City of Ryde

Eastwood Pedestrian Access and Mobility Plan

Final Report

ARUP

City of Ryde

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Final Report

Issue

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1 INTRODUCTION

1.1 Background

Ryde Council engaged Arup to undertake a Pedestrian Access and Mobility Plan (PAMP) for the Eastwood town centre. The study area encompasses a 800 metres radius of Eastwood Station.

Walking is an important travel mode, both for solely pedestrian-based journeys and also as a part of trips for which the main mode of travel is by bus, rail and car. Walking as a mode of transport has declined in western society in recent years (Arup, 1998). Research from the United States suggests that in 1997-98, on average, the US spent just 55 cents per person of their federal transportation funds on pedestrian projects, less than 1 percent of their total spending, yet their average spending on highways came to $72 per person (STPP, 2000). This has significant environmental, economic and social effects.

Increasing the proportion of journeys that are undertaken on foot can make a significant contribution to achieving a better quality of life and environment for all and contribute to wider sustainable transport themes of promoting alternative to the private motor vehicle. Potentially there are significant benefits to be derived from encouraging more walking, particularly for shorter distance trips. These benefits include improved health, better environmental conditions, decreased traffic congestion and improved safety.

1.2 Aims

The main aim of the Eastwood PAMP is to improve the pedestrian network's:

- coherence;
- directness;
- safety;
- comfort;
- attractiveness; and
- equity of access.

1.3 Objectives

The main objectives of the PAMP as identified in the City of Ryde Brief are to:

- Facilitate improvements in the level of pedestrian access and priority, particularly in areas of high pedestrian concentrations;
- Reduce pedestrian access severance and enhance safe and convenient crossing opportunities on major roads;
- Identify and resolve pedestrian crash clusters;
- Facilitate improvements in the level of personal mobility and safety for pedestrians with disabilities and older persons through the provision of pedestrian infrastructure and facilities which cater to the needs of all pedestrians;
- Provide links with other transport services to achieve an integrated land use and transport network of facilities that comply with best technical standards;
- Ensure pedestrian facilities are provided in a consistent and appropriate manner,
- Ensure that pedestrian facilities remain appropriate and relevant to the surrounding land use and the user group;

- Facilitate the integration of walking into the transport system as a legitimate transport mode in its own right
- Accommodate special event needs of pedestrians; and
- Further Council's obligations under the Commonwealth Disability Discrimination Act 1996.

1.4 Universal Access Principles

Universal Access Principles highlight the rights of all citizens in relation to all transport needs, including non-vehicle forms of transport. These are presented in Figure 1.

Figure 1 Universal Access Principles

- Universal Access is the ability of all citizens to reach every destination served by the public road and transit system.
- Every local road and intersection should be designed and regulated to preserve reasonably safe access to all lawfully behaving citizens as intended and expected users (i.e. all citizens are Design Users.)
- Engineering designers and policy should aim for acceptable Level of Service measures, such as delays, that are similar for all road users – motorists, pedestrians, cyclists and mobility-impaired persons.
- Avoid road "improvements" which reduce the Level of Service below acceptable levels for pedestrians, cyclists and mobility-impaired persons.
- Provide footpaths on at least one side of all streets so that wheelchair users have accessible routes outside of vehicle travel lanes.
- Public facilities or policies that discriminate against the "car-less" violate the most basic rights described in law.

(Acknowledgments to S.B. Goodridge)

Existing and Potential Users

Image Source: www.flickr.com

1.5 Methