, shelter, paving, lighting)	As per 'Bus stop – upgrade to accessible bus stop'	
Bus stop – No shelter, no seating	Bus stop upgrade to accessible (seat, shelter, paving, lighting)	As per 'Bus stop – upgrade to accessible bus stop'	
Long pedestrian waiting times	Consultation with RMS to consider shorter waiting times for pedestrians. Further traffic modelling and investigation may be required.	To be determined	-No current infrastructure cost. Further investigation required.
Signage required	Install CoR Wayfinding Sign	\$8,000	-Similar design to existing signs on Herring Road at Macquarie University train station
Lighting required	Install pedestrian path lighting	\$8,000 per light	-Macquarie Park Public Domain Technical Manual
Footpath obstruction - trees	Trim trees	\$300	
Narrow path – (no type identified in Macquarie Park Public Domain Manual)	Remove existing and install new footpath – Type 4 (1.8m wide) (permeable interlocking blocks)	\$250	-City of Ryde -Macquarie Park Public Domain Technical Manual
Narrow path - Type 1 footpath	Remove existing and install new footpath – Type 1 (Min. 3m to 4.5 m wide) (granite)	\$600 per sq metre	-City of Ryde -Macquarie Park Public Domain Technical Manual

Issues	Recommended Actions	Estimated Unit Cost	Reference (if applicable)
Narrow path - Type 2 footpath	Remove existing and install new footpath – Type 2 (Min.3m wide footpath to 4.5m) (granite)	\$600 per sq metre	-City of Ryde -Macquarie Park Public Domain Technical Manual
Narrow path - Type 3 footpath	Remove existing and install new footpath – Type 3 (2m wide footpath, up to 3.8m) (granite)	\$600 per sq metre	-City of Ryde -Macquarie Park Public Domain Technical Manual
Narrow path - Type 4 footpath	Remove existing and install new footpath – Type 4 (1.8m) (permeable interlocking blocks)	\$250 per sq metre	-City of Ryde -Macquarie Park Public Domain Technical Manual
Cycling path conflict	Extend path to Min. 3m to 4.5 m wide, shared path (concrete(	\$200 per sq metre	-City of Ryde -Macquarie Park Public Domain Technical Manual
Cycling path potential connection	Further investigation required. Location to be considered with further investigation in bicycle strategy	To be determined	No current infrastructure cost. Further investigation required.
Poor lit area	Trim trees	\$300	
Pedestrian fencing required	Install pedestrian fencing	\$225 per metre	
Pole obstruction at on kerb ramp	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	\$1,500	
Utilities/manhole uneven	CoR to contact utility provider for further works to be carried out by utility provider.	Unknown	No infrastructure costs to City of Ryde.

Note that types of footpaths refer to classifications from the Public Domain Manual.

Estimate costs for crossing opportunity recommendations are presented in Table 23.

Issues	Recommended Actions	Estimated Unit Cost	Reference (if applicable)
Potential signalised pedestrian crossing point	New signalised pedestrian crossing	\$400,000 per site	City of Ryde*
Missing signalised pedestrian crossing arm	Install new pedestrian arm on existing pedestrian crossing	\$100,000 per site	
Potential signalised pedestrian crossing point – mid block	Install new pedestrian crossing mid-block	\$300,000 per site	
Potential zebra foot crossing	Install zebra foot crossing (does not include lighting)	\$50,000 per site	AS 1742.10 Austroads Pt 13 Fig 3.10.
Dangerous crossing point – need to limit pedestrians crossing at this point	Install pedestrian fencing	\$225 per metre	
Safe refuge at crossing point required for pedestrians	Install pedestrian refuge	\$12,000	

Table 23: Estimate costs for crossing opportunity recommendation works.

\*Note that intersection works at Waterloo/Khartoum have been costed separately by CoR as \$700- \$750,000.

It should be noted that these cost estimates are based on typical unit costs for construction estimated from 2012 construction cost and information provided by CoR. The costs estimations have not taken into account specific conditions for each of the proposed work sites. The cost estimates are to be used as guide only for budget preparation.

#### 12.1.2 Summary

The estimated cost for the works included in the work program are summarised in Table 24 below. The work priority and program should be reviewed by Council as part of the annual budget review process.

Category	Action Priority							
		1		2		3	To	tal
Consultation with RMS to consider shorter waiting	¢		То	be	Τc	be	т	he determined
times for pedestrians at selected locations	ф	d	det	ermined	det	termined	10 be determined	
CoR to contact utility provider for further works to	¢		То	be	Τc	be	Т	be determined
be carried out by utility provider.	φ	-	det	ermined	det	termined	10	) be determined
Footpath grinding	\$	-	\$	591	\$	1,999	\$	2,590
Install new signalized crossing (mid block for future	To t	e						
fine grain network)	deter	mined if	\$	-	\$	300,000	\$	300,000
	warra	ants are met						
Install pedestrian refuges	\$	12,000	\$	12,000	\$	12,000	\$	36,000
Install bus shelter	\$	38,500	\$	77,000	\$	269,500	\$	385,000
Install bus shelter only	\$	-	\$	-	\$	60,000	\$	60,000
Install CoR Wayfinding Sign	\$	-	\$	16,000	\$	160,000	\$	176,000
Install new footpath	\$	2,280,311	\$	-	\$	-	\$	2,280,311
Install new kerb ramps	\$	15,700	\$	20,000	\$	4,500	\$	40,200
Install pedestrian path lighting	\$	-	\$	8,000	\$	56,000	\$	64,000
Install signalised pedestrian crossing	¢		¢		¢		¢	
(Khartoum/Wateroo)	\$	-	\$	-	\$	-	\$	-
Install pedestrian fencing	\$	11,250	\$	-	\$	-	\$	11,250
	Tot	be and a second s						
Install pedestrian crossing signal on one arm of the	deter	mined in	¢		¢		¢	
intersection	consultation with		<b>э</b> –		\$ -		φ	-
	RMS							
Pedastrian ungrades (by other parties)	¢		То	be	Тс	be be	¢	
redestrian upgrades (by other parties)	φ	-	det	ermined	det	termined	φ	-
Install signalised pedestrian crossing	\$	-	\$	400,000	\$	-	\$	400,000
Install zebra crossing	\$	-	\$	50,000	\$	-	\$	50,000
Extend width of footpath where narrow	\$	-	\$	216,000	\$	-	\$	216,000
Trim trees	\$	-	\$	300	\$	900	\$	1,200
Install new signalised pedestrian crossing (for	¢		¢		¢	800.000	¢	800 000
future fine grain network)	Э	-	Э	-	Э	800,000	Э	500,000
Total	\$	2,357,761	\$	799,891	\$	1,664,899	\$	4,822,551

Table 24:	PAMP	Work	Program	Cost	Summarv
1 4010 2 11			1 10 Stann	0000	Sammary

It is noted that this is a total cost summary that includes the cost of all works to all parties where costing information is available. For example, note that cost estimates for upgrades to the bus interchange at Macquarie Centre (ID 112) are unknown and therefore are not reflected in the total cost.

It is also highlight that the costs above are anticipated costs that are subject to relevant grants/matched funding being provided. The PAMP would adopt a staged approach to implementation, if anticipated grants/matched funding is not provided at the timeframes outlined above, then the timeframes for completion of projects can be extended.

The actions by priority are presented in Figure 41 to Figure 43.

#### Figure 41 Priority 1 Actions



#### Figure 42: Priority 2 Actions



#### Figure 43 Priority 3 Actions



### **12.1.3 Potential funding sources**

Breakdown of potential funding source by priority is found in Table 25.

Table 25:	Potential	funding	sources	of w	orks	by	priorit	y
		<u> </u>				~		~

Category	Action Priority					
	1	2	3			
City of Ryde Anticipated Costs (Funding sources including general Revenue/ Section 94/ Macquarie Park Special Rate Levy)	\$862,350	\$335,241	\$650,654			
Developer Anticipated Contributions (through conditions of consent or VPA)	\$1,025,534	\$90,000	\$800,000			
RMS (by RMS 50/50 funding toPAMP and other works)	\$25,100	\$374,650	\$193,850			
Other state departments (e.g. TfNSW or DP&I)	\$444,777	To be determined. Costs unknown at this time	\$20,395			

## **12.2** Concept Plans for Key Locations

Concept plans for three priority locations have been developed as part of this PAMP to assist CoR in implementing the works identified in the Action Plan. Concept Plan locations are presented in Table 26 with the relevant diagrams presented in Figure 44, Figure 45, and Figure 46. Note that these concept plans are indicative only.

ID	Location Description	Issue	Action
121	Roundabout Island Refuge at Paul Street North and Lyonpark Road	Poor crossing facilities	Provide pedestrian refuge
123	Mid-block Island Refuge at Giffnock Avenue	Poor crossing facilities	Provide pedestrian refuge
21, 102, 109, 180, 102	Intersection Refuge and Footpath Reconfiguration at Rivett Road and Lucknow Rd	Poor crossing facilities and constrained ramp from Lucknow St to bus stop on Epping Road.	Provide pedestrian refuge and alternative stair route

 Table 26: Concept Plan Locations

Relevant standards were used for concept design for all the works. Wherever possible, the most conservative and practical guidelines were used. The standards used are listed below:

• RTA Technical Direction TDT 2011 / 01a Pedestrian Refuges

- RTA Supplement for AS 1742.10–2009 Manual of uniform traffic control devices Part 10: Pedestrian control and protection
- RTA Supplement for Austroads Guide to Road Design Part 4: Intersections and Crossing–General
- RTA Supplement for Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings
- AS 1428.1–2009 Design for access and mobility Part 1: General requirements for access–New building work

#### 12.2.1 Location 121

ID 121 is located at the existing roundabout of Paul Street North and Lyonpark Road. Works proposed for this location includes a new pedestrian refuge crossing point on the south approach of the intersection (not a shared crossing) which includes a cut out of the existing traffic island and associated footpath connections.

A summary of the works include:

- 1. A cut-out of the existing island, and re-paving of the area (approximately 3m length), 2m from the northern tip of the existing traffic island;
- 2. Extension of the traffic island to align to traffic lanes and provide the minimum 2m width required for pedestrian refuges;
- 3. Pedestrian assist handrails to be provided either side of the cut-out where space is available in the island if provided, they should be frangible;
- 4. A 'Keep Left' sign to be provided to further delineate traffic from the island;
- 5. Kerb ramps provided outside of existing services within the existing pedestrian desire line the ramp grade should be no more than 1 in 8;
- 6. Concrete slabs to the kerb ramps provided at a 1.8m width from the existing footpaths (provided on both sides of Lyonpark Road);
- 7. Deflective linemarking and new centreline on Paul Street North approach to provide appropriate delineation this has been designed with 12.5m design vehicle swept paths as detailed below; and
- 8. Refresh of linemarking to all approaches to provide clearer traffic direction.

During the investigation of this location, crossing facilities at Paul Street north were also considered. There was evidence that a series of works has been undertaken at Paul Street North approach (refuge island removed, a kerb realignment and change of linemarking) to accommodate 30 degree angled parking. The reinstatement of this refuge island was investigated during design of this concept plan to allow pedestrians to cross this arm of the road safely.

A swept path analysis using a 12.5m design vehicle indicated that if the refuge is installed on the southern arm of Lyonpark Road, the existing roundabout kerbs would need realignment. Therefore, it is suggested that appropriate linemarking (point 7) should be provided at this location, with the provision for kerb realignment and a refuge island in the long term if warranted.

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Figure 44: Location 121 Concept plan

#### 12.2.2 Location 123

ID 123 is located near 26 Giffnock Avenue, (near the corner where Lyonpark Road changes into Giffnock Avenue), opposite the Waterloo Road footpath connection. The location currently has a high demand for crossing, to connect to the footpath. Recommended works proposed for this location include a new midblock pedestrian refuge crossing point, which includes removal of parking and associated footpath connections. A summary of the works include:

- 1. Removal of five parking spaces including three spaces on south side and two spaces on the north side of Giffnock Avenue (to the southeast of the corner);
- 2. Construction of two traffic islands to align to traffic lanes and provide the desirable 3m width for mid-block pedestrian refuges;
- 3. Pedestrian assist handrails to be provided on each island where space is available in the island if provided, they should be frangible;
- 4. A 'Keep Left' sign should be provided to further delineate traffic from the island;
- 5. Kerb ramps provided outside of existing services within the existing pedestrian desire line the ramp grade should be no more than 1 in 8;
- 6. Footpath connections to the kerb ramps provided at a 1.5m width from the existing footpaths (provided on both sides of Giffnock Avenue);
- 7. Provide 'No Stopping' signage 20 metres from the kerb ramps;
- 8. Refresh existing 'No Stopping' signage with new two-sided arrows;
- 9. Provide 'Refuge Island' signage to on approaches, up to 95m from kerb ramp; and
- 10. Deflective linemarking and associated reflectors to provide appropriate delineation to islands; and
- 11. Replace the centreline on Giffnock Avenue / Lyonpark Road this has been designed with 12.5m design vehicle swept paths.



Figure 45: Location 123 Concept Plan

#### 12.2.3 Location 3 (ID 21 including: 102, 109, 180)

This location is at the intersection of Rivett Road and Lucknow Road. This site combines a number of location IDs. The location currently has a high demand from bus stops on Epping Road, to connect to the footpaths along Rivett Road to the north. Recommended works for this location include a new pedestrian refuge crossing point, upgraded kerb ramps and a separate footpath to shift bus users away from the intersection. A summary of the works include:

- 1. Upgrade and provide new kerb ramps outside of existing services within the existing pedestrian desire line the ramp grade should be no more than 1 in 8 and grade in the direction towards the road;
- 2. Provide new footpath connections to new kerb ramps at a 1.5m width from the existing footpaths (provide retaining walls as necessary on south side);
- 3. Provide new kerbs and medians where outlined on plan (includes realigned western corner and new refuge);
- 4. Remove kerb ramp that is not to standard as it would maintain poor visibility to the intersection;
- 5. Cut out existing medians and kerbing as necessary to provide for pedestrian crossing;
- 6. Pedestrian assist handrails to be provided on each island where space is available in the island if provided, they should be frangible;
- 7. A 'Keep Left' sign should be provided (centred in the island) to further delineate traffic from the island;
- 8. Update linemarking on south approach of Rivett Road (remove existing linemarking);
- 9. Set stop line back by 500mm on west approach of Lucknow Road to cater for pedestrian movement; and
- 10. Provide 1.5m wide footpath and stairs with matching landing at the existing ramp, provide retaining walls as necessary. Provide appropriate landings to match bus stop level pavement on Epping Road.

12.5m and 8.8m design vehicles were analysed for all movements at the intersection of Rivett Road and Lucknow Road. These vehicles were analysed for the existing intersection layout and for the proposed design, to examine any changes. A 5.2m design vehicle was also analysed for all movements.

In the existing intersection layout, 12.5m design vehicles could only use Rivett Street and were not able to turn left or right into Lucknow Road. The 8.8m design vehicle was able to turn right only from both the north and south approach into Lucknow (i.e. turn from south of Rivett Road into Lucknow Road east or turn from north of Rivett Road into Lucknow Road west). Left turns were not possible without sweeping over the wrong side of the road.

The proposed design configuration does not change access for these vehicle types and adequately guides vehicles into their necessary movements. The renewed deflective linemarking will aid smaller vehicles in performing a left turn from Rivett Road south into Lucknow Road west.



Figure 46: Location 3 Concept plan

## **12.3 Project ranking process**

Alongside the concept plans, the RMS Project Ranking Process was undertaken for each location. This process is documented in the *Memorandum of Understanding for Works by Council and Funded by RTA: Project Ranking for Pedestrian Project Program Position 27401.* 

The project ranking process for the three concept plan locations is presented in Table 27.

Information Required	Details		
	Location 1: ID 121	Location 2: ID 123	Location 3: ID 21
Length of crossing	10.5	11	14.3
85th Percentile speed of traffic <sup>1</sup>	60	60	60
Pedestrians per hour <sup>2,3</sup>	6	90	30
Vehicles per hour in both directions4	1700	1500	800
Adjacent Land Use	4	4	4
Road gradient	1	1	1
Maximum sight distance	3	3	3
Five year crash data	1	1	1
Project Identified in a PAMP	5	5	5
Net Weighting Factor	60	60	60
Ranking index	23.13	320.76	74.13

Table 27: Project ranking process

#### Notes

1: No tube data was available, speed of traffic data is based on speed limit.

2: Estimate pedestrian volumes only.

3: Pedestrian volumes were not available for Rivett Road and Lucknow St (ID 21). Closest pedestrian volumes (at Epping Road and Pittwater Road) were adopted.

4: Traffic volumes were not available for Location 2 and 3. Traffic volumes at Lyon Park Road and Paul Street north were adopted for ID 123. Traffic volumes at Delhi road and Plassey Road were adopted for ID 21.

## **13 PAMP Funding and Implementation**

## **13.1** Implementation

The Staged Action Plan identified through the PAMP study would need to be assessed and implemented based on specific site conditions and reflect the latest pedestrian facilities standards at the time of implementation. The Staged Action Plan would be considered by CoR for inclusion in their Four Year Delivery Plan and associated Operational Plans for implementation according to the timeframe identified. Work program items that are under the responsibility of RMS, potential developers or other key stakeholders are expected to be implemented by the responsible agencies or developers at timeframes to coincide with the proposed development or infrastructure trigger.

## **13.2** Funding Source

### **13.2.1** The Roads and Maritime Services

### **Local Government Pedestrian Facilities (27401)**

The development of the PAMP presents a Staged Action Plan that is in a format that is consistent with the requirements for applying for 50/50 funding from the RMS. All future RMS funding will be determined on an annual basis.

The main RMS funding arrangements for local government are documented in *Council Projects Funded by the RTA Memorandum of Understanding* (June 2009). The main funding sources relevant to pedestrian facilities include the Pedestrian Facilities Program 27401 and Blackspot facilities under Program 26301 (with funding requirements detailed in Attachment C of the MoU).

The works on Local and Regional Roads that are eligible generally for 50/50 % RTA/Councils funding include:

- a) Preparation of Pedestrian Access and Mobility Plans (PAMPs)
- b) Upgrading of existing pedestrian infrastructure

Typical projects include:

- Kerb ramps with tactile indicators built in accordance with AS1428 1 & 4 and
- RTA guidelines
- Cris-cross "scramble" crossings (exclusive pedestrian phase)
- Pedestrian priority systems

c) New pedestrian crossing treatments and facilities

Typical projects include:

- • New signals for pedestrian access, convenience and safety
- • Work to support pedestrian malls and shared zones

- • Kerb extensions / blisters
- • Raised pedestrian crossings
- • Other pedestrian road crossing facilities

#### The Accident Blackspot Treatment (26301)

The RMS outlines the follow regarding Accident Blackspot Treatments:

Funding is mainly available for the treatment of Black Spot sites, or road lengths, with a proven history of crashes. Project proposals should be able to demonstrate a benefit to cost ratio of at least 2:1.

For individual sites such as intersections, mid-block or short road sections, there should be a history of at least three casualty crashes over a five-year period. For lengths of road, there should be an average of 0.2 casualty crashes per kilometre per annum over the length in question over five years; or the road length to be treated should be amongst the top 10% of sites with a demonstrated higher crash rate than other roads in a region.

The requirement of a history of crashes ensures that those sites that have a recurrent problem are targeted first for treatment.

The Black Spot Program also recognises that there are road locations which could be considered as 'accidents waiting to happen'.

The crash analysis in Section 4.2 highlights that there are currently no locations within the study area that have more than three casualty crashes over a five year period.

#### **State operated roads**

RMS highlights that RMS does not fund footpaths. RMS currently has three pedestrian program budgets, which include State roads (100% funded); Regional and Local Roads (50-50 matched funds); and pedestrian bridges.

State roads within the study area include:

- Epping Road;
- M2 Motorway and adjoining ramps;
- Delhi Road; and
- Lane Cove Road.

#### **13.2.2** Macquarie Park Corridor Special Rate Levy (MPCSRL)

The MPCSRL is a levy contributed by businesses within the corridor. Part of the received fund could be contributed towards pedestrian facilities improvement identified by PAMP within Macquarie Park area. In 2012-13, the levy funded footpath construction along Waterloo Road, wayfinding signage and open spaces upgrade. In 2013-15, the levy is scheduled to be used for a public domain upgrade

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along Lane Cove Rd WS from Talavera to Waterloo Rd. It is noted that \$100,000 in 2013/14 and 2014/15 has been allocated from the from the MPSL towards the implementation of PAMP works program.

Funding for a number of new footpath treatments within the future fine grain network and potential future crossing opportunities have the potential to be sought through the Macquarie Park Corridor Special Rate Levy.

#### **13.2.3** Section 94 Contributions

Section 94 of the Environmental Planning and Assessment Act 1979 (NSW) allows Council to extract contributions from developers to provide for public facilities and services in the form of the dedication of land free of cost and/or payment of a monetary contribution.

Under Section 94, the consent authority may levy the developer for contribution to public services. Section 94 states:

"Where a consent authority is satisfied that a development, the subject of a development application, will or is likely to require the provision of or increase the demand for public amenities and public services within the area, the consent authority may grant consent to that application subject to a condition requiring -

- (a) The dedication of land free of cost; or
- (b) The payment of a monetary contribution, or both."

A link between development and the need for a public amenity can be developed through the extent to which a development creates a need for a particular service or facility. Should developments increase pedestrian volumes to warrant facilities such as a pedestrian crossing or pedestrian signals, funding could be sought through Section 94 Contributions for the provision of such facilities.

Funding for new footpath treatments within the future fine grain network and potential future crossing opportunities have the potential to be sought through Section 94 Contributions for the provision of such facilities.

#### **13.2.4** Voluntary Planning Agreements (VPAs)

VPAs may involve monetary contributions, partial or full construction of new facilities, expansion, upgrades, augmentations, embellishments, fit-outs and resourcing of existing facilities or any other public benefit as agreed to by the Council from the potential developers. Facilities could include pedestrian linkages and footpaths; street furniture – seats, bins; signage including suburb identification, way finding, parking, interpretation and information signs for pedestrian; and land dedications for pedestrian connectivity and new roads.

The application of VPAs as a funding source for PAMP works would be agreed to between Council and developers on a case by case basis.

#### **13.2.5** Conditions of Consent

In addition to requirements for pedestrian infrastructure as a condition of consent, developers would install new kerb ramps and driveway crossings as part of the DA approval process. These facilities are required to be installed in line with CoR's Public Domain Manual referred to in the DCP Section 4.5. See previous Section 10 for further information on funding initiatives.

#### **13.2.6** Urban Activation Precincts

The North Ryde Station Precinct is currently on public exhibition and the Herring Road UAP is still to be subject to public consultation. (Note: The City of Ryde is proposing a slightly different area for the Herring Road UAP). Should these UAPs proceed, Growth Infrastructure Plans would be developed for each precinct with limited funding of through the Precinct Support Scheme available to assist local councils to upgrade local infrastructure and urban environments. A pilot allocation of \$50 million is to be shared between the councils responsible for each precinct. Approximately \$5 million per precinct is envisaged to be available to each precinct to fast track necessary infrastructure, although it is not possible to know which infrastructure this would be applied to at this stage. The Housing Acceleration Fund may provide an additional funding source.

## **13.3** Monitoring the PAMP

As the pedestrian network is developed, it will be important to monitor the progress of the network over time. In particular, it will be important to further develop an understanding of travel patterns and behaviour and the role that walking plays. Monitoring will relate to the following three areas:

- route conditions and overall route quality;
- changes in demand; and
- implementation of work program.

Monitoring of the quality of pedestrian routes could be undertaken by establishing an ongoing regular Route Quality Audit process, with the results catalogued and regularly updated. The quality of routes would be measured against the existing design criteria as part of a "look and see" audit process. This will enable the overall quality of routes to be improved, problems to be addressed and resources to be targeted appropriately. Council would monitor the PAMP deliverables as per the works schedule.

A typical Route Quality Audit would involve an assessment of route conditions and would be undertaken by a person familiar with pedestrian design issues and involve a site visit along the specified route. A simple site visit report form could be developed that allows the auditor to note down a series of checks of the route against the design criteria specified. The route should also be reviewed in light of possible land use changes and Council works.
# **14 Conclusions and Recommendations**

## **14.1 Conclusions**

The background review conducted as part of the PAMP study shows that there are opportunities to improve pedestrian facilities provision within the study area. Key pedestrian issues, concerns and hazardous locations were identified through a three-stage consultation process.

A pedestrian route hierarchy was developed through examining the existing available information and comments received throughout the consultations. A physical field audit was conducted by Arup to confirm the path and access and mobility issues along the high priority routes. A recommended PAMP work program was developed based on the consultation and audit findings.

The study concluded that the objectives of the PAMP could be achieved in the study area by a staged implementation of work program across the areas of enforcement, encouragement, education and engineering. Many of these actions in the first three areas will occur as part of Council's other programs. The proposed engineering actions are included as a work program which can be implemented as funding permits.

## 14.2 **Recommendations**

The implementation of the PAMP program will provide the local community with a safe, continuous and accessible network of footpaths to travel. This would encourage the use of walking as a sustainable mode of travel in Macquarie Park. It is recommended that the City of Ryde consider the adoption of the PAMP network and associated work program and other actions in conjunction with the RMS and other key agencies.

Specific recommendations were given on path and kerb ramp provision, signage and crossing opportunities locations. The exact locations of the works are registered in the PAMP GIS database and the approximate locations are described in Appendix A.

In addition to specific items identified in the work program, general recommendations of the PAMP include:

- Pedestrian facilities identified within this PAMP must be constructed with consideration of the requirements of AS 1428 and AUSTROADS Part 4 & 6A. It is essential that facilities are designed to ensure compliance with Australian Standards and Council standards such as the Macquarie Park Public Domain Technical Manual;
- Council should periodically review the PAMP routes and implementation of the work program, and consider auditing the medium and low priority routes within the study area when funds become available or through Council's asset audit inspection. Similarly, monitoring of the quality of pedestrian routes should be undertaken by establishing a regular Route Quality Audit process, with the results catalogued and regularly updated.
- Shrimpton Creek was initially identified as a medium priority route. Following the public exhibition process, Shrimpton Creek was assigned as a high priority

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route. It is recommended that CoR undertake audits along these routes to identify relevant pedestrian actions.

- Council should further investigate crossing opportunity recommendations, especially in areas in close proximity to educational institutions, elderly housings and major attractors like the Macquarie shopping centre;
- All future major new development is recommended to provide for pedestrian access need. Footpath provision should be formed as part of the new development and sub-division requirement to the standard detailed in the Macquarie Park Public Domain Technical Manual.
- It is understood that bus shelter design may be upgraded in 2018. During this process, it is recommended that bus shelter design consider design for constrained locations.
- A Street light audit is recommended to check streetlight brightness levels as per Australian Standards along the key pedestrian routes; and
- Encouraging walking as a mode could be addressed by the introduction of measures aimed at educating people of the benefits associated with walking. Council should consider the introduction of such initiatives including walking maps and the provision of educational information.

Appendix A

Staged Action Plan

# A1 Staged Action Plan by Priority

				-												
					.,							Potential sources	Potential			
I	D	Street	Nearest cross street	Intersection	Location	Issues	Action	Justification/Link to PAMP report	Length m /Unit	Responsibility	Potential Funding Source	of funding within Council	Infrastructure Trigger	Priority	Timeframe	Potential indicative costing
			000111004.07	0.11	Between Coolinga and Lyonpark		Remove existing and install new footpath – Type 1		150			0				<b>A0</b> 40 000
	3	GIFFNOCK AVE	COOLINGA ST	South	Rd	Narrow path - 1 ype 1 footpath	(Min. 3m to 4.5 m wide)	Pedestrian connectivity	450	COR	COR	Section 94/	N/A Euture	1	0 - 5 years	\$810,000
							<u>-</u>	Pedestrian connectivity and providing a continuous				Condition of	development			
1	18	DELHI RD	HILLS RD	South	9m from HILLS RD	No path - Type 1 footpath	Install new tootpath - Type 1 (Min. 3m to 4.5 m wide)	path	171	CoR	CoR/ Developer	Consent	application	1	0 - 5 years	\$307,420
							Install new footpath - Type 2 (Min. 3m wide footpath	Pedestrian connectivity and providing a continuous				Condition of	development			
2	23	GIFFNOCK AVE	WATERLOO RD	South	132m from WATERLOO RD	No path - Type 2 footpath	to 4.5m)	path	4	CoR	CoR/ Developer	Consent	application	1	0 - 5 years	\$7,951
								Pedestrian connectivity and providing a continuous				Condition of	development			
3	36	JULIUS AVE	RIVETT RD	South	5m from RIVETT RD	No path - Type 4 footpath	Install new footpath - Type 4 (1.8m wide)	path	357	CoR	CoR/ Developer	consent	application	1	0 - 5 years	\$160,586
								Pedestrian connectivity and providing a continuous				Condition of	euture development			
4	40	JULIUS AVE	NEWBIGIN CL	South	24m from NEWBIGIN CL	No path - Type 4 footpath	Install new footpath - Type 4 (1.8m wide)	path	171	CoR	CoR/ Developer	consent	application	1	0 - 5 years	\$76,930
								Pedestrian connectivity and providing a continuous				Section 94/ Condition of	Future development			
4	13	JULIUS AVE	DELHI RD	South	6m from DELHI RD	No path - Type 4 footpath	Install new footpath - Type 4 (1.8m wide)	path	99	CoR	CoR/ Developer	consent	application	1	0 - 5 years	\$44,543
								Pedestrian connectivity and providing a continuous				Section 94/ Condition of	Future development			
5	57	LANE COVE RD	HILLS RD	South	25m from HILLS RD	No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)	path	84	CoR	CoR/ Developer	consent	application	1	0 - 5 years	\$151,298
								Pedestrian connectivity and providing a continuous				Section 94/ Condition of	Future development			
5	58	LANE COVE RD	HILLS RD	North	6m from LANE COVE RD	No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)	path	76	CoR	CoR/ Developer	consent	application	1	0 - 5 years	\$136,709
							Install new footpath - Type 3 (2m wide footpath, up to	Pedestrian connectivity and providing a continuous				Section 94/ Condition of	Future development			
6	69	PAUL ST NORTH	LYONPARK RD	North	21m from LYONPARK RD	No path - Type 3 footpath	3.8m)	path	97	CoR	CoR/ Developer	consent	application	1	0 - 5 years	\$116,878
								Pedestrian connectivity and providing a continuous				Section 94/	Future			
7	74	RIVETT RD	JULIUS AVE	South	68m from JULIUS AVE	No path - (no type identified in Macquarie Park Public Domain Manual)	Install new footpath -1.8m wide	path	35	CoR	CoR/ Developer	consent	application	1	0 - 5 years	\$9,565
								Pedestrian connectivity and providing a continuous				Section 94/	Future			
7	75	RIVETT RD	JULIUS AVE	South	47m from JULIUS AVE	No path - (no type identified in Macquarie Park Public Domain Manual)	Install new footpath -1.8m wide	path	19	CoR	CoR/ Developer	consent	application	1	0 - 5 years	\$5,089
								Pedestrian connectivity and providing a continuous				Section 94/	Future			
7	76	RIVETT RD	JULIUS AVE	North	15m from JULIUS AVE	No path - (no type identified in Macquarie Park Public Domain Manual)	Install new footpath -1.8m wide	path	32	CoR	CoR/ Developer	consent	application	1	0 - 5 years	\$8,564
													North Ryde			
													Station Precinct Project Transit			
													Oriented			
													State Significant			
				South	24m from WATERLOO RD	No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)	Pedestrian connectivity and providing a continuous	30	Transport for NSW	TENSW/	NI/A	Development Application <sup>1</sup>	1	0 5 10000	\$52.710
	55	WIGHCHE	WATERCOOK D	Coun				paul	00	Transport for Nov	interv	10/7	North Durle	1	0 - 5 years	<i>400,113</i>
													Station Precinct			
													Project Transit Oriented			
													Development			
								Pedestrian connectivity and providing a continuous					Development			
g	96	WICKS RD	WATERLOO RD	South	7m from WATERLOO RD	No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)	path	69	Transport for NSW	/ TfNSW	N/A	Application <sup>1</sup>	1	0 - 5 years	\$124,220
													North Ryde Station Precinct			
													Project Transit			
													Oriented Development			
								De destrice e constituite e descridites e constitueres					State Significant			
g	97	WICKS RD	WATERLOO RD	North	6m from WATERLOO RD	No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)	path	148	Transport for NSW	/ TfNSW	N/A	Application <sup>1</sup>	1	0 - 5 years	\$266,837
	00			North	Intersection	No kerb ramp	Install new kerk ramp	Mobility access	1	PMS/CoP	50% PMS 50% Co	Conoral Royonuo	N/A	1	0 - 5 years	002
8	99	COLLODEN KD	WATERLOORD	Norun	Intersection			Mobility access	1	RIVIO/COR	0% KM3 50% C0	General Revenue	INA	I	0 - 5 years	\$900
				1								0	To be completed			
				1								Section 94/ Condition of	development of			
1	00	JULIUS AVE	RIVETT RD	North	35m from RIVETT RD	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% Co	consent	new footpath	1	0 - 5 years	\$900
													To be completed			
				1								Section 94/	in conjunction with			
1	01	JULIUS AVE	RIVETT RD	North	27m from RIVETT RD	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% Co	consent	new footpath	1	0 - 5 years	\$900
												Section 94/	To be completed in conjunction with			
	02			North		No kerb ramp	Install new kerb ramp	Mobility access	4	PMC/CaD	00/ DMC 500/ 0-	Condition of	development of	4	0 Euror	¢000
1 10	UZ		LOOKNOW RD	INOIDI	THE TOT ON MANED RD	no nois ramp	moral new very railly	mobility access	1 1	NIVIO/COK	PU /0 ININO DU% CO	CONSERV	new roupath	1	u - p years	\$900

ID	Street	Nearest cross street	Side of the road/ Intersection	Location	Issues	Action	Justification/Link to PAMP report	Length m /Unit	Responsibility	Potential Funding Source	Potential sources of funding within Council	Potential Infrastructure Trigger	Priority	Timeframe	Potential indicative costing
											Section 94/	To be completed in conjunction with			
103	RIVETT RD	LUCKNOW RD	South	85m from UNNAMED RD	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoF	Condition of consent	development of new footpath	1	0 - 5 years	\$900
											Section 94/	To be completed in conjunction with development of	1		
104	RIVETT RD	JULIUS AVE	South	68m from JULIUS AVE	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoF	consent	new footpath	1	0 - 5 years	\$900
											Section 94/ Condition of	To be completed in conjunction with development of	1		
105	RIVETT RD	JULIUS AVE	South	62m from JULIUS AVE	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoF	consent	new footpath	1	0 - 5 years	\$900
400			North	47m from III IIIS AVE	No keth ramp	lastal asw kart some	Mobility access			50% DMC 5001 0	Section 94/ Condition of	To be completed in conjunction with development of		0.5.000	<b>\$</b> 000
106			NULTI	TIT HOIT JULIUS AVE						2070 KIVIƏ 50% COF	consent	new rootpath	1	u - o years	\$900
107	RIVETT RD	JULIUS AVE	North	39m from JULIUS AVE	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoF	Section 94/ Condition of consent	To be completed in conjunction with development of new footpath	11	0 - 5 years	\$900
											Section 94/ Condition of	To be completed in conjunction with development of			
108	JULIUS AVE	LUCKNOW RD	South	129m from LUCKNOW RD	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoF	consent	new footpath	1	0 - 5 years	\$900
400			South	129m from LLICKNOW PD	No kerb ramo	Install new kerb ramp	Mobility access		RMG/CAP	50% RMS 50% 0-5	Section 94/ Condition of	To be completed in conjunction with development of	4	0 - 5 - 5 - 5	\$000
109			30001						NWO/COK	2070 AWG 20% COF	CONSEIL		<u> </u>	0 - 5 years	2900
110	RICHARDSON PI	JULIUS AVE	North	9m from JULIUS AVE	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% Co	Section 94/ Condition of consent	To be completed in conjunction with development of new footpath	1	0 - 5 vears	\$900
										0.0 / COP	Consont		<u>ب</u>	5 5 years	სსწდ
444			South	11m from 1111 1115 A\/E	No kerb ramo	Install new kerb ramp	Mobility access		RMC/Cop	50% RMS 50% 0-5	Section 94/ Condition of	I o be completed in conjunction with development of new footpath	1	0 - 5 10000	¢000
111		JULIUS AVE	Jouil	THI HOIT JULIUS AVE						2070 KIVIƏ 50% COF	consent	new rootpath	1	u - o years	2900
118	WATERLOO RD	COTTONWOOD CRES	South	20m from COTTONWOOD CRES	Existing desire line. No pedestrian crossing facility on western arm of existing traffic signals	Investigate the installation of a pedestrian crossing signal on the western arm of the existing signalised intersection in consultation with RMS.	Pedestrian safety and connectivity	1	RMS/CoR	50% RMS 50% CoF	General Revenue	N/A	1	0 - 5 years	To be Determined

			Side of the road/					Length m		Potential Eurodine	Potential sources	Potential			Potential
ID	Street	Nearest cross street	Intersection	Location	Issues	Action	Justification/Link to PAMP report	/Unit	Responsibility	Source	Council	Trigger	Priority	Timeframe	indicative costing
						Install signalised intersection with pedestrian phase									
						on all four legs to replace existing roundabout as									
					Existing strong pedestrian desire line and identified hazardous location	soon as possible. A signalised intersection is critically	у								
					with high levels of pedestrian/vehicle conflict at existing roundabout.	important to improve pedestrian safety at this location	n			CoR Manguaria	Maguaria Bark				
					the North of Waterloo Rd) are considered to be insufficient to cater for	and Macquarie University Station, Signalised				Park Special Rat	e Special Rates				
119	WATERLOO RD	KHARTOUM RD	North	13m from KHARTOUM RD	safe pedestrian crossing.	intersection approved - expected 2013.		1	CoR	Levy or s94	Levy	DA approved	1	0 - 5 years	To be Determined
120	WATERLOO RD	KHARTOUM RD	South	17m from KHARTOUM RD	See ID 119	See ID 119	See ID 119	See ID 119	See ID 119	See ID 119	See ID 119	See ID 119	1	See ID 119	To be Determined
					The roundehout at this location presented limited cafe crossing	In the short term: Install pedestrian refuges at existing	a								
121	PAUL ST NORTH	LYONPARK RD	North	21m from LYONPARK RD	opportunities for pedestrians.	pedestrian volumes	Pedestrian connectivity and safety	1	RMS/CoR	50% RMS 50% C	N/A	N/A	1	0 - 5 years	\$12.000
						1	,								,
						A pedestrian refuge at this location has gone to traffic	2								
						committee previously and was not approved due to									
						poor sight distances and conflict with driveways etc.									
400			N I - with		l instant a chartaine ann aire fa sliùine at this le saite	Further traffic calming measures should be	De de striker a statu en des mers stir itu		DM0/0-D	500/ DMO 500/ O	0	<b>N</b> 1/A		0.5	To be Determined
130	JULIUS AVE	NEWBIGIN CL	North	10m from NEWBIGIN CL	Limited pedestrian crossing facilities at this location.	considered at this location to allow for safe crossing.	Pedestrian safety and connectivity	1	RM5/COR	00% RMS 50% C	General Revenue	N/A	1	0 - 5 years	To be Determined
					Poor crossing point no kerb ramps in existing island or north side of	for signalised mid block crossing would be met									
131	HERRING RD	WINDSOR DR	North	16m from WINDSOR DR	road	currently or on the future.	Pedestrian connectivity and safety	1	RMS/CoR	50% RMS 50% Co	oF N/A	Monitor situation.	1	0 - 5 years	To be Determined
						It is understood that signalised crossing at this									
						location would not be approved along Lane Cove									
						Road by RMS. Further pedestrian safety measures									
						location in the short term, for example pedestrian	5								
						fencing. Policy measures such as encouraging land									
						use change on the eastern side of Lane Cove Road									
						could be implemented to reduce the need to cross at this point									
						Cost/ benefits of an additional crossing pedestrian									
						bridge crossings are unlikely to meet Council and									
					Evicting strong pedagtrian desire line and identified begardeus legistion	RMS requirements.	Bedestrian graphen recorded in close to this logation			DMC/					
		1	1		Pedestrians were observed crossing Lane Cove Road near McDonalds	be conducted with RMS.	at Lane Cove Road and Talavera Road intersection			development					1
133	LANE COVE RD	TALAVERA RD	South	Intersection	at lunchtime.		on the eastern arm.	50	RMS	contribution	N/A	Unknown	1	0 - 5 years	\$11,250
151	LANE COVE RD	TALAVERA RD	South	127m from TALAVERA RD	Bus stop – No shelter, no seating	Install bus shelter (including integrated seating)	Mobility access	1	CoR	CoR	General Revenue	N/A	1	0 - 5 years	\$38,500
157	WATERI OO RD		South	32m from COTTONWOOD	Kerh ramp lin/sten	Remove existing kerb ramp and install new kerb	Mobility access	1	RMS/CoR	50% RMS 50% C	General Revenue	N/A	1	0 - 5 years	\$1.000
107		2 ST. S. WOOD ONLO			······································	Remove existing kerb ramp and install new kerb					Seneral Revenue			0 0 yours	φ1,000
160	HERRING RD	EPPING RD	South	14m from EPPING RD	Kerb ramp lip/step	ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Co	F General Revenue	N/A	1	0 - 5 years	\$1,000
						Remove existing kerb ramp and install new kerb									
161	HERRING RD	EPPING RD	North	23m from EPPING RD	Kerb ramp lip/step	ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Co	of General Revenue	N/A	1	0 - 5 years	\$1,000
164			South	15m from COTTONWOOD	Kerb ramp pop-standard	Remove existing kerb ramp and install new kerb	Mobility access	1	RMS/CoP	50% PMS 50% C	General Revonue	N/A	1	0-5 years	\$1.000
104		COTTOINVOOD CRES	Sodun	UNEO		Location should be considered in the Rike Plan with			NIVIO/COR	0 % KIVIO 00% CO		IN/A	1	0-5 years	φ1,000
1	WATERLOO RD	LANE COVE RD	North	10m from LANE COVE RD	Cycling path conflict	potential path separation at this location	Pedestrian and cyclist safety	282	CoR	CoR	General Revenue	N/A	2	5 - 10 years	N/A

	Chroat	Necrest cross street	Side of the road/	Looption	laguag	Antion	Instituation // interior DAMD consist	Length m	Deenensikilitu	Potential Funding	Potential sources of funding within	Potential Infrastructure	Driarity	Timeframe	Potential
שו	Street	Nearest cross street	Intersection	14m from COTTONWOOD	Issues	Location should be considered in the Bike Plan, with		/Unit	Responsibility	Source	Council	rngger	Phoney	Inneirame	indicative costing
6	WATERLOO RD	COTTONWOOD CRES	South	CRES	Cycling path conflict	potential path separation at this location	Pedestrian and cyclist safety	309	CoR	CoR	General Revenue	N/A	2	5 - 10 years	N/A
10	I YONPARK RD	N/A	South	N/A	Cycling path potential connection	considered with further investigation in bicycle	Cycling connectivity	613		50% PMS 50% Co	N/A	N/A	2	5 - 10 years	To be Determined
											0 10				10 00 00000000000
17	DELHIRD	JULIUS AVE	North	68m from JULIUS AVE	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$14
20	EPPING RD	BALACLAVA	South	50m from BALACLAVA	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	2	CoR	CoR	General Revenue	N/A Herring Road	2	5 - 10 years	\$42
29	HERRING RD	IVANHOE PL	South	81m from IVANHOE PL	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	DP&I	DP&I	N/A	UAP <sup>1</sup> Herring Road	2	5 - 10 years	\$33
31	HERRING RD	UNIVERSITY AVE	North	87m from UNIVERSITY AVE	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	2	DP&I	DP&I	N/A	UAP <sup>1</sup>	2	5 - 10 years	\$60
35	EPPING RD	HERRING RD	North	33m from HERRING RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$20
37	JULIUS AVE	RIVETT RD	South	86m from RIVETT RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	2	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$50
38			South	100m from RIVETT RD	Footpath uneven or cracked - all types	Footpath grinding	Pedestrian safety	1	CoP	CoR	General Revenue	N/A	2	5 - 10 years	\$10
			Nesth						0.0			N/A			φ13
44	JULIUS AVE	RICHARDSON PL	North	38m from RICHARDSON PL	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$30
45	JULIUS AVE	DELHI RD	North	31m from DELHI RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$21
46	JULIUS AVE	RIVETT RD	South	57m from RIVETT RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$15
47	JULIUS AVE	DELHI RD	South	64m from DELHI RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$31
60	LANE COVE RD	EDEN PARK DR	South	150m from EDEN PARK DR	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$27
63	LANE COVE RD	WATERLOO RD	North	103m from WATERLOO RD	Narrow path - Type 1 footpath	Remove existing and install new footpath – Type 1 (Min. 3m to 4.5 m wide)	Pedestrian connectivity	70	RMS	development contri	N/A	N/A	2	5 - 10 years	\$126,000
72	RIVETT RD		North	64m from ILILIUS AVE	Footpath uneven or cracked - all types	Footpath grinding	Pedestrian safety	1	CoP	CoR	General Revenue	N/A	2	5 - 10 years	\$3/
72			Marth						0.0	0.0		N//A		5 10 years	
13	RIVETTRD	JULIUS AVE	North	9111 HOIN JOLIOS AVE	Polipatri uneven or cracked – all types	roopan grinning	Pedestrian safety	1	COR	COR	General Revenue	IN/A	2	5 - 10 years	\$21
82	TALAVERA RD	LANE COVE RD	North	60m from LANE COVE RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	2	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$47
83	TALAVERA RD	LANE COVE RD	South	116m from LANE COVE RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$22
84	TALAVERA RD	LANE COVE RD	South	116m from LANE COVE RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$27
93	WATERLOO RD	KHARTOUM RD	North	36m from KHARTOUM RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	3	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$72
						Remove existing and install new footpath – Type 1					Section 94/ Condition of				
94	WATERLOO RD	COOLINGA ST	North	15m from COOLINGA ST	Narrow path - Type 1 footpath	(Min. 3m to 4.5 m wide)	Pedestrian connectivity	50	CoR	CoR/ Developer	consent	N/A	2	5 - 10 years	\$90,000
					with high levels of pedestrian/vehicle conflict. Inconsistent crossing	It is understood that Transport for NSW is	Pedestrian crashes recorded in close to this location					Macquarie Centre			determined by
112	HERRING RD	INNOVATION RD	South	100m from INNOVATION RD	pedestrian crossing.	Macquarie Centre bus interchange upgrade.	North of the signalised crossing.	1	Transport for NSW	/ TfNSW	N/A	upgrade	2	5 - 10 years	NSW.
						Monitor growth. When warrants are met, consider									
113	WATERLOO RD	BYFIELD ST	Intersection	Intersection	Existing desire line and dangerous crossing location at roundabout.	providing a signalised intersection pedestrian crossing to replace existing roundabout	Pedestrian safety and connectivity	1	RMS/CoR	50% RMS 50% CoF	Developer Contribution/S94	Future development	2	5 - 10 years	\$400.000
114	EPPING RD	LANE COVE RD	South	8m from LANE COVE RD	See ID 133	See ID 133		1	See ID 133	See ID 133	See ID 133	See ID 133	2	See ID 133	To be Determined
115	WICKS	EPPING RD	North	13m from EPPING RD	See ID 140	See ID 140		See ID 140	See ID 140	See ID 140	See ID 140	See ID 140	2	See ID 140	To be Determined
116	HERRING RD	INNOVATION RD	South	49m from INNOVATION RD		See ID 112		1	See ID 112	See ID 112		See ID 112	2	See ID 112	10 be Determined
117	LYONPARK RD	BYFIELD ST	South	15m from BYFIELD ST	Pedestrian desire line and pedestrian/vehicle conflict at existing uncontrolled midblock pedestrian crossing	Monitor pedestrian and traffic volumes. Install zebra crossing in 5 - 10 years time if warrants are met.	Pedestrian connectivity and safety	1	RMS/CoR	50% RMS 50% CoF	Developer Contribution/S94	N/A	2	5 - 10 vears	\$50,000
100			South		No crossing opportunity from south of Giffnock Ave to Waterloo	Install pedestrian refuges at existing island if warrants	Intersection upgrade as per Concept Plan 2 in PAMP	1	PMS/CoP	50% PMS 50% Car	General Pevenue	N/A	2	5 - 10 1007	\$12.000
123			Nesth		No crossing opportunity from north of Giffnock / west of Coolinga until	Install pedestrian refuges at existing island if warrants	Bedestries of the order of the							J- TO years	φ12,000
124	ICOULINGA ST	GIFFINOUK AVE	INORTO	I IIII TROM GIFFNOCK AVE	Waterioo Road	are met.	Peuesulan safety and connectivity	1	RMS/CoR	DU% KMS 50% CoF	General Revenue	IN/A	2	5 - 10 years	1 0 De Determined

			-	-	-		-				-				
			O'de states as all					Longethere.		Detected Fundament	Potential sources	Potential			Detected
ID	Street	Nearest cross street	Intersection	Location	291122	Action	.lustification/Link to PAMP report	Length m	Responsibility	Source	of funding within	Trigger	Priority	Timeframe	indicative costing
	Ouccu	Nearest cross street	Intersection	Location	155455	rouon		701110	responsibility	Cource	Countien	niggei	Thony	minerianie	indicative costing
												North Ryde			
						It is understood that Transport for NSW is						Project Transit			
						part of the North Ryde Precinct Redevelopment						Oriented			
						including:						Development			Unknown. To be
						- Intersection upgrades and modifications at Wicks						State Significant			provided by
125			Intersection	Intersection	There are no formal pedestrian crossing facilities at any of the arms of the Waterloo and Wicks Road intersection	Road and Waterloo Road and Epping Road.	Pedestrian connectivity	1	Transport for NSM	TENSW/	NI/A	Application <sup>1</sup>	2	E 10 vooro	Transport for
125	WATERLOORD	WIERS RD	Intersection	Intersection	the Waterioo and Wicks Road Intersection.	- Tedestrian bridge over the tims wollorway	r edestrian connectivity	1	Transport for NSW	1111000	IN/A	Application	2	5 - 10 years	NOW.
126	WICKS RD	WATERLOO RD	South	8m from WATERLOO RD	See ID 125	See ID 125		See ID 125	See ID 125	See ID 125	See ID 125	See ID 125	2	See ID 125	To be Determined
										Marke to be					
										WORKS to be					
										conjunction with					
										Macquarie		Macquarie			
						Cofe exercise experiments to be considered with				University		University			
128	GYMNASIUM RD	CULLODEN RD	South	25m from CULLODEN RD	No safe crossing opportunity to cross Gymnasium Road	Macquarie University Masterplan developments.	Pedestrian safety	1	Acquarie Universi	t developments	N/A	development.	2	5 - 10 years	To be Determined
120					······································	······							-	e reyoure	
						It is not possible to provide a further signalised									
						crossing arm on the E side of the existing intersection	1								
						Pedestrian demand at this location is unlikely to meet									
						warrants for an overhead crossing. Cost/ benefits of									
						an additional crossing underground crossing are									
					There is limited connectivity to the bus stops located on Epping Road	unlikely to meet Council requirements.						Monitor cituation			
					of lights on W and S side of intersection but no direct formal crossing or	pedestrian behaviour. If required, install pedestrian						and pedestrian			
129	RIVETT RD	LUCKNOW RD	North	7m from UNNAMED RD	E side of intersection.	fencing.	Pedestrian connectivity	1	CoR/RMS	50% RMS 50% Col	N/A	behaviour.	2	5 - 10 years	To be Determined
						Consultation with RMS to consider shorter waiting									
						times for pedestrians. Further traffic modelling and									
139	HERRING RD	EPPING RD	North	7m from EPPING RD	Long pedestrian waiting times	investigation may be required.	Pedestrian amenity and connectivity	1	RMS/CoR	NA	N/A	N/A	2	5 - 10 years	To be Determined
						Consultation with RMS to consider shorter waiting									
141	BALACLAVA	BALACLAVA RD	South	7m from BALACLAVA RD	Long pedestrian waiting times	investigation may be required.	Pedestrian amenity and connectivity	1	RMS/CoR	NA	N/A	N/A	2	5 - 10 years	To be Determined
	-	-				Install bus shelter (including integrated seating) and		1						2 12 / 2410	
148	WATERLOO RD	COOLINGA ST	North	71m from COOLINGA ST	Bus stop – No shelter, no seating, not paved to kerb	pave to kerb	Mobility access	1	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$38,500
						Install bus shelter (including integrated seating) and									
152	WATERLOO RD	TRAFALGAR PL	South	70m from TRAFALGAR PL	Bus stop – No shelter, no seating, not paved to kerb	pave to kerb	Mobility access	1	CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$38,500

ID	Street	Nearest cross street	Side of the road/ Intersection		Issues	Action	Justification/Link to PAMP report	Length m /Unit	Responsibility	Potential Funding Source	Potential sources of funding within Council	Potential Infrastructure Trigger	Priority	Timeframe	Potential indicative costing
156	WATERLOO RD	COTTONWOOD CRES	South	CRES	Kerb ramp lip/step	ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
158	IVANHOE PL	HERRING RD	South	12m from HERRING RD	Kerb ramp lip/step	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
159	IVANHOE PL	HERRING RD	North	9m from HERRING RD	Kerb ramp lip/step	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
162	LANE COVE RD	WATERLOO RD	North	17m from WATERLOO RD	Kerb ramp lip/step	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS	RMS/ development contribution	N/A	N/A	2	5 - 10 years	\$1,000
163	EPPING RD	HERRING RD	North	20m from HERRING RD	Kerb ramp lip/step	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS	RMS/ development contribution	N/A	N/A	2	5 - 10 years	\$1,000
165	HERRING RD	WINDSOR DR	South	8m from WINDSOR DR	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
166	HERRING RD	INNOVATION RD	South	38m from INNOVATION RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 vears	\$1.000
168	LANE COVE RD	TALAVERA RD	North	12m from TALAVERA RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS	RMS/ development contribution	N/A	N/A	2	5 - 10 years	\$1,000
170	TALAVERA RD	LANE COVE RD	South	200m from LANE COVE RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	RMS/ development contribution	N/A	N/A	2	5 - 10 years	\$1,000
171	TALAVERA RD	LANE COVE RD	South	200m from LANE COVE RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design Remove existing kerb ramp and install new kerb	Mobility access	1	RMS/CoR	RMS/ development contribution	N/A	N/A	2	5 - 10 years	\$1,000
172	KHARTOUM RD	TALAVERA RD	South	13m from TALAVERA RD	Kerb ramp non-standard	ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
173	TALAVERA RD	KHARTOUM RD	North	10m from KHARTOUM RD	Kerb ramp non-standard	ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
174	KHARTOUM RD	TALAVERA RD	North	10m from TALAVERA RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
175	TALAVERA RD	KHARTOUM RD	North	7m from KHARTOUM RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
176	TALAVERA RD	KHARTOUM RD	North	10m from KHARTOUM RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
177	COOLINGA ST	GIFFNOCK AVE	North	16m from GIFFNOCK AVE	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
179	UNNAMED RD	RIVETT RD	South	50m from RIVETT RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
180	RIVETT RD	LUCKNOW RD	South	12m from LUCKNOW RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	RMS/ development contribution	N/A	N/A	2	5 - 10 years	\$1,000
181			South	75m from DELHLRD	Kerb ramp pop-standard	Remove existing kerb ramp and install new kerb	Mobility access	1	PMS/CoP	RMS/ development	N/A	N/A	2	5 - 10 years	\$1.000
182	PLASSEY RD	JULIUSAVE	South	24m from JULIUS AVE	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$1,000
183	HERRING RD	IVANHOE PL	North	50m from IVANHOE PL	Utilities/manhole uneven	CoR to contact utility provider for further works to be carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	2	5 - 10 years	To be Determined
184	HERRING RD	IVANHOE PL	North	24m from IVANHOE PL	Utilities/manhole uneven	CoR to contact utility provider for further works to be carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	2	5 - 10 years	To be Determined
185	HERRING RD	WINDSOR DR	North	50m from WINDSOR DR	Utilities/manhole uneven	CoR to contact utility provider for further works to be carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	2	5 - 10 years	To be Determined
186			North	92m from WINDSOR DR	l Itilities/manhole uneven	CoR to contact utility provider for further works to be carried out by utility provider	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	2	5 - 10 years	To be Determined
187		UNIVERSITY AVE	North	97m from UNIVERSITY AVE	Utilities/manhole uneven	CoR to contact utility provider for further works to be carried out by utility provider	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	2	5 - 10 years	To be Determined
188	HERRING RD	TALAVERA RD	North	51m from TALAVERA RD		CoR to contact utility provider for further works to be carried out by utility provider	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	2	5 - 10 years	To be Determined
191	TALAVERA RD	LANE COVE RD	South	90m from LANE COVE RD	Utilities/manhole uneven	corried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	2	5 - 10 years	To be Determined
197	WATERLOO RD	COOLINGA ST	South	122m from COOLINGA ST	Utilities/manhole uneven	CoR to contact utility provider for further works to be carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	2	5 - 10 years	To be Determined
198	LANE COVE RD	WATERLOO RD	South	32m from WATERLOO RD	Utilities/manhole uneven	CoR to contact utility provider for further works to be carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	2	5 - 10 years	To be Determined

ID	Street	Nearest cross street	Side of the road/ Intersection	Location	Issues	Action	Justification/Link to PAMP report	Length m /Unit	Responsibility	Potential Funding Source	Potential sources of funding within Council	Potential Infrastructure Trigger	Priority	Timeframe	Potential indicative costing
199	EPPING RD	HERRING RD	North	33m from HERRING RD	l Itilities/manhole uneven	CoR to contact utility provider for further works to be carried out by utility provider	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	2	5 - 10 years	To be Determined
201	JULIUS AVE	RIVETT RD	South	52m from RIVETT RD	Utilities/manhole uneven	CoR to contact utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	2	5 - 10 years	To be Determined
215	WATERLOO RD	COOLINGA ST	North	16m from COOLINGA ST	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Macquarie Park Special Rates Levy	N/A	2	5 - 10 years	\$8,000
217	HERRING RD	EPPING RD	North	24m from EPPING RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Macquarie Park Special Rates Levy	N/A	2	5 - 10 years	\$8,000
232	WATERLOO RD	WICKS RD	South	Close to Wicks Road and Waterloo Rd intersection	Poor lit area	N/A - adjacent streets considered as well lit. Further night audit may be required.	Pedestrian safety	1	RMS/CoR	N/A	N/A	N/A	2	N/A	N/A
233	WATERLOO RD	COOLINGA ST	South	Approximately 300m east of Waterloo Rd and Lane Cove Rc intersection	t Lighting required	Install pedestrian path lighting	Pedestrian safety	1	RMS/CoR	50% RMS 50% CoF	General Revenue	N/A	2	5 - 10 years	\$8,000
242	HERRING RD	WINDSOR DR	South	Approximately 50 m north of Ivanhoe PI	Poor lit area	Trim trees	Location identified in questionnaire for request for improved lighting - Trim trees	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	2	5 - 10 years	\$300
252	WATERLOO RD	HERRING RD	North	Vehicle access points at Macquarie Centre	Vechicle access points at Macquarie Centre present potential conflicts with pedestrians	Consulation should occur with Macquarie Centre and traffic calming measures and signage should be considered for installation by Macquarie Centre	Pedestrian safety	1	pR/ Macquarie Cer	n Macquarie Centre	N/A	Macquarie Centre	2	5 - 10 years	To be Determined
253	EPPING RD	DELHI RD	Intersection	Intersection	Long pedestrian waiting times	Consultation with RMS to consider shorter waiting times for pedestrians. Further traffic modelling and investigation may be required.	Pedestrian amenity and connectivity	1	RMS/CoR	NA	N/A	N/A	2	5 - 10 years	To be Determined

											Potential sources	Potential			
10	01		Side of the road/	/		Anting		Length m	Description	Potential Funding	of funding within	Infrastructure	Deleviter	Timeforme	Potential
Ū	Street	Nearest cross street	Intersection	Location	ISSUES	Action Further investigation required. Location to be	Justification/Link to PAMP report	/Unit	Responsibility	Source	Council	i rigger	Priority	Timeframe	Indicative costing
11	HERRING RD	N/A	North	N/A	Cycling path potential connection	considered with further investigation in bicycle	Cycling connectivity	408	DP&I	DP&I	N/A	Herring Road	3	10 - 25 vears	To be Determined
			North		Cyoing pair potential connection	Shacey	Cycling connectivity	400	Didi	Dida		0/1	5	10 - 25 years	To be Determined
12	BYFIELD ST	WATERLOO RD	North	27m from WATERLOO RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$27
13	BYFIELD ST	LYONPARK RD	North	67m from LYONPARK RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$30
14	DELHI RD	THE MAIN AVE	North	140m from THE MAIN AVE	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	3	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$71
15	DELHI RD	JULIUS AVE	North	35m from JULIUS AVE	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	2	CoR	CoR	General Revenue	N/A	3	10 - 25 vears	\$62
10	DELINITO	0011007112	Horan			r oopdar girrang		-	0011	OOIT			0	10 20 years	
16	DELHI RD	RICHARDSON PL	North	97m from RICHARDSON PL	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	2	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$60
19	EPPING RD	PAUL ST NORTH	South	48m from PAUL ST NORTH	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	3	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$79
												North Ryde			
												Project Transit			
												Oriented Development			
					Crossing is contrained at this intersection. Ramp to bus stop on Epping	Install pedestrian refuges at existing island if warrants	Intersection upgrade as per Concept Plan 3 in PAMP					State Significant Development			
21	RIVETT RD	EPPING RD	North	at intersection	Road is not direct.	are met.	report	1	DP&I	DP&I	N/A	Application1	3	5 - 10 years	\$12,000
24	HERRING RD	WATERLOO RD	South	35m from WATERLOO RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	DP&I	DP&I	N/A	UAP <sup>1</sup>	3	10 - 25 years	\$33
25	HERRING RD	I ACHLAN AVE	South	88m from LACHLAN AVE	Footpath uneven or cracked – all types	Ecotpath grinding	Pedestrian safety	3	DP&I	DP&I	N/A	Herring Road	3	10 - 25 years	\$74
20		E IONE IT I I	oodun						Didi	Diai		Herring Road	0	10 20 years	
28	HERRING RD	IVANHOE PL	South	9m from IVANHOE PL	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	2	DP&I	DP&I	N/A	UAP' Herring Road	3	10 - 25 years	\$38
30	HERRING RD	WINDSOR DR	North	67m from WINDSOR DR	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	DP&I	DP&I	N/A	UAP <sup>1</sup>	3	10 - 25 years	\$30
32	HERRING RD	UNIVERSITY AVE	North	13m from UNIVERSITY AVE	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	3	DP&I	DP&I	N/A	UAP <sup>1</sup>	3	10 - 25 years	\$69
33	HERRING RD	INNOVATION RD	North	34m from INNOVATION RD	Footpath uneven or cracked – all types	Ecotpath grinding	Pedestrian safety	1	DP&I	DP&I	N/A	Herring Road	3	10 - 25 years	\$27
			North			r oopaar grinaing			Didi	Diai		Herring Road	5	10 - 25 years	
34	HERRING RD	TALAVERA RD	North	43m from TALAVERA RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	2	DP&I	DP&I	N/A	UAP'	3	10 - 25 years	\$39
39	JULIUS AVE	LUCKNOW RD	South	145m from LUCKNOW RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$29
41	JULIUS AVE	NEWBIGIN CL	North	26m from NEWBIGIN CL	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$35
42	JULIUS AVE	RICHARDSON PL	North	14m from RICHARDSON PL	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	4	CoR	CoR	General Revenue	N/A	3	10 - 25 vears	\$107
72	002.007.02								OOK	oon	Contoirai reoroniae		0	10 20 years	
48	KHARTOUM RD	TALAVERA RD	North	27m from TALAVERA RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$24
49	KHARTOUM RD	TALAVERA RD	North	101m from TALAVERA RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$26
50			North	148m from TALAVERA PD	Footpath upgyen or cracked – all types	Footpath grinding	Redectrian safety	2	CoP	CoP	General Revenue	N/A	2	10 25 10000	¢.40
50			North					2	COK	COK	General Nevenue	N/A	3	10 - 25 years	φ <del>4</del> υ
51	KHARTOUM RD	WATERLOO RD	North	108m from WATERLOO RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$29
52	KHARTOUM RD	WATERLOO RD	North	105m from WATERLOO RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$27
53	KHARTOUM RD	WATERLOO RD	South	111m from WATERLOO RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$34
54	KHARTOUM RD	WATERLOO RD	South	121m from WATERLOO RD	Footpath upeven or cracked – all types	Ecotpath grinding	Pedestrian safety	2	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$41
04			ooduit					-	OOK	oon			0	10 20 years	
55	KHARTOUM RD	TALAVERA RD	South	87m from TALAVERA RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$23
56	KHARTOUM RD	HILLS RD	South	88m from HILLS RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$31
61	LANE COVE RD	WATERLOO RD	South	65m from WATERLOO RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	3	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$64
64	LYONPARK RD	BYFIELD ST	North	96m from BYFIELD ST	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 vears	\$25
0-			North			Factorith aviation					Canas-1 D-	N1/A	-	40.05	
65	LYUNPARK RD	BIFIELD SI	North	TIUM TOM BYFIELD ST	roupain uneven or cracked – all types	roopatn grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$17
66	LYONPARK RD	PAUL ST NORTH	North	76m from PAUL ST NORTH	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$27
67	LYONPARK RD	PAUL ST NORTH	North	19m from PAUL ST NORTH	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$19
71	PITTWATER	EPPING RD	North	29m from EPPING RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$24
77			North	130m from ALMA PD	Epotenth upeven or cracked will three	Ecotopth grinding	Pedectrian cafety	А	CAP	CoP	Canaral Baussur	NI/A	0	10 25 10000	0.01
	IALAVERA KU		INUIUI		n oopaan uneven or cracked – all types	n ooipatri girinding		4	CUK	CUR	General Revenue	N/A	3	10 - 20 years	\$95
78	TALAVERA RD	KHARTOUM RD	North	188m from KHARTOUM RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	2	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$48
79	TALAVERA RD	KHARTOUM RD	North	50m from KHARTOUM RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$30

			Side of the road/					Length m		Potential Funding	Potential sources	Potential Infrastructure			Potential
ID	Street	Nearest cross street	Intersection	Location	Issues	Action	Justification/Link to PAMP report	/Unit	Responsibility	Source	Council	Trigger	Priority	Timeframe	indicative costing
80	TALAVERA RD	KHARTOUM RD	North	40m from KHARTOUM RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	4	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$104
81	TALAVERA RD	LANE COVE RD	North	320m from LANE COVE RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	4	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$97
85	TALAVERA RD	KHARTOUM RD	South	180m from KHARTOUM RD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	3	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$77
86			South	130m from ALMA RD	Footnath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$2'
				18m from COTTONWOOD				-	0.0	0.5				10 20 years	φ21
88	WATERLOO RD	COTTONWOOD CRES	South	49m from COTTONWOOD	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	5	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$134
89	WATERLOO RD	COTTONWOOD CRES	South	CRES	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$24
90	WATERLOO RD	BYFIELD ST	North	110m from BYFIELD ST	Footpath uneven or cracked – all types	Footpath grinding	Pedestrian safety	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$27
												North Ryde Station Precinct			
												Project Transit Oriented			
												Development State Significant			
08	WICKS PD		South		Footpath upeyed or cracked – all types	Ecotoath grinding	Padastrian safatu	3	Transport for NSV		NI/A	Development	2	10 25 10010	¢02
30	WICKS KD		Sodin		roupaur uneven of cracked – air types	In the long term for consideration with future fine	recession salety	5	Transport for NSV	1111370	IN/A	Application	3	10 - 25 years	φοι
121	PAUL ST NORTH	LYONPARK RD	North	21m from LYONPARK RD	The roundabout at this location presented limited safe crossing opportunities for pedestrians.	grain network: Install signalised pedestrian crossing at this location.	Pedestrian connectivity and safety	1	RMS/CoR	50% RMS 50% Col	N/A	N/A	3	10 - 25 years	\$300,000
122	PAUL ST NORTH	LYONPARK RD	South	49m from LYONPARK RD	See ID 121	See ID 121		See ID 121	See ID 121	See ID 121	See ID 121	See ID 121	3	See ID 121	To be Determined
127	LANE COVE RD	WATERI OO RD	South	104m from WATERLOO RD	See ID 133	See ID 133		See ID 133	See ID 133	See ID 133	See ID 133	See ID 133	3	See ID 133	To be Determined
127	Date COVE AD		Couli					000 10 100	00010100	00010100	00010100	00010100		00010100	TO be Determined
						It is noted that signalised intersection at Herring Rd									
						and Ivanhoe Place may not be approved by RMS as so close to other intersection would be likely to cause									
						problems with traffic. The current intention with Ryde's fine grained road network is for this									
						intersection to remain as a roundabout. Intersection should be monitored with potential future									
						development at Macquarie University and Herring Road for further consideration of a signalised									
132	HERRING RD	IVANHOE PL	North	10m from IVANHOE PL	Poor crossing point at existing roundabout.	pedestrian crossing at this location.	Pedestrian connectivity and safety	1	CoR	CoR	General Revenue	Monitor situation.	3	10 - 25 years	To be Determined
404			North			times for pedestrians. Further traffic modelling and	Dedectrice emerity and comparisity	1	DMO/O-D		NI/A	NI/A		40.05	To be Determined
134	LAINE COVE RD	TALAVERA RD	North		Long pedesuran walung umes	Consultation with RMS to consider shorter waiting		1	RIVI5/COR	NA	IN/A	IN/A	3	10 - 25 years	To be Determined
135	LANE COVE RD	EPPING RD	South	15m from EPPING RD	Long pedestrian waiting times	times for pedestrians. Further traffic modelling and investigation may be required.	Pedestrian amenity and connectivity	1	RMS/CoR	NA	N/A	N/A	3	10 - 25 years	To be Determined
						Consultation with RMS to consider shorter waiting times for pedestrians. Further traffic modelling and									
136	HILLS RD	EPPING RD	South	6m from EPPING RD	Long pedestrian waiting times	investigation may be required.	Pedestrian amenity and connectivity	1	RMS/CoR	NA	N/A	N/A	3	10 - 25 years	To be Determined
						Consultation with RMS to consider shorter waiting times for pedestrians. Further traffic modelling and									
137	WATERLOO RD	LANE COVE RD	South	6m from LANE COVE RD	Long pedestrian waiting times	investigation may be required. Consultation with RMS to consider shorter waiting	Pedestrian amenity and connectivity	1	RMS/CoR	NA	N/A	N/A	3	10 - 25 years	To be Determined
138	HERRING RD	WATERI OO RD	North	4m from WATERLOO RD	Long pedestrian waiting times	times for pedestrians. Further traffic modelling and investigation may be required	Pedestrian amenity and connectivity	1	RMS/CoR	NA	N/A	N/A	3	10 - 25 vears	To be Determined
100						Consultation with RMS to consider shorter waiting			TIMO/OOT	10/			0	10 20 years	To be betermined
140	EPPING RD	WICKS	North	4m from WICKS	Long pedestrian waiting times	investigation may be required.	Pedestrian amenity and connectivity	1	RMS/CoR	NA	N/A	N/A	3	10 - 25 years	To be Determined
142	LANE COVE RD	HILLS RD	North	55m from HILLS RD	Bus stop – No shelter, no seating, not paved to kerb	Install bus shelter (including integrated seating) and pave to kerb	Mobility access	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$38,500
143	WATERLOO RD	COTTONWOOD CRES	S North	20m from COTTONWOOD CRES	Bus stop - No shelter, no seating, not paved to kerb	Install bus shelter (including integrated seating) and pave to kerb	Mobility access	1	CoR	CoR	General Revenue	N/A	3	10 - 25 vears	\$38,500
			North		Rue ston – No shelter no sosting not pousd to kert	Install bus cheltor	Mobility access	4	0.0	CoP	General Revenue	NI/A	0	10 05	\$00,000
144									COK	COR	General Revenue	IN/A	3	10 - 25 years	\$38,500
145	WATERLOO RD	HERRING RD	South	56m from HERRING RD	Bus stop – No shelter	Install bus shelter only Install bus shelter (including integrated seating) and	Mobility access	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$30,000
146	KHARTOUM RD	WATERLOO RD	South	77m from WATERLOO RD	Bus stop – No shelter, no seating, not paved to kerb	pave to kerb	Mobility access	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$38,500

											Potential sources	Potential			
ID	Street	Nearest cross street	Side of the road/	Location	Issues	Action	Justification/Link to PAMP report	Length m /Unit	Responsibility	Potential Funding Source	of funding within Council	Trigger	Priority	Timeframe	Potential indicative costing
	Olioot		Interection	Loodiidii	10000	Install bus shelter (including integrated seating) and		/orin	reopenoionity	Couloo	Counter	inggoi	Thomy		indicative cooking
147	KHARTOUM RD	WATERLOO RD	North	93m from WATERLOO RD	Bus stop – No shelter, no seating, not paved to kerb	pave to kerb	Mobility access	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$38,500
													-		
153	CULLODEN RD	WATERLOO RD	North	84m from WATERLOO RD	Bus stop – No shelter, no seating	Install bus shelter (including integrated seating)	Mobility access	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$38,500
154	EPPING RD	HERRING RD	North	70m from HERRING RD	Bus stop – No shelter	Install bus shelter only	Mobility access	1	CoR	CoR	General Revenue	N/A	3	10 - 25 vears	\$30.000
155	DELHI RD	RICHARDSON PL	North	117m from RICHARDSON PL	Bus stop – No shelter, no seating	Install bus shelter (including integrated seating)	Mobility access	1	CoR	CoR	General Revenue	N/A	3	10 - 25 years	\$38,500
407			N		Kata area a standard	Remove existing kerb ramp and install new kerb	Mark West and a second		DM0/0-D	500/ DMO 500/ 0-1	0	N//A	0	40.05	¢4.000
167	WATERLOORD	KHAR TOUM RD	North	17m from KHAR TOUM RD	Kerb ramp non-standard	ramp – upgrade to AS design	Mobility access	1	RM5/COR	00% RMS 50% C0	General Revenue	N/A	3	10 - 25 years	\$1,000
						Remove existing kerb ramp and install new kerb				development					
169	HILLS RD	LANE COVE RD	North	15m from LANE COVE RD	Kerb ramp non-standard	ramp – upgrade to AS design	Mobility access	1	RMS	contribution	N/A	N/A	3	10 - 25 years	\$1,000
										RMS/					
170		WICKS	North	15m from WICKS	Kerb ramp pop-standard	Remove existing kerb ramp and install new kerb	Mobility access	1	DMC	development	N/A	NI/A	2	10 25 10000	\$1.00(
176	EFFING KD	WICKS	NOIT	ISHI HOIH WICKS		CoR to contact utility provider for further works to be	Mobility access	1	RMS	CONTRIBUTION	IN/A	IN/A	3	10 - 25 years	\$1,000
189	TALAVERA RD	KHARTOUM RD	North	50m from KHARTOUM RD	Utilities/manhole uneven	carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	3	10 - 25 years	To be Determined
						CoR to contact utility provider for further works to be									
190	TALAVERA RD	LANE COVE RD	North	120m from LANE COVE RD	Utilities/manhole uneven	carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	3	10 - 25 years	To be Determined
192	TALAVERA RD	LANE COVE RD	South	180m from LANE COVE RD	Utilities/manhole uneven	CoR to contact utility provider for further works to be carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	3	10 - 25 vears	To be Determined
102						CoR to contact utility provider for further works to be				0011				10 20 youro	TO DO DOLOMINOU
193	TALAVERA RD	KHARTOUM RD	South	320m from KHARTOUM RD	Utilities/manhole uneven	carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	3	10 - 25 years	To be Determined
	TH N (50 A 00					CoR to contact utility provider for further works to be							-		
194	TALAVERA RD	KHAR TOUM RD	South	220m from KHAR TOUM RD	Utilities/manhole uneven	carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	3	10 - 25 years	To be Determined
195	TALAVERA RD	KHARTOUM RD	South	200m from KHARTOUM RD	Utilities/manhole uneven	carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	3	10 - 25 vears	To be Determined
						CoR to contact utility provider for further works to be									
196	TALAVERA RD	KHARTOUM RD	South	45m from KHARTOUM RD	Utilities/manhole uneven	carried out by utility provider.	Mobility access and pedestrian safety	1	CoR	CoR	N/A	N/A	3	10 - 25 years	To be Determined
200			North	14m from ILII ILIS AVE	Litilities/manholo.ups/op	CoR to contact utility provider for further works to be	Mobility appear and podestrian sofety	1	CaD	CaD	NI/A	NI/A	2	10 25 veers	To be Determined
200	DELHIND	JOLIUS AVE	NOIT	14III IIOIII JOLIOS AVE		carried out by utility provider.	Mobility access and pedestitian salety	1	COR	COR	IN/A	N/A	3	10 - 25 years	To be Determined
202	WICKS	EPPING RD	South	43m from EPPING RD	Footpath obstruction - trees	Trim trees	Clear path for pedestrian movement	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	3	10 - 25 years	\$300
						Remove existing kerb ramp and install new kerb									
203	ALMA RD	TALAVERA RD	South	18m from TALAVERA RD	Pole obstruction at on kerb ramp	ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	3	10 - 25 years	\$1,500
				21m from COTTONWOOD							Macquarie Park				
204	WATERLOO RD	COTTONWOOD CRES	S South	CRES	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 years	\$8,000
												Macquarie Centre			
205	HERRING RD	INNOVATION RD	South	75m from INNOVATION RD	Signage required	Install CoR Wavfinding Sign	Pedestrian amenity and connectivity	1	TfNSW	TfNSW	N/A	bus interchange upgrade	3	10 - 25 vears	\$8.000
- C\hl									111105377			- upuluuu			

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											<b>D</b> ( ) ( )	<b>B</b> ( ) ( )			
			Side of the road/					Longth m		Rotantial Eurodina	Potential sources	Potential			Potontial
ID	Street	Nearest cross street	Intersection	Location	seuse	Action	.lustification/Link to PAMP report	/Unit	Responsibility	Source	Council	Trigger	Priority	Timeframe	indicative costing
	Cubbi		Interesection	Loodiion	10000	10101		/01110	reopenoisinty	000100	Maguaria Bark	inggoi	i nonty	Timonamo	indicative cooking
											Special Rates				1
206	EPPING RD	PAUL ST NORTH	South	36m from PAUL ST NORTH	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 vears	\$8.000
				Delhi Rd near the existing bus							Macquarie Park				1
				stop on the outer boundary of							Special Rates				1
207	DELHI RD	RICHARDSON PL	North	Macquarie Park	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 years	\$8,000
											Macquarie Park				1
											Special Rates				1
208	JULIUS AVE	DELHI RD	North	10m from DELHI RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 years	\$8,000
											Macquarie Park				1
		TH 41/504.00		10 (							Special Rates		_		1
209	KHAR TOUM RD	TALAVERA RD	South	12m from TALAVERA RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	COR	Levy	N/A	3	10 - 25 years	\$8,000
											Macquarie Park				1
210			North	18m from WATERLOO RD	Signage required	Install CoR Wayfinding Sign	Redestrian amonity and connectivity	1	CoP	CoP	Special Rates	NI/A	2	10 25 10000	\$9,000
210	BTFIELD ST	WATERLOORD	North	18III IIOIII WATERLOO RD	Signage required	Install COR Waylinding Sign	Pedestrian amenity and connectivity	1	COR	COR	Levy	IN/A	3	10 - 25 years	\$0,00U
											Macquarie Park				1
211	WATERI OO RD	KHARTOUM RD	South	16m from KHARTOUM RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Special Rates	N/A	3	10 - 25 years	\$8.000
211	WATERLOOKD	IN WITTOOM TO	oodan		olghage required	Install Cort Waymang Olgh			0011	0011	Mooguaria Bark	10/7	5	10 20 years	φ0,000
											Special Rates				1
212	WATERLOO RD	KHARTOUM RD	North	12m from KHARTOUM RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 years	\$8,000
											Macquarie Park				
											Special Rates				1
213	GIFFNOCK AVE	LYONPARK RD	South	34m from LYONPARK RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 years	\$8,000
											Macquarie Park				1
											Special Rates				1
214	TALAVERA RD	LANE COVE RD	North	14m from LANE COVE RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 years	\$8,000
											Macquarie Park				1
											Special Rates				1
216	EDEN PARK DR	WATERLOO RD	North	17m from WATERLOO RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 years	\$8,000
											Macquarie Park				1
040			N			la stall O-D M/s fie die e Oise	De destrine servezito en deservezativito		0-0	0.0	Special Rates	N1/A	0	10.05	<b>6</b> 0.00/
218	EPPING RD	LANE COVE RD	North	26m from LANE COVE RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	COR	COR	Levy	N/A	3	10 - 25 years	\$8,000
											Macquarie Park				1
210	LANE COVE RD	EPPING RD	South	30m from EPPING RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoP	CoR	Special Rates	N/A	3	10 - 25 vears	\$8.000
215	ENNE COVE ND		oodan		olghage required	Install Cort Waymaing Cign			COIL	0011	Measuratic Dark	14/7	5	10 - 25 years	ψ0,000
											Special Rates				1
220	EPPING RD	WICKS RD	South	14m from WICKS RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 vears	\$8.000
											Macquarie Park				1
											Special Rates				1
221	EPPING RD	HILLS RD	North	42m from HILLS RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 years	\$8,000
											Macquarie Park				1
											Special Rates				ł
222	LUCKNOW RD	EPPING RD	North	15m from EPPING RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 years	\$8,000
											Macquarie Park				ł
222			South	Near interaction	Signage required	Install CoP Wayfinding Sign	Pedestrian amenity and connectivity	4	CoP	CoP	Special Rates	NI/A	2	10 - 25 1000	¢0.00/
223		WANNOE PL	30001	inear intersection	orginage required	Instan OUK Wayinung Sign			CUR	CUR	Levy	IN/A	3	iu - 20 years	φo,000
											Macquarie Park				1
224	TALAVERA RD	HERRING RD	North	11m from HERRING RD	Signage required	Install CoR Wavfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levv	N/A	3	10 - 25 vears	\$8.000
		1	1				,	1	1	1	Macquarie Park		-		<i>\$</i> 0,000
											Special Rates				ł
225	HERRING RD	TALAVERA RD	South	16m from TALAVERA RD	Signage required	Install CoR Wayfinding Sign	Pedestrian amenity and connectivity	1	CoR	CoR	Levy	N/A	3	10 - 25 years	\$8,000
															1
226	LYONPARK RD	BYFIELD ST	North	At intersection	Lighting required	Install pedestrian path lighting	Pedestrian safety	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	3	10 - 25 years	\$8,000
				Approximately 100m south of		N/A - adjacent streets considered as well lit. Further									ł
227	LYONPARK RD	GIFFNOCK AVE	North	Giffnock Ave/ Lyon Park Rd	Poor lit area	night audit may be required.	Pedestrian safety	1	RMS/CoR	N/A	N/A	N/A	3	N/A	N/A
				Approximately 20m south of											ł
			Quarth	Coolinga St/ Waterloo Rd	Dear literate	N/A - adjacent streets considered as well lit. Further	De destrine sefet					N/ (*	_		h
228	COOLINGA ST	WATERLOU RD	SOUTH	Intersection	Poor in area	nigni audit may be required.	redesirian sarety	1	RMS/CoR	N/A	N/A	N/A	3	N/A	N/A
220			South	Approximately 50m south of	Poor lit area	N/A - adjacent streets considered as well lit. Further	Pedestrian safety	4	DMC	NI/A	N/A	NI/A	2	N1/A	NI/A
229	SIT NOUR AVE		00001	Approximately 100		night auun may be lequileu.	r cucstnan sarety	+	KIVIS	IN/A	IN/A	IN/A	3	IN/A	IN/M
				Approximately 100m south of Waterloo Pd/Bufield Pd		N/A - adjacent streets considered as well lit. Eurthor									ł
230	BYFIELD ST	WATERLOO RD	South	intesection	Poor lit area	night audit may be required.	Pedestrian safety	1	RMS/CoR	N/A	N/A	N/A	3	N/A	N/A
200						N/A - adjacent streets considered as well lit Further		1					Ť		
231	WATERLOO RD	WICKS RD	North	Thomas Holter Drive	Poor lit area	night audit may be required.	Pedestrian safety	1	RMS/CoR	N/A	N/A	N/A	3	N/A	N/A

									1						
											Potential sources	Potential			
			Side of the road/					Length m		Potential Funding	of funding within	Infrastructure			Potential
ID	Street	Nearest cross street	Intersection	Location	Issues	Action	Justification/Link to PAMP report	/Unit	Responsibility	Source	Council	Trigger	Priority	Timetrame	indicative costing
234	WATERLOO RD	GIFFNOCK AVE	South	Khartoum Rd traffic signals	Lighting required	Install pedestrian path lighting	Pedestrian safety	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	3	10 - 25 years	\$8,000
				Approximately 50m north of										· · ·	
235	RIVETT RD	JULIUS AVE	North	Rivett Rd/Julius Ave crossing	Poor lit area	Trim trees	Pedestrian safety	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	3	10 - 25 years	\$300
				Approximately 20 m west of						RMS/					
236	EPPING RD	RIVETT RD	South	Epping Rd/Rivett Rd intersection	Lighting required	Install pedestrian path lighting	Pedestrian safety	1	RMS	contribution	N/A	N/A	3	10 - 25 years	\$8.000
					5 - 5 - 1					RMS/					+0,000
				Approximately 100m east of						development					
237	DELHI RD	JULIUS AVE	North	Delhi Rd/Julies Ave crossing	Poor lit area	Trim trees	Pedestrian safety	1	RMS	contribution	N/A	N/A	3	10 - 25 years	\$300
				Approximately 100 m west of Talayera Rd/ Technology Pl											
238	TALAVERA RD	RESEARCH PARK DR	South	intersection	Lighting required	Install pedestrian path lighting	Pedestrian safety	1	RMS/CoR	50% RMS 50% Col	General Revenue	N/A	3	10 - 25 years	\$8,000
				Approximately 100 m south of											
0.10			Orwith	Gymnasium Rd/Culloden Rd	Link for a second second	heatell a subscription with Polytics	Location identified in questionnaire for request for		5140/0 B		0	<b>N</b> 1/A		10.05	<b>AA AA</b>
240	CULLODEN RD	GYMINASIUM RD	South	Intersection	Lighting required	Install pedestrian path lighting	Improved lighting	1	RMS/CoR	0% RMS 50% Col	General Revenue	N/A	3	10 - 25 years	\$8,000
				Approximately 100m north of Herring Rd/Talavera Rd			Location identified in questionnaire for request for			development					
244	HERRING RD	INNOVATION RD	North	intersection	Lighting required	Install pedestrian path lighting	improved lighting	1	RMS	contribution	N/A	N/A	3	10 - 25 years	\$8,000
				Approximately 10 m north of						RMS/					
245	TALAVERA RD	LANE COVE RD	North	Lane Cove Rd/Talavera Rd	Lighting required	Install pedestrian path lighting	Location identified in questionnaire for request for	1	RMS	development	N/A	N/A	3	10 - 25 vears	\$8,000
240	INERVERVIND	DARE COVE IND	North	Intersection					TUNO	contribution	10/7	1977	0	10 20 years	\$0,000
											Section 94 or				
											Macquarie				
						When the new fine grain road network connection is					Special	Development and			
					Identified as a future pedestrian crossing point to connect with footpaths	constructed in 10 - 20 years, modelling indicates that	Pedestrian connectivity for the proposed future fine				Levy or Condition	establishment of the fine grain road			
248	TALAVERA RD	ALMA RD	North	Future pedestrian crossing point	associated with fine grain network.	pedestrian crossing.	grain network	1	CoR	Developer	of Consent	network.	3	10 - 25 years	\$400,000
						When the future fine grain road network is					Section 94 or				
						constructed in 10 - 20 years, modelling indicates that					Macquarie				
						a warrant may be met for new signalised pedestrian crossings. Consideration also needs to be given to					Development	establishment of			
					Future pedestrian crossing point to connect with footpaths associated	the network wide traffic efficiency impacts resulting	Pedestrian connectivity for the proposed future fine				Levy or Condition	the fine grain road			
249	TALAVERA RD	LANE COVE RD	South	Future pedestrian crossing point	with fine grain network	from the new signals.	grain network	1	CoR	Developer	of Consent	network.	3	See ID 248	To be Determined
											Section 94 or				
						When the new fine grain road network connection is					Special	Development and			
						constructed in 10 - 20 years, modelling indicates that					Development	establishment of			
250	WATERI OO RD	COOLINGA ST	North	Future pedestrian crossing point	Identified as a future pedestrian crossing point to connect with footpaths associated with fine grain petwork	the warrant may be met for a new signalised	Pedestrian connectivity for the proposed future fine	1	CoR	Developer	Levy or Condition	the fine grain road	3	10 - 25 vears	\$400.000
200		COCLINGICOT	110101	I diaro podocinari oroconig point		podoolinan orodoning.	gian notion		CON	Bereiepei	Section 04 or	notivonti	0	10 20 youro	\$ 100,000
						Modelling indicates that in 10-20 years time, warrant					Macquarie				
						still not met for signalised intersection based on					Special				
251	KHARTOUM RD	WATERLOO RD	South	New intersection as a result of future fine grain network	Identified as a tuture pedestrian crossing point to connect with footpaths associated with fine grain network.	predicted pedestrian volumes. However, actual growth should be monitored	Pedestrian connectivity for the proposed future fine grain network	1	CoR	CoR	Development Levy	Monitor situation	3	10 - 25 vears	To be Determined
					g		<u></u>	· ·	00.0	00.1			v	20 yours	
					Bus stop – No shelter, no seating. Along shared pedestrian and cycle	Considering location, bus shelter is unlikely to be able									
149	WATERLOO RD	LANE COVE RD	South	70m from LANE COVE RD	path.	to install due to space constraints	N/A	1	CoR	N/A	N/A	N/A	N/A	N/A	N/A
150			South		Bus stop – No shelter, no seating. Along shared pedestrian and cycle	Strained location due to shared pedestrian and	N/A	1	CoP	N//A	N/A	N/A	N/A	NI/A	NI/A
100			Gouin		Paur.	oyoning path. Location should be reviewed.			CUR	N/A	IN/A	IN/A	IN/A	IN/A	IN/A
				Approximately 100 m west of			Leasting identified in suppliance in factors of								
239	TALAVERA RD	INNOVATION RD	North	intersection	Poor lit area	night audit may be required.	improved lighting	1	RMS/CoR	N/A	N/A	N/A	N/A	N/A	N/A
				Approximately 50 m east of				· ·							
				Waterloo Rd/Herring Rd		N/A - adjacent streets considered as well lit. Further	Location identified in questionnaire for request for								
243	UNIVERSITY AVE	HERRING RD	South	intersection	Poor lit area	night audit may be required.	improved lighting	1	RMS	N/A	N/A	N/A	N/A	N/A	N/A
				Approximately 100m west of Talayera Rd/ Khartoum Rd		N/A - adjacent streets considered as well lit Further	Location identified in questionnaire for request for								
246	TALAVERA RD	KHARTOUM RD	South	intersection	Poor lit area	night audit may be required.	improved lighting	1	RMS/CoR	N/A	N/A	N/A	N/A	N/A	N/A
						To be upgraded as part of pedestrian crossing works									
247			South	34m from INNOVATION PD	Lighting required	as part of the Macquarie Centre bus interchange	Location identified in questionnaire for request for	4	TENIOW	TENOW	N/A	NI/A	NI/A	N1/A	
247			Journ	JHIT TOTT INNOVATION RD	Lighting required	apgraue by manapolition NOW	Improved lighting	1 1	UINOVV	11110010	IN/A	IN/A	IN/A	IN/A	IN/A

Note 1: Should Urban Activation Precincts proceed for the North Ryde Station/ Herring Road Urban areas (as applicable) Council anticipates that limited funding of approximately \$5 million per precinct may be available through the Precinct Support program for works such as public domain upgrades. Therefore, funding and timing of works within this Staged Action Plan may potentially need to be revisited should these Urban Activation Precincts proceed

# A2 Separate work schedules

## Footpath\_renew

									Potential source	s Potential			
ID	Street	Nearest cross street	Side of the road/ Intersection	Location	Issues	Action	Length m /Unit	Responsibility	Potential Funding of funding withi Source Council	n Infrastructure Trigger	Priority	l Timeframe i	Potential indicative costing
3	GIFFNOCK AVE	COOLINGA ST	South	Between Coolinga and Lyonpark	k Narrow path - Type 1 footpath	Remove existing and install new footpath – Type 1 (Min. 3m to 4.5 m wide)	450	CoR	CoR General Revenue	e N/A	1	0 - 5 years	\$810,000
12	BYFIELD ST	WATERLOO RD	North	27m from WATERLOO RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Revenue	e N/A	3	10 - 25 years	\$27
13	BYFIELD ST	LYONPARK RD	North	67m from LYONPARK RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Revenue	e N/A	3	10 - 25 years	\$30
14	DELHI RD	THE MAIN AVE	North	140m from THE MAIN AVE	Footpath uneven or cracked – all types	Footpath grinding	3	CoR	CoR General Revenu	e N/A	3	10 - 25 years	\$71
15	DELHI RD	JULIUS AVE	North	35m from JULIUS AVE	Footpath uneven or cracked – all types	Footpath grinding	2	CoR	CoR General Revenu	e N/A	3	10 - 25 years	\$62
16	DELHI RD	RICHARDSON PL	North	97m from RICHARDSON PL	Footpath uneven or cracked – all types	Footpath grinding	2	CoR	CoR General Revenu	e N/A	3	10 - 25 years	\$60
17	DELHI RD	JULIUS AVE	North	68m from JULIUS AVE	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Revenu	e N/A	2	5 - 10 years	\$14
19	EPPING RD	PAUL ST NORTH	South	48m from PAUL ST NORTH	Footpath uneven or cracked – all types	Footpath grinding	3	CoR	CoR General Revenu	e N/A	3	10 - 25 years	\$79
20	EPPING RD	BALACLAVA	South	50m from BALACLAVA	Footpath uneven or cracked – all types	Footpath grinding	2	CoR	CoR General Revenu	e N/A	2	5 - 10 years	\$42
24	HERRING RD	WATERLOO RD	South	35m from WATERLOO RD	Footpath uneven or cracked – all types	Footpath grinding	1	DP&I	DP&I N/A	Herring Road UAP <sup>1</sup>	3	10 - 25 years	\$33
25	HERRING RD	LACHLAN AVE	South	88m from LACHLAN AVE	Footpath uneven or cracked – all types	Footpath grinding	3	DP&I	DP&I N/A	Herring Road UAP <sup>1</sup>	3	10 - 25 years	\$74
28	HERRING RD	IVANHOE PL	South	9m from IVANHOE PL	Footpath uneven or cracked – all types	Footpath grinding	2	DP&I	DP&I N/A	Herring Road UAP <sup>1</sup>	3	10 - 25 years	\$38
29	HERRING RD	IVANHOE PL	South	81m from IVANHOE PL	Footpath uneven or cracked – all types	Footpath grinding	1	DP&I	DP&I N/A	Herring Road UAP <sup>1</sup>	2	5 - 10 years	\$33
30	HERRING RD	WINDSOR DR	North	67m from WINDSOR DR	Footpath uneven or cracked – all types	Footpath grinding	1	DP&I	DP&I N/A	Herring Road UAP <sup>1</sup>	3	10 - 25 years	\$30
31	HERRING RD	UNIVERSITY AVE	North	87m from UNIVERSITY AVE	Footpath uneven or cracked – all types	Footpath grinding	2	DP&I	DP&I N/A	Herring Road UAP <sup>1</sup>	2	5 - 10 years	\$60
32	HERRING RD	UNIVERSITY AVE	North	13m from UNIVERSITY AVE	Footpath uneven or cracked – all types	Footpath grinding	3	DP&I	DP&I N/A	Herring Road UAP <sup>1</sup>	3	10 - 25 years	\$69
33	HERRING RD	INNOVATION RD	North	34m from INNOVATION RD	Footpath uneven or cracked – all types	Footpath grinding	1	DP&I	DP&I N/A	Herring Road UAP <sup>1</sup>	3	10 - 25 years	\$27
34	HERRING RD	TALAVERA RD	North	43m from TALAVERA RD	Footpath uneven or cracked – all types	Footpath grinding	2	DP&I	DP&I N/A	Herring Road UAP <sup>1</sup>	3	10 - 25 years	\$39
35	EPPING RD	HERRING RD	North	33m from HERRING RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Revenue	e N/A	2	5 - 10 years	\$20
37	JULIUS AVE	RIVETT RD	South	86m from RIVETT RD	Footpath uneven or cracked – all types	Footpath grinding	2	CoR	CoR General Revenue	e N/A	2	5 - 10 years	\$50
38	JULIUS AVE	RIVETT RD	South	100m from RIVETT RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Revenu	e N/A	2	5 - 10 years	\$19
39	JULIUS AVE	LUCKNOW RD	South	145m from LUCKNOW RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Revenu	e N/A	3	10 - 25 years	\$29
41	JULIUS AVE	NEWBIGIN CL	North	26m from NEWBIGIN CL	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Revenu	e N/A	3	10 - 25 years	\$35
42	JULIUS AVE	RICHARDSON PL	North	14m from RICHARDSON PL	Footpath uneven or cracked – all types	Footpath grinding	4	CoR	CoR General Revenu	e N/A	3	10 - 25 years	\$107
44	JULIUS AVE	RICHARDSON PL	North	38m from RICHARDSON PL	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Reven	e N/A	2	5 - 10 years	\$30
45	JULIUS AVE	DELHI RD	North	31m from DELHI RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Reven	e N/A	2	5 - 10 years	\$21
46	JULIUS AVE	RIVETT RD	South	57m from RIVETT RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Reven	e N/A	2	5 - 10 years	\$15
47	JULIUS AVE	DELHI RD	South	64m from DELHI RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Reven	e N/A	2	5 - 10 years	\$31
48	KHARTOUM RD	TALAVERA RD	North	27m from TALAVERA RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Reven	e N/A	3	10 - 25 years	\$24
49	KHARTOUM RD	TALAVERA RD	North	101m from TALAVERA RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Revenu	e N/A	3	10 - 25 years	\$26
50	KHARTOUM RD	TALAVERA RD	North	148m from TALAVERA RD	Footpath uneven or cracked – all types	Footpath grinding	2	CoR	CoR General Reven	e N/A	3	10 - 25 years	\$40
51	KHARTOUM RD	WATERLOO RD	North	108m from WATERLOO RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Reven	e N/A	3	10 - 25 years	\$29
52	KHARTOUM RD	WATERLOO RD	North	105m from WATERLOO RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Reven	e N/A	3	10 - 25 years	\$27
53	KHARTOUM RD	WATERLOO RD	South	111m from WATERLOO RD	Footpath uneven or cracked – all types	Footpath grinding	1	CoR	CoR General Reven	e N/A	3	10 - 25 years	\$34

ID         Street         Nearest cross street         Side of the road/ Internaction         Location         Location         Location         Lesues         Action         Length m /Uhit         Responsibility         Potential Fe Source           54         KHARTOUM RD         WATERLOO RD         South         121m from WATERLOO RD         Footpath uneven or cracked – all types         Footpath grinding         2         C.O.R         C.O.R           55         KHARTOUM RD         TALAVERA RD         South         87m from TALAVERA RD         Footpath uneven or cracked – all types         Footpath grinding         1         C.O.R         C.O.R           56         KHARTOUM RD         HILLS RD         South         88m from HILLS RD         Footpath uneven or cracked – all types         Footpath grinding         1         C.O.R         C.O.R           60         LANE COVE RD         EDEN PARK DR         South         66m from WATERLOO RD         Footpath uneven or cracked – all types         Footpath grinding         3         C.O.R         Responsibility         Responsity					
ID         Street         Nearest cross street         Side of the road Intersection         Location         Issues         Action         Length m /Unit         Responsibility         Potential Fr Source           54         KHARTOUM RD         WATERLOO RD         South         121m from WATERLOO RD         Footpath uneven or cracked – all types         Footpath grinding         2         CoR         CoR           55         KHARTOUM RD         TALAVERA RD         South         87m from TALAVERA RD         Footpath uneven or cracked – all types         Footpath grinding         1         CoR         CoR           56         KHARTOUM RD         HILLS RD         South         88m from HILLS RD         Footpath uneven or cracked – all types         Footpath grinding         1         CoR         CoR           660         LANE COVE RD         EDEN PARK DR         South         150m from EDEN PARK DR         Footpath uneven or cracked – all types         Footpath grinding         1         CoR         CoR           61         LANE COVE RD         WATERLOO RD         South         65m from WATERLOO RD         Footpath uneven or cracked – all types         Footpath grinding         3         CoR         CoR           63         LANE COVE RD         WATERLOO RD         South         65m from WATERLOO RD         North <th>Potential source</th> <th>ces Potential</th> <th></th> <th></th> <th></th>	Potential source	ces Potential			
54       KHARTOUM RD       WATERLOO RD       South       121m from WATERLOO RD       Footpath uneven or cracked – all types       Footpath grinding       2       CoR       CoR         55       KHARTOUM RD       TALAVERA RD       South       87m from TALAVERA RD       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR         66       KHARTOUM RD       HILLS RD       South       88m from HILLS RD       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR         600       LANE COVE RD       EDEN PARK DR       South       150m from EDEN PARK DR       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR         61       LANE COVE RD       WATERLOO RD       South       65m from WATERLOO RD       Footpath uneven or cracked – all types       Footpath grinding       3       CoR       CoR         63       LANE COVE RD       WATERLOO RD       South       65m from WATERLOO RD       Footpath uneven or cracked – all types       Footpath grinding       3       CoR       CoR         641       LANE COVE RD       WATERLOO RD       North       103m from WATERLOO RD       Narrow path - Type 1 footpath       Footpath grinding       1       CoR       CoR	ding of funding within Council	hin Infrastructur Trigger	e Priority	Timeframe	Potential indicative costing
55       KHARTOUM RD       TALAVERA RD       South       87m from TALAVERA RD       Footpath uneven or cracked – all types       Footpath grinding       1       CorR       CorR         56       KHARTOUM RD       HILLS RD       South       88m from HILLS RD       Footpath uneven or cracked – all types       Footpath grinding       1       CorR       CorR         60       LANE COVE RD       EDEN PARK DR       South       150m from EDEN PARK DR       Footpath uneven or cracked – all types       Footpath grinding       1       CorR       CorR         61       LANE COVE RD       WATERLOO RD       South       65m from WATERLOO RD       Footpath uneven or cracked – all types       Footpath grinding       3       CorR       CorR         63       LANE COVE RD       WATERLOO RD       South       65m from WATERLOO RD       Footpath uneven or cracked – all types       Footpath grinding       3       CorR       RMS/ developer controbut         63       LANE COVE RD       WATERLOO RD       North       103m from WATERLOO RD       Narrow path - Type 1 footpath       (Mo. 3th 0.4.5 m wide)       70       RMS/ developer controbut       Remove existing and install new footpath - Type 1       70       RMS       CorR       RMS/ developer controbut       Remove existing and install new footpath - Type 1       70       RMS <td< th=""><th>General Reven</th><th>nue N/A</th><th>3</th><th>10 - 25 years</th><th>\$41</th></td<>	General Reven	nue N/A	3	10 - 25 years	\$41
56KHARTOUM RDHILLS RDSouth88m from HILLS RDFootpath uneven or cracked – all typesFootpath grinding1CoRCoR60LANE COVE RDEDEN PARK DRSouth150m from EDEN PARK DRFootpath uneven or cracked – all typesFootpath grinding1CoRCoR61LANE COVE RDWATERLOO RDSouth65m from WATERLOO RDFootpath uneven or cracked – all typesFootpath grinding3CoRCoR63LANE COVE RDWATERLOO RDNorth103m from WATERLOO RDFootpath uneven or cracked – all typesFootpath grinding3CoRRMS/ contraction63LANE COVE RDWATERLOO RDNorth103m from WATERLOO RDNarrow path - Type 1 footpathRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMS/ RMS/ contractionRMS/ contraction64LYONPARK RDBYFIELD STNorth96m from BYFIELD STFootpath uneven or cracked – all typesFootpath grinding1CoRCoR65LYONPARK RDBYFIELD STNorth10m from BYFIELD STFootpath uneven or cracked – all typesFootpath grinding1CoRCoR66LYONPARK RDBYLIST NORTHNorth70m from PAUL ST NORTHFootpath uneven or cracked – all typesFootpath grinding1CoRCoR67LYONPARK RDPAUL ST NORTHNorth70m from PAUL ST NORTHFootpath uneven or cracked – all typesFootpath grinding1CoRCoR67LYONPARK RD	General Reven	nue N/A	3	10 - 25 years	\$23
60LANE COVE RDEDEN PARK DRSouth150m from EDEN PARK DRFootpath uneven or cracked – all typesFootpath grinding1CoRCoR61LANE COVE RDWATERLOO RDSouth65m from WATERLOO RDFootpath uneven or cracked – all typesFootpath grinding3CoRCoR63LANE COVE RDWATERLOO RDNorth103m from WATERLOO RDPootpath uneven or cracked – all typesFootpath grinding3CoRRMS/ developm64LYONPARK RDBYFIELD STNorth96m from BYFIELD STFootpath uneven or cracked – all typesFootpath grinding1CoRCoR65LYONPARK RDBYFIELD STNorth10m from BYFIELD STFootpath uneven or cracked – all typesFootpath grinding1CoRCoR66LYONPARK RDBYFIELD STNorth76m from PAUL ST NORTHFootpath uneven or cracked – all typesFootpath grinding1CoRCoR67LYONPARK RDBYFIELD STNorth76m from PAUL ST NORTHFootpath uneven or cracked – all typesFootpath grinding1CoRCoR67LYONPARK RDPAUL ST NORTHNorth76m from PAUL ST NORTHFootpath uneven or cracked – all typesFootpath grinding1CoRCoR67LYONPARK RDPAUL ST NORTHNorth16m from PAUL ST NORTHFootpath uneven or cracked – all typesFootpath grinding1CoRCoR	General Reven	nue N/A	3	10 - 25 years	\$31
61LANE COVE RDWATERLOO RDSouth65m from WATERLOO RDFootpath uneven or cracked – all typesFootpath grinding3CoRCoR63LANE COVE RDWATERLOO RDNorth103m from WATERLOO RDNarrow path - Type 1 footpathRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMSCoRCoR65LYONPARK RDBYFIELD STNorth10m from PAUL ST NORTHFootpath uneven or cracked - all typesFootpath grinding1CoRCoR67LYONPARK RD </td <td>General Reven</td> <td>nue N/A</td> <td>2</td> <td>5 - 10 years</td> <td>\$27</td>	General Reven	nue N/A	2	5 - 10 years	\$27
63LANE COVE RDWATERLOO RDNorth103m from WATERLOO RDNarrow path - Type 1 footpathRemove existing and install new footpath - Type 1 (Min. 3m to 4.5 m wide)70RMS. developm contribut contribut64LYONPARK RDBYFIELD STNorth96m from BYFIELD STFootpath uneven or cracked – all typesFootpath grinding1CoRCoR65LYONPARK RDBYFIELD STNorth110m from BYFIELD STFootpath uneven or cracked – all typesFootpath grinding1CoRCoR66LYONPARK RDPAUL ST NORTHNorth76m from PAUL ST NORTHFootpath uneven or cracked – all typesFootpath grinding1CoRCoR67LYONPARK RDPAUL ST NORTHNorth19m from PAUL ST NORTHFootpath uneven or cracked – all typesFootpath grinding1CoRCoR	General Reven	nue N/A	3	10 - 25 years	\$64
64LYONPARK RDBYFIELD STNorth96m from BYFIELD STFootpath uneven or cracked – all typesFootpath grinding1CoRCoR65LYONPARK RDBYFIELD STNorth110m from BYFIELD STFootpath uneven or cracked – all typesFootpath grinding1CoRCoR66LYONPARK RDPAUL ST NORTHNorth76m from PAUL ST NORTHFootpath uneven or cracked – all typesFootpath grinding1CoRCoR67LYONPARK RDPAUL ST NORTHNorth19m from PAUL ST NORTHFootpath uneven or cracked – all typesFootpath grinding1CoRCoR	nt n N/A	N/A	2	5 - 10 years	\$126,000
65       LYONPARK RD       BYFIELD ST       North       110m from BYFIELD ST       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR         66       LYONPARK RD       PAUL ST NORTH       North       76m from PAUL ST NORTH       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR         67       LYONPARK RD       PAUL ST NORTH       North       19m from PAUL ST NORTH       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$23
66       LYONPARK RD       PAUL ST NORTH       North       76m from PAUL ST NORTH       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR         67       LYONPARK RD       PAUL ST NORTH       North       19m from PAUL ST NORTH       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$17
67 LYONPARK RD PAUL ST NORTH North 19m from PAUL ST NORTH Footpath uneven or cracked – all types Footpath grinding 1 Cor	General Reven	nue N/A	3	10 - 25 years	\$27
	General Reven	nue N/A	3	10 - 25 years	\$19
71       PITWATER       EPPING RD       North       29m from EPPING RD       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$24
72       RIVETT RD       JULIUS AVE       North       64m from JULIUS AVE       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR	General Reven	nue N/A	2	5 - 10 years	\$34
73       RIVETT RD       JULIUS AVE       North       91m from JULIUS AVE       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR	General Reven	nue N/A	2	5 - 10 years	\$27
77       TALAVERA RD       ALMA RD       North       130m from ALMA RD       Footpath uneven or cracked – all types       Footpath grinding       4       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$95
78       TALAVERA RD       KHARTOUM RD       North       188m from KHARTOUM RD       Footpath uneven or cracked – all types       Footpath grinding       2       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$48
79       TALAVERA RD       KHARTOUM RD       North       50m from KHARTOUM RD       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$30
80       TALAVERA RD       KHARTOUM RD       40m from KHARTOUM RD       Footpath uneven or cracked – all types       Footpath grinding       4       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$104
81       TALAVERA RD       LANE COVE RD       North       320m from LANE COVE RD       Footpath uneven or cracked – all types       Footpath grinding       4       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$97
82       TALAVERA RD       LANE COVE RD       North       60m from LANE COVE RD       Footpath uneven or cracked – all types       Footpath grinding       2       CoR       CoR	General Reven	nue N/A	2	5 - 10 years	\$47
83       TALAVERA RD       LANE COVE RD       South       116m from LANE COVE RD       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR	General Reven	nue N/A	2	5 - 10 years	\$22
84       TALAVERA RD       LANE COVE RD       South       116m from LANE COVE RD       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR	General Reven	nue N/A	2	5 - 10 years	\$27
85       TALAVERA RD       KHARTOUM RD       South       180m from KHARTOUM RD       Footpath uneven or cracked – all types       Footpath grinding       3       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$77
86       TALAVERA RD       ALMA RD       South       130m from ALMA RD       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$21
88       WATERLOO RD       COTTONWOOD CRES       South       CRES       Footpath uneven or cracked – all types       Footpath grinding       5       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$134
89       WATERLOO RD       COTTONWOOD CRES       South       CRES       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$24
90       WATERLOO RD       BYFIELD ST       North       110m from BYFIELD ST       Footpath uneven or cracked – all types       Footpath grinding       1       CoR       CoR	General Reven	nue N/A	3	10 - 25 years	\$27
93       WATERLOO RD       KHARTOUM RD       North       36m from KHARTOUM RD       Footpath uneven or cracked – all types       Footpath grinding       3       CoR       CoR	General Reven	nue N/A	2	5 - 10 years	\$72
94 WATERLOO RD COOLINGA ST North 15m from COOLINGA ST Narrow path - Type 1 footpath (Min. 3m to 4.5 m wide) 50 CoR CoR/ Deve	Condition of consent	, f N/A	2	5 - 10 vears	\$90.000
		North Ryde Station Preci Project Tran Oriented Developmer State Signific Developmer	e nct sit nt ant 1	10 25	\$00,000

# New footpath

										Potential	Potential sources	Potential			Detected
ю	Street	Nearast cross streat	Side of the road/	Location	leques	Action	lustification/Link to RAMP report	Longth m /Linit	Posponsibility	Funding	of funding within	Infrastructure	Driority	Timofromo	Potential
U	Sileei	Nedrest cross street	Intersection	Location	Issues	ACIION	Justification/Link to PAMP report	Length m /Onit	Responsibility	Source		- ingger	Phonty	Timetrame	indicative costing
				9m from HILLS			Pedestrian connectivity and providing a			CoR/	Section 94/	Future			
18	DEI HI RD	HILLS RD	South	RD	No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)	continuous path	171	CoR	Developer	consent	application	1	0 - 5 years	\$307 420
10	DEEMIND		Couli						COIL	Developer	Section 94/	Euturo	•	0 0 years	φ007,420
				132m from			Pedestrian connectivity and providing a			CoR/	Condition of	development			
23	GIFFNOCK AVE	WATERLOO RD	South	WATERLOO RD	No path - Type 2 footpath	Install new footpath - Type 2 (Min. 3m wide footpath to 4.5m)	continuous path	4	CoR	Developer	consent	application	1	0 - 5 years	\$7,951
											Section 94/	Future		,	
				5m from RIVETT			Pedestrian connectivity and providing a			CoR/	Condition of	development			
36	JULIUS AVE	RIVETT RD	South	RD	No path - Type 4 footpath	Install new footpath - Type 4 (1.8m wide)	continuous path	357	CoR	Developer	consent	application	1	0 - 5 years	\$160,586
											Section 94/	Future			
				24m from			Pedestrian connectivity and providing a			CoR/	Condition of	development			
40	JULIUS AVE	NEWBIGIN CL	South	NEWBIGIN CL	No path - Type 4 footpath	Install new footpath - Type 4 (1.8m wide)	continuous path	171	CoR	Developer	consent	application	1	0 - 5 years	\$76,930
											Section 94/	Future			
				6m from DELHI			Pedestrian connectivity and providing a			CoR/	Condition of	development			
43	JULIUS AVE	DELHI RD	South	RD	No path - Type 4 footpath	Install new footpath - Type 4 (1.8m wide)	continuous path	99	CoR	Developer	consent	application	1	0 - 5 years	\$44,543
											Section 94/	Future			
				25m from HILLS			Pedestrian connectivity and providing a			CoR/	Condition of	development			
57	LANE COVE RD	HILLS RD	South	RD	No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)	continuous path	84	CoR	Developer	consent	application	1	0 - 5 years	\$151,298
											Section 94/	Future			
				6m from LANE		<b>.</b>	Pedestrian connectivity and providing a			CoR/	Condition of	development			
58	LANE COVE RD	HILLS RD	North	COVE RD	No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)	continuous path	76	CoR	Developer	consent	application	1	0 - 5 years	\$136,709
											Section 94/	Future			
			N I - mile	21m from			Pedestrian connectivity and providing a	07	0.5	CoR/	Condition of	development			<b>A</b> 440.070
69	PAULSINORTH	LYONPARK RD	North	LYONPARK RD	No path - Type 3 footpath	Install new footpath - Type 3 (2m wide footpath, up to 3.8m)	continuous path	97	CoR	Developer	consent	application	1	0 - 5 years	\$116,878
					No path – (no type identified in						Section 94/	Future			
74			Couth	68m from JULIUS	Macquarie Park Public Domain	Install new factmeth 1 On wide	Pedestrian connectivity and providing a	25	0.0	CoR/	Condition of	development	4	0.5	<b>\$0.505</b>
/4	RIVETTRD	JULIUS AVE	South	AVE	Manual)	Install new footpath –1.8m wide	continuous path	35	COR	Developer	consent	application	1	0 - 5 years	\$9,565
					No path – (no type identified in					0.5/	Section 94/	Future			
75			South	47m from JULIUS	Macquarie Park Public Domain	Install now factnath 1 8m wide	Pedestrian connectivity and providing a	10		CoR/	Condition of	development	4	0 5	¢5,000
75	RIVETTRD	JULIUS AVE	3000	AVE				19	COR	Developei	Consent	application	1	0 - 5 years	\$5,089
				1Em from IIII IIIC	No path – (no type identified in		Dedectrion connectivity and providing a			CoP/	Section 94/	Future			
76	RIVETT RD		North	AVF	Macquarie Fark Fublic Domain Manual)	Install new footpath –1 8m wide	continuous path	32	CoR	Developer	consent	application	1	0 - 5 vears	\$8 564
10		JOLIOO AVE	North		Manualy			02	COIX	Developer	consent	application	I	0 - 5 years	ψ0,004
												North Ryde			
												Station Precinct			
												Project Transit			
												Development			
												State Significant			
				24m from			Pedestrian connectivity and providing a					Development			
95	WICKS RD	WATERLOO RD	South	WATERLOO RD	No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)	continuous path	30	Transport for NSW	TfNSW	N/A	Application <sup>1</sup>	1	0 - 5 vears	\$53,719
															+, -
												North Ryde			
												Project Transit			
												Oriented			
												Development			
												State Significant			
				7m from			Pedestrian connectivity and providing a					Development			
96	WICKS RD	WATERLOO RD	South	WATERLOO RD	No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)	continuous path	69	Transport for NSW	TfNSW	N/A	Application <sup>1</sup>	1	0 - 5 years	\$124,220
												North Ryde			
												Station Precinct			
												Project Transit			
												Oriented			
												Development			
												State Significant			
				6m from			Pedestrian connectivity and providing a					Development			
97	WICKS RD	WATERLOO RD	North	WATERLOO RD	No path - Type 1 footpath	Install new footpath - Type 1 (Min. 3m to 4.5 m wide)	continuous path	148	Transport for NSW	TfNSW	N/A	Application	1	0 - 5 years	\$266,837

	Charact		Side of the road/		lawar	A other	Justification/Link to PAMP	l an ath an Allait	Desservitiv	Potential Funding	Potential sources of funding within	Potential Infrastructure	Delastra	Timeforme	Potential
ID	Street	Nearest cross street	Intersection	Location 54m from	Issues	Action	report	Length m /Unit	Responsibility	Source	Council	Irigger	Priority	Timeframe	indicative costing
156	WATERLOO RD	COTTONWOOD CRES	South	COTTONWOOD CRES	Kerb ramp lip/step	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% CoR	General Revenue	N/A	2	5 - 10 years	\$1,000
157	WATERI OO RD	COTTONWOOD	South	32m from COTTONWOOD CRES	Kerb ramp lin/step	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50%	General Revenue	N/A	1	0 - 5 vears	\$1 000
158			South	12m from	Kerb ramp lip/step	Remove existing kerb ramp and install new kerb ramp – upgrade to AS	Mobility access	1	RMS/CoR	50% RMS 50%	General Revenue	N/A	2	5 - 10 years	\$1,000
100				9m from		Remove existing kerb ramp and install new kerb ramp – upgrade to AS				50% RMS 50%			L	o lo years	φ1,000
159	IVANHOE PL	HERRING RD	North	HERRING RD	Kerb ramp lip/step	design	Mobility access	1	RMS/CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$1,000
160	HERRING RD	EPPING RD	South	EPPING RD	Kerb ramp lip/step	design	Mobility access	1	RMS/CoR	CoR	General Revenue	N/A	1	0 - 5 years	\$1,000
161	HERRING RD	EPPING RD	North	23m from EPPING RD	Kerb ramp lip/step	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% CoR	General Revenue	N/A	1	0 - 5 years	\$1,000
162	LANE COVE RD	WATERLOO RD	North	17m from WATERLOO RD	Kerb ramp lip/step	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS	RMS/ development contribution	N/A	N/A	2	5 - 10 years	\$1,000
				20m from		Remove existing kerb ramp and install new kerb ramp – ungrade to AS				RMS/					
163	EPPING RD	HERRING RD	North	HERRING RD	Kerb ramp lip/step	design	Mobility access	1	RMS	contribution	N/A	N/A	2	5 - 10 years	\$1,000
164	WATERLOO RD	COTTONWOOD CRES	South	15m from COTTONWOOD CRES	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% CoR	General Revenue	N/A	1	0-5 years	\$1,000
165			South	8m from	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS	Mobility access	1	RMS/CoR	50% RMS 50% CoR	General Revenue	N/A	2	5 - 10 years	\$1.000
166	HERRING RD	INNOVATION RD	South	38m from INNOVATION RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% CoR	General Revenue	N/A	2	5 - 10 years	\$1,000
				17m from		Remove existing kerb ramp and install new kerb ramp – upgrade to AS				50% RMS 50%					÷.,
167	WATERLOO RD	KHARTOUM RD	North	KHARTOUM RD	Kerb ramp non-standard	design	Mobility access	1	RMS/CoR	CoR RMS/	General Revenue	N/A	3	10 - 25 years	\$1,000
168	LANE COVE RD		North	12m from	Kerb ramp pon-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS	Mobility access	1	RMS	development	N/A	N/A	2	5 - 10 years	\$1,000
100		TALAVERARD	North		Nero ramp non standard			· ·		RMS/	<b>N/A</b>	11/7	2	5 - TO years	\$1,000
169	HILLS RD	LANE COVE RD	North	15m from LANE COVE RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS	development contribution	N/A	N/A	3	10 - 25 vears	\$1.000
					· ·					RMS/					
170	TALAVERA RD	LANE COVE RD	South	200m from LANE COVE RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	development contribution	N/A	N/A	2	5 - 10 years	\$1,000
				200m from LANE		Remove existing kerb ramp and install new kerb ramp, ungrade to AS				RMS/					
171	TALAVERA RD	LANE COVE RD	South	COVE RD	Kerb ramp non-standard	design	Mobility access	1	RMS/CoR	contribution	N/A	N/A	2	5 - 10 years	\$1,000
172	KHARTOUM RD	TALAVERA RD	South	13m from TALAVERA RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% CoR	General Revenue	N/A	2	5 - 10 vears	\$1.000
172			North	10m from	Korb romp pop standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS	Mobility access	1	PMS/CoP	50% RMS 50%	Conoral Royanua	NI/A	2	E 10 vooro	¢1,000
			North	10m from		Remove existing kerb ramp and install new kerb ramp – upgrade to AS		1		50% RMS 50%		N/A	2	5 - 10 years	\$1,000
174	KHARTOUM RD	TALAVERARD	North	7m from	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS	Mobility access	1	RMS/COR	50% RMS 50%	General Revenue	N/A	2	5 - 10 years	\$1,000
175	TALAVERA RD	KHARTOUM RD	North	KHARTOUM RD	Kerb ramp non-standard	design	Mobility access	1	RMS/CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$1,000
176	TALAVERA RD	KHARTOUM RD	North	KHARTOUM RD	Kerb ramp non-standard	design	Mobility access	1	RMS/CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$1,000
177	COOLINGA ST	GIFFNOCK AVE	North	16m from GIFFNOCK AVE	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% CoR	General Revenue	N/A	2	5 - 10 years	\$1,000
						Pomovo avisting karb roma and install now karb roma ungrada to AS				RMS/					
178	EPPING RD	WICKS	North	15m from WICKS	Kerb ramp non-standard	design	Mobility access	1	RMS	contribution	N/A	N/A	3	10 - 25 years	\$1,000
179	UNNAMED RD	RIVETT RD	South	50m from RIVETT RD	Kerb ramp non-standard	Remove existing kerb ramp and install new kerb ramp – upgrade to AS design	Mobility access	1	RMS/CoR	50% RMS 50% CoR	General Revenue	N/A	2	5 - 10 years	\$1,000
				12m from		Remove existing kerb roms and install new kerb roms - ungrade to AS				RMS/					
180	RIVETT RD	LUCKNOW RD	South	LUCKNOW RD	Kerb ramp non-standard	design	Mobility access	1	RMS/CoR	contribution	N/A	N/A	2	5 - 10 years	\$1,000
				75m from DELHI		Remove existing kerb ramp and install new kerb ramp – upgrade to AS				RMS/ development					
181	JULIUS AVE	DELHI RD	South	RD	Kerb ramp non-standard	design	Mobility access	1	RMS/CoR	contribution	N/A	N/A	2	5 - 10 years	\$1,000
182	PLASSEY RD	JULIUS AVE	South	AVE	Kerb ramp non-standard	design	Mobility access	1	RMS/CoR	CoR	General Revenue	N/A	2	5 - 10 years	\$1,000

## New kerb ramps

			Side of the road/							Potential Funding	Potential sources of funding within	Potential Infrastructure			Potential
ID	Street	Nearest cross street	Intersection	Location	Issues	Action	Justification/Link to PAMP report	Length m /Unit	Responsibility	Source	Council	Trigger	Priority	Timeframe	indicative costing
99	CULLODEN RD	WATERLOO RD	North	Intersection	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoR	General Revenue	N/A	1	0 - 5 vears	\$900
	0011001												1	0 0 years	\$300
												To be completed			
				35m from RIVETT							Section 94/ Condition of	in conjunction with development of			
100	JULIUS AVE	RIVETT RD	North	RD	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoR	consent	new footpath	1	0 - 5 years	\$900
												To be completed			
											Section 94/	in conjunction with			
101	JULIUS AVE	RIVETT RD	North	27m from RIVETT RD	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoR	Condition of	development of	1	0 - 5 vears	\$900
101	002.007.112										concern	new locipulit		0 - 5 years	\$300
												To be completed			
				7m from							Section 94/ Condition of	in conjunction with development of			
102	RIVETT RD	LUCKNOW RD	North	UNNAMED RD	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoR	consent	new footpath	1	0 - 5 years	\$900
												To be completed			
											Section 94/	in conjunction with			
103	RIVETT RD		South	85m from	No kerb ramp	Install new kerb ramp	Mobility access	1		50% RMS 50% CoR	Condition of	development of	1	0 = 5 years	006\$
103	NIVETT ND		Coun						RW0/COR		consent		I	0 - 5 years	\$900
												To be completed			
				68m from JULIUS							Section 94/ Condition of	in conjunction with development of			
104	RIVETT RD	JULIUS AVE	South	AVE	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoR	consent	new footpath	1	0 - 5 years	\$900
											Section 94/	I o be completed in conjunction with			
105			South	62m from JULIUS	No korb ramp	Install now kerb romp	Mehility accord	1		50% PMS 50% CoP	Condition of	development of	4	0 5 4000	\$000
105	RIVETTRD	JULIUS AVE	South	AVE				1	KMS/COK	50% RMS 50% COR	consent	new lootpath	1	0 - 5 years	\$900
												To be completed			
				47m from JULIUS							Section 94/	in conjunction with			
106	RIVETT RD	JULIUS AVE	North	AVE	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoR	consent	new footpath	1	0 - 5 years	\$900
											Section 94/	To be completed in conjunction with			
407			North	39m from JULIUS	No korb romp	Install new Kerk rome	Mahility access	1		50% DMS 50% CoD	Condition of	development of	4	0 5 4000	\$000
107	RIVETTRD	JOLIOS AVE	North	AVE				1	RIVIS/COR	50% RMS 50% COR	consent	new lootpath	1	0 - 5 years	\$900
												To be completed			
				129m from							Section 94/ Condition of	in conjunction with development of			
108	JULIUS AVE	LUCKNOW RD	South	LUCKNOW RD	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoR	consent	new footpath	1	0 - 5 years	\$900
											Section 94/	I o be completed in conjunction with			
100			South	129m from	No korb ramp	Install now kerb ramp	Mobility access	1	DMS/CoD	50% PMS 50% CoP	Condition of	development of	4	0 5 400 70	\$000
109	JULIUS AVE		5000	LUGKNOW KD					KIVIS/COK	50 % KIVIS 50% COR	consent	new lootpath	1	0 - 5 years	\$900
												To be completed			
	RICHARDSON			9m from JULIUS							Section 94/ Condition of	in conjunction with development of			
110	PL	JULIUS AVE	North	AVE	No kerb ramp	Install new kerb ramp	Mobility access	1	RMS/CoR	50% RMS 50% CoR	consent	new footpath	1	0 - 5 years	\$900
											Section 94/	I o be completed in conjunction with			
			South	11m from JULIUS	No korb rama	Install now kerk romp	Mahility access	4			Condition of	development of	4	0.5	<b>\$</b> 265
111	I T L	JULIUS AVE	South		INO KEID IAIIIP	ווואמו חפש גפוט זמווף	would access		KIVIS/COR	00% KIVIS 50% COR	consent	new lootpath	1	U-5 years	\$900

Appendix B

Survey Observations

Date:Wednesday 14 November 2012Weather:Occasional drizzleTemp.:18-20 degree

Observation Periods: AM (8:00-10:00) Lunch (12:00-14:

AM (8:00-10:00) Lunch (12:00-14:00) PM (16:00-18:00) \* hourly data derived from 10mins count

			10mins			1 hr*			
Site No.	Location	Period	AM	Lunch	PM	AM	Lunch	PM	
	1 Khartoum and Talavera	Lunch peak		26		0	156	0	
2-3	Waterloo Rd and Herring Rd	Lunch peak		55		0	330	0	
	4 Byfield and Waterloo	AM, PM, Lunch peak	55	111	27	330	666	162	
	5 5 Byfield	Lunch peak		33		0	198	0	
6-9	Waterloo Rd and Lane Cove Rd	Lunch peak		70		0	420	0	
	10 Julius Ave W and Delhi Rd	Lunch peak		25		0	150	0	
	Lane Cove Rd between McDonalds and Marriot	Lunch peak, AM	59	58		354	348	0	
	12 Khartoum and Waterloo	Lunch peak, AM	42	65		252	390	0	
	13 Shrimptons Creek and Waterloo	AM, PM, Lunch peak	40	65	38	240	390	228	
	Lane Cove Rd and M2 14 (particularly on E side of Lane Cove Rd)	AM, PM	11		5	66	0	30	
	Waterloo (Talavera?) Rd and Herring Rd	Lunch peak		14		0	84	0	
	Pittwater and Epping Rd (near Rivett Rd)	AM	11			66	0	0	
	17 Hyundai Drive and Lane Cove Rd	AM, PM, Lunch peak	47	20	33	282	120	198	
	Giffnock and Lyon Park Rd in 18 line with walkway from Waterloo	AM, Lunch peak	44	15		264	90	0	
	19 Waterloo and Eden Park Drive	Lunch peak		50		0	300	0	
	20 Talavera Rd crossing near Alma St	Lunch peak		17		0	102	0	
	Talavera Rd roundabout at University Hosptial	AM	3			18	0	0	
	22 Herring Rd in front of Shopping Centre bus stop	Lunch peak		304		0	1824	0	
	23 Culloden Rd and Waterloo Rd	АМ, РМ	18		40	108	0	240	
			330	928	143	1980	5568	858	

Appendix C

Survey questionnaire



Lifestyle and opportunity

@ your doorstep

ARUP

### Let's go for a walk in Macquarie Park!

Do you live, work, study or walk in Macquarie Park? Provide your feedback and go into the draw to win one of 10 movie double passes!

City of Ryde is seeking feedback from the community feedback to help us develop a Pedestrian Access and Mobility Plan (PAMP) for the Macquarie Park business precinct. Your feedback will help us make Macquarie Park more pedestrian-friendly.

Our aim is to:

- develop a continuous and comprehensive network of footpaths and other pedestrian infrastructure such as crossings, kerbs etc
- o make the area safer and easier to walk around
- o put pedestrians at the forefront of our planning for the future
- o develop an action plan and schedule for our construction works.

If you are a resident, worker, student or visitor in Macquarie Park, we would like to hear what you have to say. Please return this survey to City of Ryde, Reply Paid 65204, North Ryde NSW 1670 (you do not need to put a stamp on the envelope) by **Friday 2 November**. Alternatively, you can complete it ONLINE at **www.myplaceryde.com.au**.

For further information call the City of Ryde Senior Sustainability Coordinator on 9952 8222 or email cityofryde@ryde.nsw.gov.au.

#### Privacy

- personal information collected from this questionnaire will be used by Council for the purpose of preparing the draft PAMP report. Your personal details will not be disclosed to any person, body or agency except where required or authorised by or under law;
- your questionnaire will be retained by Council and disposed of in accordance with the Local Government Disposal Authority;
- your personal information can be accessed and corrected at any time by contacting this Council.

The study area is shown in Figure 1 below or can be viewed at <u>www.collaborativemap.org/macquariepark</u> (Note that pedestrian facilities within private property are outside the scope of this PAMP). You may also leave any comments regarding safety, access, or other issues that are location specific on this website.



Figure 1: Study Area

### Questionnaire

#### **Pedestrian experience**

- 1. When was the most recent time you walked in the Macquarie Park area?
- C 0-1 week ago
- C 2-4 weeks ago
- C 1-6 months ago
- C More than 6 months ago

If you have never walked in the Macquarie Park area, we thank you for your interest in participating. Unfortunately you don't qualify for this specific survey. Please refer this survey to any relevant members of your household.

#### 2. Why do you walk in the area? (Select all that apply)

To go to or from home
To go to or from work
To go to or from school
To go to or from University
Shopping (to buy lunch)
Shopping (other)
Health benefits
Recreation
Other, please specify:

#### 3. Do you usually walk in the area during......(Select all that apply)

Weekdays
Weekends

#### 4. When do you usually walk in the area? (Select all that apply)



Morning (7-10am)

Late morning (10am-12pm)

Lunch hours (12-2pm)

Later afternoon (2-4:30pm)

Afternoon peak (4:30-6:30pm)



5.

## How would you rate the walking environment in terms of...

	Not at all satisfactory	Not very satisfactory	Somewhat satisfactory	Satisfactory	Very satisfactory
Pleasantness					
Convenience					
Safety					

If you found the walking environment unsatisfactory, what are the main reasons why you are dissatisfied?

	<u> </u>
	<b>*</b>
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6. In the area, do you find the pedestrian crossings (eg pedestrian lights, refuges, crossings, overpasses) are in convenient locations?



If you answered "no", please specify locations and reasons for concern

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4	•

### **Barriers to walking**

#### 7. What are the main barriers to walking in the area? (Select all that apply and please specify the location where possible)

	Location (optional)
Uneven footpath	
Narrow footpath width	
Missing footpath	
Poor kerb ramp design	
Lack of kerb ramps	
Lack of appropriate pedestrian signage	
Lack of audible/ tactile signals at crossings	
Lack of pedestrian crossing opportunities (pedestrian lights, refuges, crossings, overpasses)	
Poor lighting	
Maintenance and cleanliness of paths	
Pedestrian safety at crossing locations (pedestrian lights, refuges, crossings, overpasses)	
Waiting times at crossing locations (pedestrian lights, refuges, crossings, overpasses)	
Lack of amenities (benches, bus shelters etc)	
Obstructions (poles, tree roots, overhanging trees, rubbish bins on footpaths)	
Motorist behaviour	
Personal safety/ security concerns	
Long distances to walk to destinations	
Physical barriers (eg fences, no through site linkages)	
Lack of information about walking opportunities (eg maps)	
Other:	
None of the above	

#### 8. In your opinion and experience, where are the most hazardous and unsafe locations for pedestrians within the area?

Please mention the street name (as well as the nearest cross street), and specify your reasons for concern:

	-
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### **Pedestrian environment improvements**

# 9. What types of improvements are most important to you? (please select up to 5 of the most important improvements and specify location where possible)

 	Location (optional)
Provide paved footpath	
Widen footpath	
Increased pedestrian crossing opportunities (pedestrian lights, refuges, crossings, overpasses)	
Lower waiting times at pedestrian crossing opportunities (pedestrian lights, refuges, crossings, overpasses)	
Directional and wayfinding signage	
Pedestrian barriers on busy roads to stop illegal crossing	
Mobility maps for the area showing accessible locations	
Kerb ramps	
Improved lighting and security	
Accessible transport options (e.g. access to buses)	
Audible/ tactile crossing facilities at signals for the sight impaired	
Provide amenities along path (benches, drinking fountains, shade area etc.)	
Build additional road/path connections to reduce block size	
Other:	
None of the above	

10. Do you have any other comments you would like to make relating to pedestrian facilities within the area and ways of improving them? Please specify the location wherever appropriate.



#### Your details

#### 11. Which of the following best describes your age range?



12. What is your residential postcode?

13. Finally, please provide your contact details to go into the draw to win one of 10 double movie passes.

Note this is optional if you do not wish to enter the draw. Your contact details will be kept confidential, and will not be identifiable in any reports.

First name	
Last name	
E-mail	
Phone number	

We may be conducting further research in the future around the topics discussed in this survey. Would you be interested in being contacted for future studies on this topic?

If yes, please ensure your contact details are provided above.

14. Would you like to be contacted to discuss your comments further?



If you wish to leave any further comments regarding safety, access, or other issues that are location specific, please visit <u>www.collaborativemap.org/macquariepark</u>
Appendix D

Stakeholder meeting notes

Project title	Macquarie Park PAMP	Job number 227219/00
Meeting name and number	Stakeholder Workshop	File reference
Location	Room 3, Level 5, Ryde Civic Centre, 1 Devlin St, Ryde	Time and date 1:30- 5 November 2012 3:30pm
Purpose of meeting		
Present		
	Macquarie Park TMA/ Optus	Andrew Parker
	Guide Dogs NSW	Nicole Holmes
	Vision Australia	Kathy Fela
	Vision Australia	Margaret Steggles
	Former Access Committee member	Hazel Myers
	Former Access Committee member	Greg McClure
	Hills Bus/ Bus West	Stephen Timbrell
	Macquarie University	Hilary Bekmann
	Ryde Business Forum	Morrell Boyce
	State Transit Authority (Sydney Buses)	Michael Perrone
	Arup	Joanna Lau
	Arup	Andrew Hulse
	Arup	Marissa Powell
	City of Ryde	Jenai Davies
	City of Ryde	John Brown
	City of Ryde	Anthony Ogle
	City of Ryde	Austin Morris
	City of Ryde	Nathan Pratt

Prepared by

Joanna Lau

Date of circulation

Date of next meeting

J:\227000\227219-00 MACQUARIE PARK PAMP\WORK\05 ARUP PROJECT DATA\05\_WORKSHOP\003-WORKSHOP NOTE\_FINAL\_DOC

Project title	doL	Job number		Date of Meeting 5 November 2012	
Macquarie Park PAMP	227219/00		)		
Apologies					
	Bike North- Bicycle Committee Memb	ers	Alison	Pryor	
	RMS		Carl	Mella	
	Hills Buses/ Bus West		John	Booth	
	Police - Eastwood LAC Community Liasion Group for North R	Ryde	Andrew	Germolus	
	Station Precinct		Dianne	Knott	
	MS Australia		Cynthia	Cameron	
	Muscular Distrophy Society		Maralyn	Mccann	
	Former Access Committee member		Martin	Z'Graggen	
	Goodman		Felicity	Quinn	
	Johnson & Johnson		Joe	Vurchio	
	Fuji Xerox		Lachlan	Feggans	
	AMP Capital Investor - Property Operation	ation	Caroline	Choy	
	Johnson & Johnson		Andrew	Houston	
	CityRail		Eddie	Blackwell	
	City of Ryde		Meryl	Bishop	
	City of Ryde		William	Davies	
Circulation	Those present				

#### 1. Introduction 1:30-1:40pm

JD opened the meeting with introduction of Macquarie Park PAMP

#### 2. PAMP Study progress 1:40-2:00pm

JL provided a brief study progress report on data review, on-line questionnaire and collaborative map findings

#### 3. Discussion 2:00-3:30pm

MP facilitated the workshop, with participants divided into three discussion groups

### 3.1 Discussion topic 1: Key Pedestrian Issues

Issues	Description
Safety	<ul> <li>Pedestrian crossing opportunities (particularly along Waterloo Rd and at Byfield Street and Lyon Park Road)</li> </ul>
	<ul> <li>Recognise and cater for 'safe j-walking'</li> </ul>
	<ul> <li>High traffic speed, need to reduce speed limits</li> </ul>
	<ul> <li>Busy transport interchanging area</li> </ul>

J:227000\227219-00 MACQUARIE PARK PAMP\WORK\05 ARUP PROJECT DATA\05\_WORKSHOP\003-WORKSHOP NOTE\_FINAL.DOC

Action

Project title	Job number	Date of Meeting
Macquarie Park PAMP	227219/00	5 November 2012

		Action
	<ul> <li>Conflict between buses and pedestrians at shopping centre on Herring Rd particularly at lunchtime</li> <li>Waterloo Road – Shopping Centre as a key destination         <ul> <li>Significant volumes at lunchtime</li> <li>Lack of defined crossing</li> <li>PM peak – access to bus and train</li> </ul> </li> <li>Waterloo and Khartoum Road need traffic lights</li> <li>Footpath width insufficient to cater for AM peak clustered arrival</li> <li>Shared paths need adequate width to safely cater for all users.</li> </ul>	
Access	<ul> <li>Large block sizes restrict route choices, crossing opportunities and increase walking time (particularly for Talavera to Waterloo and Giffnock to Waterloo)</li> <li>Future development would create additional pedestrian facility demand (Particularly North Ryde Station Precinct and Shopping Centre and also with potential Park and Ride Facility associated with F3 to M2 link)</li> <li>Lane Cove Road acts a barrier to walking between east and west of the road. There is no mid-block pedestrian crossings at southern end of precinct</li> <li>Poor access for visually impaired person – no defined/signed/safe routes within the area and lack of audible crossing indicators</li> <li>No route connect across the park through Shrimpton creek</li> <li>Tactile Ground Surface Indicators (TGSIs) are not enough and worn</li> <li>Lack of covering and awnings (i.e. all weather access) particularly around Macquarie University Station</li> <li>Access to Waterloo and Talavera Rd busstops</li> <li>Pedestrian facilities need to enable people to get where they want to go (match desire lines)</li> </ul>	
Information	<ul> <li>Need information signs for bus stops i.e. when coming out of shops</li> <li>Need large print/ braille signage for visually impaired users</li> <li>No clear information on how to use the shared footpaths – access priority, conflicts, courtesy etc.</li> </ul>	

Project title	Job number	Date of Meeting
Macquarie Park PAMP	227219/00	5 November 2012

Action

#### 3.2 Discussion topic 2: PAMP Routes Prioritisation Criteria

Participants were presented with a draft PAMP network developed using the following criteria:

Route Prioritisation Criteria Weightings				
	No. of pedestrian attractors and generators on the link	5+	15	
1		3-4	10	
1		1-2	5	
		0	0	
2	Identified hazardous location	Yes/No	5/0	
3	Identified by the community as a key pedestrian route	Yes/No	5/0	
4	Missing link connecting key routes	Yes/No	5/0	
5	Planned future key links	Yes/No	5/0	

**Route Priority** 

Route Priority	Score			Priority
Low		0	10	L
Medium		11	20	М
High		21	35	Н

Participants were also presented with a map which showed the preliminary route priority assigned to the Macquarie Park area.



Key comments on route prioritisation criteria:

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Project title	Job number	Date of Meeting
Macquarie Park PAMP	227219/00	5 November 2012

Action

#### 1. No of pedestrian attractors and generators on the link:

Need to refine pedestrian attractors and generator criteria – Too heavy weight scores for attractors/generators. Need to find a different criteria base on: vehicle volumes, pedestrian volumes and frequency of ped./car conflicts across driveways and crossing points. Most of the routes within Macquarie Park have over 5 trips attractors/ generators. Also, one pedestrian attractor eg Macquarie Universty is not equivalent to another. Doesn't scale for size/number of pedestrians attracted.

**2. Identified hazardous location:** Use identified hazards as a key criterion –In order to differentiate key routes, others criteria, like identified hazardous locations / routes should be weighted with higher score. Need to clarify whether hazardous locations/routes identified by community of from accident analysis. Arup is proposing both.

**3.** Identified by the community as a key pedestrian route-No specific comments on this as a route prioritisation criteria. However, there were specific comments on identified draft pedestrian routes shown in map prepared by Arup (discussed below).

**4. Missing link connecting key routes-** No specific comments on this as a route prioritisation criteria.

**5. Planned Future Key Links-** Important to include this criteria. The Macquarie Park area is expected to change significantly – e.g. Macquarie shopping centre expansion, bus interchange upgrade, MQU masterplan, and fine grained road network development applications etc. The PAMP should consider timing of the work program to provide suitable access solution timing before the potential major changes occur.

General comments on route prioritisation criteria:

- . Use sliding scale rather than stepped scale.
- Consider a road as two pedestrian routes on each side of the road, and the crossing facilities connecting the two routes.
- Need better explanation on how criteria will actually be applied.

Key comments on assigned route priorities as per map:

1. Consider both routes and nodes – e.g. crossing points along Epping Rd should be considered as nodes with footpaths considered as routes

2. Add in location of routes entering from outside boundary of study area and associated crossing points/nodes.

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Project title	Job number	Date of Meeting
Macquarie Park PAMP	227219/00	5 November 2012

Action

3. Changes in priority for particular routes and nodes-

- The footpath sections along Epping Rd should not be considered as high priority but instead medium or low priority. However the crossing points may be another priority (depending on results of analysis).
- Talavera Rd could reduce priority of route between Christie Rd and Culloden Rd.
- Recognise Macquarie University as a key attractor, however facilities within the university are not controlled and managed by CoR. The PAMP should include the key access pedestrian points of the university to the public roads.

#### 3.3 Discussion topic 3: Work Program Prioritisation Criteria

Participants were presented with the following draft PAMP work program prioritisation criteria:

### **Work Program Prioritisation Criteria**

	CRITERION	WEIGHTING
	Nature of Works	
	Safety and Access	15
1	Missing Link	10
	Replacement	5
	New Facilities	5
	Proximity to Pedestrian Generators and Attractors	
2	Within 250 m of travel	10
2	Between 250 m and 500 m of travel	5
	Greater than 500 m of travel	0
	Estimated Traffic Volume (2 way flow)	
	>3000 - <6000 vpd (Major Local St)	10
3	>300 - <3000 vpd (Local St)	5
	<300 vpd (Access Place)	0
	6000+ vpd (State/ Regional Rd managed by RMS)	0
	Identified hazardous area (from consultation)	
4	High	10
	Medium	8
	Low	5
	None	0

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Project title	Job number	Date of Meeting
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	Identified pedestrian crashes	
	3 or more reported in five years	15
5	2 reported in five years	10
	1 reported in five year	5
	0 reported in five year	0
	Number of generators and attractors within 250 m of facility	
6	5 or more	10
	3 or 4	5
	1 or 2	2
	Community Needs/Disabled Access	
7	Located adjacent to a school, child care, aged care or disabled services centre.	10
	Not located adjacent to a school, child care, aged care or disabled services centre.	0
	Continuity	
8	Provides a link between existing facilities.	10
	Does not provide a link between existing facilities.	0
	Pedestrian Network Hierarchy Status	
9	High	10
5	Medium	5
	Low	2
	Maximum Score	100

#### **Work Priority**

Work Priority	Score
High	70-100
Medium	40-70
Low	0-40

Key comments on work program prioritisation criteria:

**1) Nature of works.** Need to demonstrate how this criteria would actually be applied given that a safety and access issue can also be a missing link, replacement or new facilities.

**2) Promixity to pedestrian generators and attractors not very useful criteria** (as almost all Macquarie Park within 250m of a pedestrian generator or attractor of some type- eg large office buildings).

3) Estimated traffic volume. Is supported as a criteria in

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Action

Project title	Job number	Date of Meeting
Macquarie Park PAMP	227219/00	5 November 2012

Action

combination with other criteria.

4) Identified hazardous location (from consultation). Could also add in or identified from observation by PAMP team.

5) Identified pedestrian crashes. No comments.

6) Number of generators and attractors within 250m of facility. This somewhat duplicates Criteria 2. Need to refine this criteria as too heavy a weight scores for attractors/generators. Need to find a different criteria base on: vehicle volumes, pedestrian volumes and frequency of ped./car conflicts across driveways. Most of the routes within Macquarie Park have over 5 trips attractors/ generators. Also, one pedestrian attractor eg Macquarie Universty is not equivalent to another. Doesn't scale for size/number of pedestrians attracted.

7) Community needs/disabled access Macquarie park has few schools/childcare, aged care or disabled services centres which would trigger this criteria. However, criteria still supported.

8) Continuity. No comments.

9) Pedestrian Network Hierarchy Status. Weightings seem low for high/medium priority routes compared to other criteria combined.

General comments on work program prioritisation criteria:

- Suggest adding in estimated pedestrian volume as • criteria
- Suggest adding in conflict volumes as a criteria (eg • cars/buses multiplied by pedestrian volumes at crossing locations such as driveways)
- Use sliding scale rather than stepped scale. •

#### 4. **Closing Remarks**

The comments made above would be assessed and considered in working paper the PAMP study.

JL – to include comment in the

**Revise PAMP** routes prioritisation criteria

### Route Prioritisation Criteria – Revised 13 November 2012

Route Prioritisation Criteria Weightings					
	Estimated pedestrian volumes (pedestrians	>250	11-15		
1	/hour)	150-250	6-10		
T		50-150	1-5		
		<50	0		
2	Links to within 500m of key pedestrian generators and attractors or community facilities such as Train Stations, Shopping Centre, Universities, Schools, Childcare, Aged Care or disabled services centre Links to within 500m of other pedestrian generators and attractors such as offices, multistorey residential development , cafes, bus stops.		6-10 1-5		
3	Identified hazardous location by the community or from accident analysis	High Medium Low None	16-20 11-15 6-10 0		
4	Identified by the community as a key pedestrian route	Yes/No	1-5		
5	Missing link connecting key existing pedestrian routes	Yes/No	1-5		
6	Planned future key pedestrian routes	Yes/No	1-5		

#### Route Priority

Route Priority	Score		Priority
Low	0	21	L
Medium	22	38	М
High	39	60	Н

### Work Program Prioritisation Criteria

	CRITERION	WEIGHTING
	Nature of Works	
	New pedestrian crossing facility	8-10
	(Intersections/tootbridges/underpasses etc)	6-7
1	Replacement/upgrade of facilities such as existing footpath or kerb	07
	ramp etc to remove hazards/improve safety	6-7
	Widening of footpath to increase capacity	1-5
	Other	1-5
	Proximity to Pedestrian Generators and Attractors	
	Train Stations, Shopping Centre, University or Schools within 500 m of travel	8-10
2	Train Stations, Shopping Centre, University or Schools within 250 m of travel	6-7
2	Offices, Multistorey Residential development , Cafes, Bus Stops within 250 m of travel	3-5
	Offices, Multistorey Residential development , Cafes, Bus Stops within 500 m of travel	1-2
	Greater than 500 m to the above pedestrian generators and attractors travel	0
3a	Estimated pedestrian volume (2 way flow along particular	
	Very high volume >250 pedestrians/hour (P)	16-20
	High volume 150, 250 pedestrians/hour (P)	10 20
	High volume 150-250 pedesthansmout (F)	11-15
	Medium volume 50-150 pedestrians/hour (P)	6-10
	Low volume <50 pedestrians/hour (P)	0-5
	OR	
3b	Estimated pedestrian/vehicle conflict volume (pedestrian per hour multiplied by traffic volume per hour) for pedestrian	
	Very High conflict V>850, P>200 and PV>250,000 across road (NB	16-20
	Pedestrian underpass/overpass warrant) High conflict > 150 P, >600V and PV>90,000 across roads (NB	11-15
	signalised intersection warrant) Medium conflict >30 P >500V and >60.000 PV across roads (NB	
	hourly pedestrian crossing warrant)	6-10
	Low conflict <30P, <500V and <60,000 PV	0-5
	Identified hazardous area (from consultation or PAMP	
	High (>3 identified hazards within 180m)	11-15
4	Medium (2-3 identified hazards within 180M)	6-10
	Low (1 identified hazard within 180M)	1-5
	None	0
	Identified pedestrian crashes	
	3 or more injury crashes, or 1 or more fatality crashes reported in five years	11-15
5	2 injury crashes reported in five years	6-10
	1 injury crashes reported in five year	1-5
	0 crashes reported in five year	0

	Located adjacent to a university, train station, school, child care, aged care or disabled services centre.	11-15
	Without this pedestrian infrastructure a high priority pedestrian route will not be able to provide adequate disabled access	11-15
	Without this pedestrian infrastructure a medium priority pedestrian route will not be able to provide adequate disabled access	6-10
	Without this pedestrian infrastructure a low priority pedestrian route will not be able to provide adequate disabled access	1-5
	Not located adjacent to a university, train station, school, child care, aged care or disabled services centre.	0
	Continuity (for existing or planned pedestrian routes)	
	Provides a link along high priority pedestrian route.	11-15
7	Provides a link along medium priority pedestrian route.	6-10
	Provides a link along low priority pedestrian route.	1-5
	Does not provide a link between existing facilities.	0
	Maximum Score	100

NB: Could consider using RMS warrants in developing pedestrian conflict rating for works prioritisation criteria.

#### Work Priority

Work Priority	Score
High	70-100
Medium	40-70
Low	0-40

# Appendix E

Selected Pedestrian Facility Guidelines

### E1 Bus Shelters and Accessible Bus Stop

### E1.1 Bus Shelters and Accessible Bus Stop

The Australian Human Rights and Equal Opportunity Commission (HREOC) recently drafted the Guideline for DDA-Compliance Bus Stops (July 2010). The guideline is to facilitate bus stops design to comply with the Disability Standards for Accessible Public Transport 2002 (DSAPT). The Guideline sets out a minimum level of performance for a basic accessible bus stop. The key performances sought in an accessible bus stop are:

- a flat, firm, unobstructed space large enough to allow for the deployment of a ramp so that a person with a mobility disability can safely get on or off a bus;
- a seamless transition between the bus stop and any connecting footpath, or the bus stop and the road where there is no footpath;
- clear signage indicating the location of the bus stop; and
- Consistently applied tactile ground surface indicators (TGSIs) to assist blind people or people with low vision to identify the presence of a bus stop and the location of the boarding point.
- A Provider is not required by the DSAPT to install a kerb at a boarding point. However, if a kerb is installed, the DSAPT requires that it must be at least 150 mm higher than the road surface.
- Ramp access to the road if no footpath is present

#### **Recommended Bus Stop Layouts**

Figure 47 Recommended bus stop layout with shelter, seating and wheelchair space. Source: HREOC



Figure 48 Recommended bus stop layout with an area without footpaths but with basic boarding point, evaluated above the road surface. Source: HREOC



STA's Bus Stop Style Guide recommends that bus shelter should be provided at stops with more than 25 passengers board per day. All bus stops should also be accessible and be connected to an accessible path. Bus shelters should be located clear of the accessible path of travel.

The RTA technical direction TDT 2011/01a provides guidance on pedestrian refuges for locations of road widening or road narrowing (kerb extension) as shown in Figure 49. TDT 2011/01a would be used as the PAMP works reference.

Figure 49: Standard Kerb Ramp Design. Source: AS 1428.1-2009.



NOTES:

- 1 Centre-line of kerb ramps and pedestrian refuges shall align across the road.
- 2 Top and bottom of kerb ramps shall be aligned at 90° to path of travel.
- 3 Top and bottom of kerb ramps shall have a sharp gradient transition.
- 4 For requirements for tactile ground surface indicators see AS 1428.4.1.
- 5 For requirements for pedestrian lights and push-button assemblies see AS 1742.14.

(a) 90° road intersection

DIMENSIONS IN MILLIMETRES

## E2 Local Area Traffic Management Plan

Austroads outlines a series of treatments aimed at Local Area Traffic Management. Where issue locations have been identified and formal crossing treatments are not warranted or deemed appropriate, appropriate Local Area Traffic Management Plan measures should be considered for application. Figure 50 Description and use of LATM devices. Source: Guide to Traffic Management Part 8: Local Area Traffic Management

	MEASURE	Reduce speeds	Reduce traffic volume	Reduce crash risk	Increase pedestrian safety	Increase bicycle safety
Vertical	Road humps	1	1	~	-	-
deflection devices	Road cushions	1	1	~	-	~
(Section 7.2)	Flat top road humps	1	1	1	-	1
	Wombat crossings	1	1	1	*	×
	Raised pavements	1	1	1	-	1
Horizontal	Lane narrowings/kerb extensions	*	-	-	*	-
deflection devices	Slow points	1	1	-		-
(Section 7.3)	Centre blister islands	1	1	-	1	-
	Driveway links	1	1	-	~	1
	Mid-block median treatments	1	-	1	1	1
	Roundabouts	1	1	*	-	-
Diversion devices	Full road closure	-	1	~	4	1
(Section 7.4)	Half road closure	÷	1	*	1	*
	Diagonal road closure	-	1	1	1	1
	Modified 'T' intersection	1	1	1	1	1
	Left-in/left-out islands	-	1	1	4	
Signs, linemarking	Speed limit signs	1	-	1	1	1
and other treatments	Prohibited traffic movement signs	-	1	~	-	1
(Section 7.5)	One-way (street) signs	-	1	1	1	-
	Give Way signs	*	1	*	*	1
	Stop signs	1	1	1	1	1
	Marked pedestrian crossings			1	~	1
	Shared zones	1	1		*	1
	School zones	1		1	1	1
	Threshold treatments	1	1	1		1
	Tactile surface treatments	1	-	-	-	-
	Bicycle facilities	-	-	1	-	~
	Bus facilities	-	1	-	-	-
Combination devices (Section 7.6)	Integrated road treatments	1	*	*	*	*

Table 7.1:	Description	and use of	LATM	devices

### E2.1 COUNCIL PROJECTS FUNDED BY THE RTA Memorandum of Understanding, 2009

Appendix F

Submissions Report

City of Ryde Macquarie Park PAMP Submission Report

Issue | 22 May 2013

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied

upon by any third party and no responsibility is undertaken to any third party.

Job number 227219

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## **Document Verification**

ARUP

Job title		Macquarie Park PAMP			Job number	
Document title		Submission Report			227219	
					File reference	
Document	ref					
Revision	Date	Filename	Submissions Report.docx			
Draft 1 6 May 2013		Description	First draft			
			Prepared by	Checked by	Approved by	
		Name	Safiah Moore	James Turner	Andrew Hulse	
		Signature				
Issue 22 May 2013		Filename	Final Macquarie	PAMP Submissions	Report.docx	
		Description	Final Submissions Report incorporating comments from CoR			
			Prepared by	Checked by	Approved by	
		Name	Safiah Moore	Andrew Hulse	Andrew Hulse	
		Signature				
		Filename			L	
		Description				
			Prepared by	Checked by	Approved by	
		Name				
		Signature				
		Filename		·		
Descript		Description				
			Prepared by	Checked by	Approved by	
		Name				
		Signature				
		•	Issue Docu	ment Verification with	Document 🗸	

| Issue | 22 May 2013 | Arup

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#### Appendices

### Appendix A

Submissions

## 1 Introduction

### **1.1** Introduction

The community engagement stream is a core of the PAMP process. The community consultation process for this PAMP included a series of engagement methods. The engagement methods and relevant aims within the PAMP process are presented in the table below.

Engagement	Stage and purpose for the PAMP	
Online collaborative mapping		
Online community questionnaires	Identification of pedestrian issues and development of PAMP route.	
Stakeholder focus group workshop		
Access Advisory Committee meeting	Information on the progress of the	
Bicycle Advisory Committee meeting	actions within the PAMP.	
Public exhibition of the draft PAMP	Feedback on draft PAMP and recommended actions within the PAMP.	

This submissions report documents the submissions and feedback received from the Access Advisory Committee meeting, Bicycle Advisory Committee meeting and the public exhibition of the draft PAMP.

This report summarise the submissions to the draft PAMP and presents proposed responses and relevant inputs into the Final PAMP.

### **1.2 Public exhibition**

The draft Macquarie Park PAMP was placed on public exhibition from Tuesday 26<sup>th</sup> March to Tuesday 23<sup>rd</sup> April 2013.

Placing the draft PAMP on public exhibition is part of the community engagement stream of the PAMP process. The community engagement stream is recognised as a key component of the PAMP as it enables community and stakeholder input to inform the PAMP issues and recommendations.

Comments on the draft Macquarie Park PAMP allowed for further feedback from the community to finalise the draft PAMP for the Macquarie Precinct.

A total of 7 responses were received during the public exhibition period. The submissions found in Appendix A of this report.

### **1.3** Access Committee meeting

The Access Advisory Committee meeting was held on the 13<sup>th</sup> March 2013 at City of Ryde. The purpose of this meeting was to seek comments from the Access Advisory Committee on the draft PAMP and to confirm PAMP recommendations proposed in the draft PAMP.

Responses from the Access Committee meeting suggested that the Committee was very happy with the consultation process to date and have understood how their inputs from the engagement methods have been integrated into the draft PAMP report.

The issues identified during the meeting are summarised in the table in Section 2.

Meetings minutes from the Access Committee meeting are found in Appendix B.

### **1.4 Bicycle Access Committee meeting**

The Bicycle Advisory Committee meeting was held on 15<sup>th</sup> April 2013. The purpose of this meeting was to seek comments from the Bicycle Access Committee on the draft PAMP and to confirm PAMP recommendations proposed in the draft PAMP.

The issues identified during the meeting are summarised in the table in Section 2.

### 2 Submissions

Subm ission	Location	Issue	Summary of submission	Response to submission	<b>Reference in PAMP Report</b>
Public .	Exhibition subm	issions			
A1	Epping Road	Shared pedestrian and cycle paths	Shared pedestrian and cycle paths along Epping Road are dangerous for pedestrians.	Throughout the PAMP process, Epping Road was not identified as a high priority route and specific actions have therefore not been proposed at this location. It is recommended that this issue be considered in future bicycle planning in consultation with RMS.	To be noted in Section 8.0
A2	Epping Road north near Rivett Road at bus stop.	Footpath issue	Pedestrian pathway on Epping Road is constrained due to slopes.	This location should be included as a footpath issue. It is understood that this location may form a part of the redevelopment that would be occurring alongside North Ryde Station Precinct. The North Ryde Station Precinct is identified as an Urban Activation Precinct by NSW Department of Planning and Infrastructure. It is understood that limited funding of approximately \$5 million per precinct may be available through the Precinct Support program for works such as public domain upgrades. Therefore, funding and timing of works within this Staged Action Plan may potentially need to be revisited should these Urban Activation Precincts proceed.	Footpath issue at this location to be included in Section 8.3 of the PAMP report. It is understood that this location may form a part of the redevelopment of the North Ryde Station Precinct. Reference to UAPs to be updated in the PAMP report with regard to the limited funding of approximately \$5 million per precinct may be available through the Precinct Support program for works such as public domain upgrades.

Subm ission	Location	Issue	Summary of submission	Response to submission	Reference in PAMP Report
A3	Rivett Road and Lucknow Road	Crossing issue	No crossing facilities at Rivett Road and Lucknow Road for pedestrians crossing east – west	During the audit, missing kerb ramps were identified at Rivett Road (ID 180). This location should be included as a crossing issue and pedestrian refuges is recommended for further investigation for installation at this location.	The installation of kerb ramps at this location is identified in Section 8.6. To be included as a concept plan location to investigate the installation of pedestrian refuge at this location. Investigation to be included in Section 12.2.
A4	Epping Road near Lane Cove River	Footpath issue	Weeds present obstruction to pathways present on Epping Road.	Throughout the PAMP process, Epping Road was not identified as a high priority route and specific actions have therefore not been proposed at this location.	N/A
A5	Bundarra Reserve (between Epping/Delhi Rd and M2)	Ecological impact	Concerns regarding ecological impacts of potential pathways being proposed in Bundarra Reserve (between Epping/Delhi Rd and M2)	The PAMP does not identify any footpath actions at this location. It is understood that this location lies within the North Ryde Station Precinct.	N/A

Subm ission	Location	Issue	Summary of submission	Response to submission	Reference in PAMP Report
B1	Byfield Street and Waterloo Road intersection	Crossing issue	City of Ryde must provide a safe way for pedestrians to cross Byfield Street at Byfield Street/ Waterloo Road roundabout.	Crossing issues at this location were identified through the audit and community consultation process (ID 113). Estimated pedestrian and vehicle volumes available currently do not meet warrants for a signalised pedestrian crossing. It is suggested that additional surveys be undertaken and growth is monitored. It is suggested that a warrant for a signalised pedestrian intersection could be met in $5 - 10$ years.	Crossing issue at this location has been identified through the PAMP process (ID 113), and action is presented in Section 8.11.
C1	Culloden Road	Driver behaviour	Cars often speed in Culloden Road making it difficult to cross.	Culloden Road and Waterloo Road intersection was identified as having limited pedestrian crossing opportunities (ID 128). It is understood that this location is to be considered within the masterplan development of Macquarie University.	Crossing issue at this location has been identified through the PAMP process (ID 128), and action is presented in Section 8.11.
C2	Herring Road bus stop at Macquarie Centre	Crossing issues	Crossing at bus stop at Herring Road is difficult to cross.	Crossing issues at this location were identified through the audit and community consultation process (ID 112 and 116). It is understood that Transport for NSW is investigating pedestrian crossing works as part of the Macquarie Centre bus interchange upgrade.	Crossing issue at this location has been identified through the PAMP process (ID 112 and 116), and action is presented in Section 8.11.
C3	Herring Road bus stop at Macquarie Centre	Bus stop	Bus shelter needs to be larger to cope with volumes of evening peak passengers.	It is understood that Transport for NSW is investigating pedestrian crossing works as part of the Macquarie Centre bus interchange upgrade.	Issues have been identified at this location through the PAMP process (ID 112 and 116), and action is presented in Section 8.11.

Subm ission	Location	Issue	Summary of submission	Response to submission	Reference in PAMP Report
C4	N/A	Bus routes	Marsfield residents need a bus that just travels from Macquarie Centre to Marsfield.	The planning of bus routes fall beyond the scope of the scope for this PAMP. It is recommended that this issue be considered in public transport planning in consultation with RMS.	N/A
C5	Macquarie Centre vehicle access points	Pedestrian safety	Vehicle access points present potential conflicts with pedestrians.	Vehicle access points at Macquarie Centre present potential conflicts with pedestrians. It is suggested that consultation should occur with Macquarie centre and traffic calming measures and signage should be considered for installation by Macquarie Centre.	To be included in crossing issues in Section 8.11.
D1	Byfield Road/ Waterloo Road crossing	Crossing issue	Crossing on Byfield Street is very dangerous.	Crossing issues at this location were identified through the audit and community consultation process (ID 113). Estimated pedestrian and vehicle volumes available currently do not meet warrants for a signalised pedestrian crossing. It is suggested that additional surveys be undertaken and growth is monitored. It is suggested that a warrant for a signalised pedestrian intersection could be met in $5 - 10$ years.	Crossing issue at this location has been identified through the PAMP process (ID 113), and action is presented in Section 8.11.

Subm ission	Location	Issue	Summary of submission	Response to submission	Reference in PAMP Report
D2	Waterloo Road	Crossing issue	There is no pedestrian crossing on Waterloo Road between Macquarie Park Station and Macquarie University train Stations	A series of crossing issues along Waterloo Road were identified during the audit and consultation period. A series of crossing opportunities were identified along Waterloo Road to be installed to align with future development and future fine grain network through the area.	Pedestrian future pedestrian demand for the study area is discussed in Section 9. This section presents an indicative pedestrian future pedestrian demand for the study area to inform future crossing requirements. Crossing opportunities, including installations to align with future fine grain road network, are presented in Figure 38 in Section 8.11.
D3	Waterloo Road cycling path	Shared pedestrian and cycle path	Cyclist ride fast along Waterloo Road.	Sections of the shared pedestrian and cycle path along Waterloo Road were identified as conflict points through the audit and community consultation process (ID 1 and 6). It is suggested that separate dedicated cycleways should be considered at this locations to provide a clear pathway for cyclists and limit potential cycling and pedestrian conflicts. It is recommended that these locations should be further reviewed through bike plan strategy processes.	Shared pedestrian and cycle paths audit findings are presented in Section 8.9.
E1	N/A	Bus route information	Bus route 293 is missing from Page 17.	A discussion around bus services in the area is presented in Section 3.5.1. Bus route 293 is missing from this section and will be included in the final PAMP report.	Bus route information to be included in Section 3.5.1.

Subm ission	Location	Issue	Summary of submission	Response to submission	<b>Reference in PAMP Report</b>
E2	Bus stop along Epping Road	Bus stop issue	Bus stop along Waterloo Road opposite Waterloo Park ID 152 is marked as no shelter, no seating in Priority 3.	This action is currently assigned Priority 3. Due to community response, this action has been assigned to Priority 1.	To be updated in PAMP report as a Priority 1 action.
F1	N/A	Parking policy	Introduce time limited parking zones with resident exemptions Restrict parking conditions within the wider residential area Provide commuter bus services to restrict car use.	Parking policy issues fall beyond the scope of the Macquarie Park PAMP. This issue will not be addressed directly in the PAMP. It is suggested that this issue be considered by the transport planning group within CoR.	N/A
F2	N/A	Car dependency	Car dependency across Sydney requires attention.	Enhancing the pedestrian environment is recognised as an element of the transport system that can assist in reducing car dependency.	The PAMP report and associated recommended actions align with the enhancing the pedestrian environment, as an element that can contribute to reducing car dependency.

Subm ission	Location	Issue	Summary of submission	Response to submission	Reference in PAMP Report
F3	North Ryde Station Precinct	Pedestrian linkages	State Government commitment to publicly funded infrastructure within the North Ryde Station Precinct may not occur.	The North Ryde Station Precinct is identified as an Urban Activation Precinct by NSW Department of Planning and Infrastructure. It is understood that limited funding of approximately \$5 million per precinct may be available through the Precinct Support program for works such as public domain upgrades. Therefore, funding and timing of works within this Staged Action Plan may potentially need to be revisited should these Urban Activation Precincts proceed.	Reference to UAPs to be updated in the PAMP report with regard to the limited funding of approximately \$5 million per precinct may be available through the Precinct Support program for works such as public domain upgrades.
F4	Residential areas beyond study area.	Pedestrian and cycling access	There should be consideration for improved access in the area to established residential areas around Pittwater, Cox's and Wicks Road.	This PAMP has been developed for the Macquarie Park area. The PAMP routes were developed with consideration to linkages to pedestrian trip attractors and generators, hazardous locations and accident statistics, missing link and planned future key pedestrian routes. Alongside the PAMP routes, key intersections that link with residential areas beyond the study area are also included in the PAMP network, recognising the need for improved access from the surrounding areas in the Macquarie Park area.	The development of the PAMP routes is discussed in Section 7.

Subm ission	Location	Issue	Summary of submission	Response to submission	Reference in PAMP Report
F5	Pittwater Road	Signal phasing issues	Pedestrian lights at Epping Road, Dehli Road and Pittwater Road near Epping Road are slow to respond and provide short crossing time.	Signal phasing issues at Epping Road and Dehli Road to be included in crossing issue. It is recommended that consultation occurs with RMS for the consideration of shorter waiting times for pedestrians.	Signal phasing audit issues for Epping Road and Dehli Road to be included in Section 8.10.
F6	CSIRO site	Pedestrian access	Improved access through CSIRO site to be integrated into future road proposals between Delhi Road and Epping Road through North Ryde Station Precinct planning.	Response as above for F3 as location is suggested to be considered within planning of the North Ryde Station Precinct.	As above in F3.
F7	Delhi Road lights near North Ryde Station	Driver behaviour	Delhi Road traffic lights near the station are poorly planned and unsafe with users reporting frequent vehicles passing through the red light.	Monitoring driver behaviour falls beyond the scope of this PAMP. It is recommended that this issue be considered by the Ryde Traffic Committee with consideration of the installation of red light camera.	N/A

Subm ission	Location	Issue	Summary of submission	Response to submission		Reference in PAMP Report
F8	N/A Shared pedestrian and cycling paths Any identified pathways and travel routes which are preferred by people with a disability be assessed with regard		The footpath upgrade align with the CoR's highlights the follow below. These widths wheelchairs and prar	es recommended within the PAMP Public Domain Manual which ing footpath widths as displayed are considered appropriate for ns to pass.	Recommended footpath widths are outlined in Section 10.3.	
			to any shared use risk.	Туре	Widths	
				Type 1	Min 3m to 4.5m wide	
				Type 2	Min 3m to 4.5m wide	
				Туре 3	2m wide up to 3.8m	
				Type 4	1.8m wide	

Subm ission	Location	Issue	Summary of submission	Response to submission	Reference in PAMP Report
F9	M2 around Wicks Road	Crossing issues	Linkages to National Park need to be considered and a future crossing of the M2 around Wicks roads needs consideration.	Crossing opportunities at Wicks Road and Waterloo Road (ID 125) have been identified through the audit and community consultation process. It is understood that this location could form part of the North Ryde Station Precinct is identified as an Urban Activation Precinct by NSW Department of Planning and Infrastructure. It is understood that limited funding of approximately \$5 million per precinct may be available through the Precinct Support program for works such as public domain upgrades. Therefore, funding and timing of works within this Staged Action Plan may potentially need to be revisited should these Urban Activation Precincts proceed.	Crossing opportunities identified in Section 10.4. PAMP report to be updated with information regarding UAPs.
F10	N/A	Shared paths	Increased pram use by families should be assessed with regard to any shared use risks.	Response as above for submission F8.	Response as above in submission F8.
F11	Delhi Road	Pedestrian access	Access to the cemetery and caravan park needs to be considered as part of the plan.	The cemetery off Delhi Road in North Ryde falls beyond the study area of the Macquarie Park PAMP. Pedestrians attractors and generators outside the study area were identified in Figure 9 in the PAMP Report. Key intersections which link to surrounding areas were also included into priority routes identified in Figure 29.	N/A

Subm ission	Location	Issue	Summary of submission	Response to submission	Reference in PAMP Report
F12	Southern edge of Bundarra Reserve	Footpath treatment	The Society does not support any change from crushed granite to a hardstand path on the southern edge of Bundara Reserve. There is a hardstand footpath on the southern side of Epping Road and access through CSIRO site if required.	Noted. No footpath actions are recommended at this location within the PAMP.	N/A
Access	Advisory Comm	ittee Meeting c	omments		
AAC 1	Waterloo Road near Cottonwood Crescent	Priority intersection	This is a priority intersection with a series of issues and recommendations.	The actions proposed at this location are identified to be undertaken in the $5 - 10$ year period.	The PAMP should be updated to highlight that where action locations are concentrated, these should be undertaken together to minimise cost and disturbance at these locations
AAC 2	Surrounding areas	Pedestrian access to surrounding areas	Pedestrian access points and access from surrounding areas into Macquarie Park should be considered.	Alongside the PAMP routes, key intersections are also included in the PAMP network, recognising the need for improved access from the surrounding areas in the Macquarie Park area.	The development of the PAMP routes is discussed in Section 7.

Subm ission	Location	Issue	Summary of submission	Response to submission	Reference in PAMP Report			
AAC 3	N/A	Pedestrian access for future developmen t	Pedestrian access should be planned for future development in the area.	A series of crossing opportunities were identified during the PAMP process to be installed to align with future development and future fine grain network through the area.	Pedestrian future pedestrian demand for the study area is discussed in Section 9. This section presents an indicative pedestrian future pedestrian demand for the study area to inform future crossing requirements. Crossing opportunities, including installations to align with future fine grain road network, are presented in Figure 38 in Section 8.11.			
AAC 4	N/A	Pedestrian waiting times	The PAMP needs to be specific about what constitutes a long pedestrian waiting time	Signal phasing findings formed a part of the pedestrian audit. Commentary around long waiting times is presented in Section 8.10 of the draft PAMP.	Further detail around signal phasing audit findings to be updated in Section 8.10.			
Bicycle Access Committee Meeting comments								

Subm ission	Location	Issue	Summary of submission	Response to submission	Reference in PAMP Report
BAC 1	General location: for example Talavera Road and Herring Road.	Bus stop installation	Concerns regarding installation of new bus shelters in seating where shared paths exist. Needs to be consideration of a light shelter at this location to ensure installation of bus shelters are not further constraining the pedestrian and bicycle environment.	Noted. This is an issue that should be noted on a location specific basis. It is understood that bus shelter design may be upgraded in 2018. During this process, bus shelter design should consider design for constrained locations.	Commentary to be updated in Bus Stop Audits.
BAC 2	N/A	Timing of recommend ations	Priority timeframes may not align with the rapid development proposed for the area.	An analysis of the future development locations was analysed and actions were aligned with these locations. A series of crossing opportunities were identified during the PAMP process to be installed to align with future development and future fine grain network through the area.	Potential future pedestrian demand for the study area is discussed in Section 9. This section presents an indicative pedestrian future pedestrian demand for the study area to inform future crossing requirements. Crossing opportunities, including installations to align with future fine grain road network, are presented in Figure 38 in Section 8.11.
Subm ission	Location	Issue	Summary of submission	Response to submission	Reference in PAMP Report
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BAC 3	Macquarie Centre access points	Crossing issues	Pedestrian improvements around Macquarie Centre were discussed. Raised walkway was discussed at Waterloo Road and Herring Road access point to minimise the confusion and enhance access at this location.	<ul><li>Vehicle access points at Macquarie Centre present potential conflicts with pedestrians.</li><li>It is suggested that consultation should occur with Macquarie centre and traffic calming measures and signage should be considered for installation by Macquarie Centre.</li></ul>	To be included in crossing issues in Section 8.11.
BAC 4	Shrimpton's Creek	PAMP route priority	Shrimpton's Creek should be considered a high priority route instead of a medium priority route.	PAMP route priority was developed based on a series of factors. Shripton's Creek has been initially identified as a medium priority route. Pedestrian audits as part of this PAMP were only undertaken on high priority routes. It is recommended that CoR undertake audits along these routes to identify relevant pedestrian actions.	Following this submission, Shrimptons' creek route to be moved to a high priority route with relevant actions such as 157/164/118 moved up to Priority 1.

# 3 Conclusion

The submission comments and issues on the draft PAMP identifies the key issue locations and also highlights were further issues should be included into the final PAMP report.

Appendix A

Submissions

E-mail Message	5	J	k	Dľ	n	S	S	0	n	А

From: To:

GROUP/CN=RECIPIENTS/CN=B10238AD-EA5F1DA7-CA256F68-7740E2] Cc: Sent: **Received:** Subject:

22/4/2013 at 3:08 PM 22/4/2013 at 3:08 PM Form data received

TrimAdmin@ryde.nsw.gov.au [SMTP:TrimAdmin@ryde.nsw.gov.au]

City of Ryde [EX:/O=COREX/OU=FIRST ADMINISTRATIVE

Dearr ,

Form data has been submitted for form Macquarie Park Draft PAMP

Field Label Field Data name: Diane Michel email: wilby11@bigpond.com phone: 9887 2703 address: 23A Epping Rd, North Ryde 2113 comments: re draft pedestrian access and mobility plan I regret that due to the pressing need to prepare submissions concerning the North Ryde Station Precinct zoning application, I am unable to give the 'pamp' as much attention as it no doubt deserves. I trust that these following (local, North Ryde) points may come in useful:- - Shared pedestrian-cycle paths such as those constructed at the time of Lane Cove Tunnel are frightening and dangerous for pedestrians on Epping Rd near Blenheim Park and Tennis World and on Delhi Rd leading to and from North Ryde Station. It is no real comfort to say that some cyclists are thoughtful and warn of their approach. A collision with one of the others can end the active live of a pedestrian. - The pedestrian pathway on the north side of Epping Rd, leading to the bus stop (slightly east of Microsoft bldg and opposite 3M bldg) is an access joke: - the access cuts in kerbing are sloped at an impossible angle to negotiate, there is no crosswalk at the vehicle access tol/from the corporate park, and pedestrians are particularly at risk from motorists entering from Epping Rd. The weird, meandering path on the last leg of the walk to the bus stop is slow and tricky on foot and no doubt impossible when pushing a pram or attempting to remain upright on a mobility vehicle. failure to control weeds along pathways in vicinity of M2 site (bounded by Wicks, Epping and Delhi Rd and M2) and on Epping Rd edge of Riverside Corporate Park is a danger for passersby and also for the environment at those locations and at the national park and great north walk east of Riverside Corporate Park. - reinforced concrete pathways are getting to be too much in both size and numbers. It seems extraordinary that the demand for all this hardstand, sometimes on both sides of a road, appears to come from cyclists who surely are capable of riding to the other side of a street or staying in an on-street cycle lane. - Plans currently afloat for what is known as the RMS site could easily result in the final destruction of the Bundara Reserve endangered ecological community. Various consultants are specifying broad paved pathways behind the Reserve, on the edge of the steep M2 cutting; and through the Reserve; and in front of the Reserve as a duplication of what already exists on Epping Rd. In summary, shared pathways present very real dangers to pedestrians and oversupply adversely affects the environment and outstrips the capability of Council mowing staff. Restraint and careful thought may provide something better than the current fashion provides. requiredAgree: on Submit: Submit

Form data can be accessed from the WCM admin site

This is an automated message; please do not reply to this email.

## E-mail Message Submission B

au [SMTP:TrimAdmin@ryde.nsw.gov.au]	Trim	From:
X/OU=FIRST ADMINISTRATIVE	City	To:
/CN=B10238AD-EA5F1DA7-CA256F68-7740E2]	GRC	
		Cc:
	28/3	Sent:
	28/3	Received:
	Forn	Subject:
	28/3 28/3 Forn	Cc: Sent: Received: Subject:

Dearr ,

Form data has been submitted for form Macquarie Park Draft PAMP

Field Label Field Data name: Simon Fuller email: simon.fuller@schneider-electric.com phone: 0403049879 address: 78 Waterloo Road, Macquarie Park, 2113 comments: The City of Ryde must provide a safe way for pedestrians to cross Byfield street at the Byfield street/Waterloo Road roundabout. The council has received many complaints about dangers for pedestrians at this intersection and acknowledged the complaints and the danger in it's draft plan document. Failure of the council to address this danger must now be viewed as negligence. requiredAgree: on Submit: Submit

Form data can be accessed from the WCM admin site

This is an automated message; please do not reply to this email.

# E-mail Message Submission C

TrimAdmin@rvde.nsw.gov.au [SMTP:TrimAdmin@rvde.nsw.gov.au]
City of Ryde [EX:/O=COREX/OU=FIRST ADMINISTRATIVE
GROUP/CN=RECIPIENTS/CN=B10238AD-EA5F1DA7-CA256F68-7740E2]
19/4/2013 at 2:19 PM
19/4/2013 at 2:19 PM
Form data received

Dearr ,

Form data has been submitted for form Macquarie Park Draft PAMP

Field Label Field Data name: Jo-Anne Lee email: jl.joanne500@gmail.com phone: 0409995743 address: 12/152 Culloden Road Marsfield 2122 comments: The draft plan is very comprehensive and council is commended on this. I often walk across the university campus from Culloden Rd to Macquarie Centre or the station. Cars often speed in Culloden road making this part of the walk quite difficult to get across but Herring road has crossings with lights. I would have thought a tunnel under Herring road would be preferable in front of Macquarie Centre to allow traffic to flow and improve pedestrian access and safety. The footpath on the university side of Herring road is too narrow with the bus shelter. The bus shelter needs to be larger to cope with volume of evening peak passengers waiting for Hills buses and M 41 service especially in rain and hot conditions . Mars field residents need a bus that just travels from Macquarie centre to Mars field, not coming from Hurstville or the 292 from the city. A continuous loop service would be great. When I drive to Macquarie centre it is very dangerous for pedestrians at all the car exits as at most exits drivers are checking for cars from one direction as well as pedestrians from both directions which is a recipe for disaster. The volume of cars and pedestrians is rapidly increasing in the area and action to improve safety needs to be done very quickly. requiredAgree: on Submit: Submit

Form data can be accessed from the WCM admin site

This is an automated message; please do not reply to this email.

# E-mail Message Submission D

TrimAdmin@ryde.nsw.gov.au [SMTP:TrimAdmin@ryde.nsw.gov.au]
City of Ryde [EX:/O=COREX/OU=FIRST ADMINISTRATIVE
GROUP/CN=RECIPIENTS/CN=B10238AD-EA5F1DA7-CA256F68-7740E2]
27/3/2013 at 12:28 PM
27/3/2013 at 12:28 PM
Form data received

Dearr ,

Form data has been submitted for form Macquarie Park Draft PAMP

This is an automated message; please do not reply to this email.

Field Label Field Data name: Mellisa email: bllueapple@yahoo.com phone: 0478405442 address: 78 Waterloo Road Macquarie Park 2113 NSW comments: 1. crossing on Byfield street is very dangerous for people who going to/from work if they take the train, there are still drivers that DID NOT indicate when they are exiting from the round-a-about which create confusion and danger to pedestrian. 2. There's no padestrian crossing along Waterloo Road between Macquarie Uni & Macquarie Park train station. To make a safe crossing we need to walk to either end traffic lights which is quite far. There're many people crossing the road to go to the opposite building/cafe which pose danger to both driver and padestrian. 3. Cyclist should not cycle fast and expect padestrian to give way to them along the padestrian path along Waterloo Road. The padestrian path is not wide enough and many cyclist are cycling very fast downhill and expect padestrian to give way to them on the path. requiredAgree: on Submit: Submit Form data can be accessed from the WCM admin site

## E-mail Message Submission E

From: To:	Peter Barrett [SMTP:pbarrett42@gmail.com] City of Ryde [EX:/O=COREX/OU=FIRST ADMINISTRATIVE GROUP/CN=RECIPIENTS/CN=B10238AD-EA5F1DA7-CA256F68-7740E2]
Cc: Sent: Received: Subject:	28/3/2013 at 10:19 AM 28/3/2013 at 10:19 AM Have your say - Draft Pedestrian Access and Mobility Plan for Macquarie Park
Attachments:	M41 Bus Stop.pdf Macq Park Mobility Plan Page17 & Fig32.pdf

Customer Service

I refer to the Draft Pedestrian Access and Mobility Plan for Macquarie Park.

a) I note on Page 17 of the plan Sydney Buses Route 293 is missing form the list, despite operating in the study area. This service Route 293 service operates to/from Macquarie Park to surrounding areas (along Culloden and Epping Roads and differently to Route 292).

b) I refer to Figure 32. "Bus stop, lighting and signage issues". I note the bus stop on Waterloo Road opposite Waterloo Park (marked 152 on your map) is denoted as 'Bus stop missing shelter'. I accept this bus stop is just outside the study area, however, it is the terminus for the Sydney Buses Metro M41 service and has neither a bus shelter or seating on the eastern side. It also services Route 292, Route 293 and Route 551. This bus stop is heavily utilised in the morning peak period and also by the elderly at other times of the day. See attached map.

I urge the council to consider this bus stop as a priority for a shelter and seating.

I would be pleased if you would respond to me in relation to the above.

Regards... Peter Barrett

------ Forwarded message ------From: My Place Team Date: 27 March 2013 13:00 Subject: Have your say -Draft Pedestrian Access and Mobility Plan for Macquarie Park To: HYPERLINK "mailto:pbarrett42@gmail.com"pbarrett42@gmail.com

http://surveys.automatesurvey.com/logo?id=13323&sid=2122&r1119785061 HYPERLINK "http://www.automatesurvey.com//multimedia/3810552122.PNG"My Place

Dear My Place members,

Thank you for your initial input into the development of the Macquarie Park Pedestrian Access and Mobility Plan (PAMP) via our online survey and collaborative map back in October 2012.

We have incorporated initial community and stakeholder input into the draft PAMP where possible, subject to the technical and financial feasibility of various options.

#### 3.5.1 Bus Services

There are several bus services operating from the Macquarie Park precinct with services to the surrounding regions. The main roads carrying services in the corridor are Waterloo Road, Lane Cove Road, Epping Road and Herring Road. A major transport interchange is located at Macquarie University train station on Herring Road, and Macquarie Park train station which is the intersection of Lane Cove Road and Waterloo Road.

Bus operators that service the transport interchanges are Sydney Buses, TransdevTSL Shorelink, Hillsbus, Forest Coach Lines and Busways. Services. Table 2 below indicates a complete list of bus services to the Macquarie Park/University transport interchanges.

Route Number	Bus Routes (Destinations)	Operator
140	Manly to Epping	Sydney Buses
288	City (QVB) to Epping	Sydney Buses
290	City (QVB) to Epping	Sydney Buses
292	City (QVB) to Marsfield	Sydney Buses
294	City (QVB) to Epping	Sydney Buses
295	North Epping to Macquarie Centre	Sydney Buses
458	Burwood to Ryde	Sydney Buses
459	Strathfield to Macquarie University	Sydney Buses
506	City (Circular Quay) to Macquarie University	Sydney Buses
507	City (Circular Quay) to Macquarie University	Sydney Buses
518	City (Circular Quay) to Macquarie University	Sydney Buses
544	Auburn to Macquarie Centre	Sydney Buses
545	Parramatta to Chatswood	Sydney Buses
550	Parramatta to Macquarie Centre	Sydney Buses
M54	Parramatta to Macquarie Park	Sydney Buses
M41	Hurstville to Waterloo Park	Sydney Buses
740	Plumpton to Macquarie Park	Busways
197	Mona Vale to Macquarie University	Forest .
562	Gordon to Macquarie University	Forest
565	Chatswood to Macquarie University	Transdev TSL Shorelink
572	Turramurra to Macquarie University	Transdev TSL Shorelink
575	Hornsby to Macquarie University	Transdev TSL Shorelink
611	Blacktown to Macquarie Park	Hillsbus
619	Castle Hill to Macquarie Park	Hillsbus
621	Castle Hill to Macquarie Park	Hillsbus
630	Blacktown to Macquarie Park	Hillsbus
628	Norwest to Macquarie Park	Hillsbus

Table 2: Bus Services which serve Macquarie Park

J.3227080127719-00 MACQUARIE PARK PAMP/WORK65 ARUP PROJECT DATAGO\_REPORTS6. 2ND DRAFT REPORT DOS\_MACPARKPAMP\_2NDDRAFTREPORT\_DOCX

<sup>2272190/00 |</sup> Draft 2 | 20 February 2013 | Arup



Google earth

feet meters

100

**Submission F** 



#### Ryde - Hunter's Hill Flora and Fauna Preservation Society

Member of Nature Conservation Council of N.S.W.

P.O. Box 2127 Boronia Park 2111

Ms. Danielle Dickson, Acting General Manager, The City of Ryde Locked Bag 2069, North Ryde NSW 1670. <u>cityofryde@ryde.nsw.gov.au</u> 1 May 2013 Attention: Mr. Sam Cappelli RE: Draft Macguarie Park Pedestrian Access and Mobility Plan.

Dear Ms. Dickson,

The Society wishes to make brief comments on the above draft plan. Whilst we support the need for improved pedestrian access and mobility, there is also the more important need to identify strategies to reduced car dependency and the deterrent that heavy traffic corridors cause to walking and cycling. Car dependency, especially for work travel to and from the expanding Macquarie Park corridor, which is so well serviced by public transport, should be discouraged.

We would urge Council to resist pressure for increased parking space on all future commercial developments, introduce time limited parking zones with resident exemptions and rigorous ranger patrols of illegal parking. Restricted parking conditions with resident exemptions should apply not only to the immediate area, but to the wider residential area within the employee parking use sphere. Innovative strategies such as Council rate relief for reduced car dependency by employees or industry provided commuter bus services should also be considered.

The broader issue of car dependency across Sydney needs wider attention eg. A taxation system that favours car packages over a "public transport" package, school students attending schools outside their local area, greater opportunities for use of small mechanized travel devices on short journeys etc. At the core of much car dependency for local trips is the sometimes irrational idea that it is safer, and quicker to drive. This would seem confirmed in the questionnaire in the draft plan where motorist behavior is identified as the second highest deterrent to walking locally.

We urge that Council consider any PAMPs within the broader context of increasing car dependency across Sydney.

With specific regard to the draft MPPAMP, we raise the need to consider the impact on existing, nearby residential areas from the projected growth in the corridor covered by the draft plan. It would seem important to identify and recognize their needs for improved access to transport and employment locally in future planning.

In particular we make some comments on the Epping/Delhi Roads intersection and its immediate surrounds:

- There is a presumption in the draft document that the State Government will deliver on the transport and access upgrades identified in the North Ryde Station Precinct Rezoning eg. the improved pedestrian linkage across Delhi Road and the M2. The Society has been represented on the Community Liaison process for this rezoning, and information given at recent meetings suggests that this commitment to publically funded infrastructure may not actually occur;
- The confined geographic area covered by the draft, limits consideration of the needs of established residential areas, especially that bounded by Pittwater, Cox's and Wicks Roads in North Ryde. Most of this area is flat and conducive to pedestrian and cycle access to the station but linkages are poor. There should be consideration for improved access in this area;
- We presume the limited geographic area covered by the draft plan, as identified in the above point, has resulted in the prioritization of the Pittwater Rd lights over the Epping and Delhi Roads pedestrian lights, which are also very slow to respond and provide short crossing time;
- Slow pedestrian lights and short crossing times are frustrating for pedestrians. Balancing pedestrian needs with traffic flows is difficult and especially compounded by the contractual arrangements of private road operators with the RMS;
- The improved access through the old CSIRO site would seem important to prioritise as identified in the draft plan, but this needs to be integrated with the future road proposal between Delhi and Epping Roads in the NRSP Rezoning;
- Delhi Road lights near the station are poorly planned and unsafe, with users reporting frequent vehicles passing thought the red light;
- Whilst some of the corridor would seem unsuitable for wheelchair access, it may be required. We would urge that any identified pathways and travel

routes which are preferred by people with a disability be assessed with regard to any shared use risks;

- It is arguable whether the questionnaires undertaken in this draft plan will be appropriate to guide the future needs planning of the projected eastern residential growth of the corridor. We would presume that the established area to the west comprises a largely student based population with a focus on the nearby university complex. This may not be the case with future development in the eastern section, where need for access to recreational areas will be greater and where there are shopping centre alternatives eg. Chatswood. Linkages to the National Park need to be considered and a future crossing of the M2 around Wicks Road needs consideration. This has been raised in the CLG meetings and it is mentioned in the plan's appendices but does not appear to be identified on the maps;
- Likewise, areas proposed for future development to the east may create increased pram use by families and should be assessed with regard to any shared use risks;
- Access to the cemetery and caravan park needs to be considered as part of the plan. It may be possible to encourage increased public transport access to the cemetery and crematorium which is used frequently and causes traffic congestion along Delhi Rd.;
- The Society does not support any change from crushed granite to a hardstand path on the southern edge of Bundara Reserve. The current path was sensitively installed when the Lane Cove tunnel and associated road improvements were undertaken. There is hardstand footpath on the southern side of Epping Road and also access through the old CSIRO site if required.

We thank you for an opportunity to comment and apologise for the lateness of our submission.

Yours sincerely,

Cathy Merchant, President.

# City of Ryde

Subject:	onsultation with Access Advisory Comm ark PAMP	ittee on Macquarie Page 1 of 4				
1	3 March 2013					
Subject:	Access Advisory Committee- Spe regarding Macquarie Park PAMP	ecial Workshop				
File No:	COR 2013/207					
Document Ref:	D13/25840					
Venue:	Meeting Room 2, Level 5, Civic C	Centre				
Date:	13 March 2013					
Time:	5.00pm Started at: 5 pm	Closed at: 6.20 pm				
Chair:	Councillor Denise Pendleton	Councillor Denise Pendleton				
Meeting Support	<b>(MS):</b> n/a					
Staff Convenor:	William Davies	William Davies				
Circulation:	committee members					

Present	Apology	Name	Position Title	Organisation
х		Clr Denise Pendleton	Chairperson	City of Ryde
х		Brian Bernard	Community Representative	
		Victoria Brookman	Community Representative	
	х	Connie Netterfield	Community Representative	
		Diane O' Brien	Community Representative	
x Doris Carrall		Doris Carrall	Community Representative	
	х	Greg McClure	Community Representative	
		Barbara Stannard	Community Representative	
х		Hazel Myers	Community Representative	
		Neita Matthews OAM	Community Representative	
x		William Davies	Section Manager Access & Equity	City of Ryde

## Other Attendees

Name	Position Title	Organisation
Andrew Hulse	Project Director from Consultants for Macquarie Park PAMP	Arup
Safiah Moore	Project Manager from Consultants for Macquarie Park PAMP	Arup
Jenai Davies	Senior Sustainability Coordinator, Ryde's Project Manager for the Macquarie Park PAMP	City of Ryde
Sam Cappelli	Manager Environment	City of Ryde

### Subject: Consultation with Access Advisory Committee on Macquarie Page 2 of 4 Park PAMP 13 March 2013

	Details	Action	Responsibility and Date
1.	Present: As above.	Noted	
2.	Apologies: As above	Noted	
3.	<ul> <li>Agenda item 1 – Consultants Arup provided an overview of the Macquarie Park Pedestrian Access Mobility Plan (PAMP) process to date and key findings/outcomes from the draft PAMP</li> <li>Committee members were also provided with an opportunity to ask about various issues. The following issues were raised and discussed: <ul> <li>Cllr Pendleton asked questions regarding survey methodology and responses</li> <li>Cllr Pendleton asked questions regarding NSW Safe Systems approach</li> <li>Cllr Pendleton asked how bicycle /pedestrian conflicts were handled</li> <li>Hazel Myers raised issue about how in residential areas just outside of study area, pedestrians can still face considerable crossing difficulties and waiting times eg along Vimiera Rd</li> <li>Cllr Pendleton asked how residential pedestrian volumes have been considered</li> <li>Brian Bernard raised issue regarding PAMP needing to be specific with what constitutes a long pedestrian waiting time</li> </ul> </li> </ul>	Noted	

City of Ryde

Sul	bject: Consultation with Access Advisory Cor Park PAMP	Consultation with Access Advisory Committee on Macquarie Park PAMP			
	13 March 2013				
4.	Agenda item 2 – Next steps for consultation with Access Committee and Public Exhibition of the Jenai Davies outlined next steps. Council to consid whether to approve public exhibition of Draft PAMP deferred meeting on 19 March.	h the PAMP ler at Circulate email version of draft Macquarie Park PAMP once Council approval has been given for public exhibition.	Project Manager once approval for public exhibition has been given (expected after 20 <sup>th</sup>		
	Should public exhibition be approved, Access Advis Committee members will then be forwarded a copy draft PAMP by Jenai Davies via email for their comments/feedback.	sory of the HaveYourSay link to members for on-line comments once public exhibition period is open.	March 2013)		
	The general public exhibition period will be from 27 2013 to 23 April 2013. Once the public exhibition period open, members will also be circulated a copy of the HaveYourSay link for comments. Written submission must be clearly marked as "Macquarie Park PAMP" can be sent submitted by email to cityofryde@ryde.nsw.gov.au or hardcopy to General Manager, City of Ryde, Locked Bag 2069, North Ry NSW 1670	March eriod is ons ' and ' and	Committee members to submit their comments via email or post to prior to the close of the public exhibition period (23 April 2013)		
	Committee member and public comments will be considered in the development of the draft PAMP w expected to be forwarded to Council by the end of J approval. Once the public exhibition is complete no consultation with either the committee or the public take place. Members of the public including member the committee may apply to address Council at a m go to www.ryde.nsw.gov.au/Council/Council+Meetings/Gu +Council+Meetings/Participating+in+Meetings+FAC further information.	Noted Noted June for o further will ers of eeting uide+to 2s for	25 June 2013 TBC		
	Access Committee endorsement of final Macquarie PAMP (responding to consultation comments) will n required prior to submission to Council for approval.	Park Noted			



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	Environme meeting to processes (once appr	nt staff to attend next Access Committee provide an update on further consultation and outcomes for final Macquarie Park PAMP oved).	Manager The Environment agreed to attend next meeting of committee to discuss	TBC
	At next Acc also discus centre bas	cess Committee meeting, Environment staff to as preferred consultation approaches for future ed PAMPS.	outcomes of Macquarie PAMP consultation and preferred consultation approaches for future centre based PAMPs.	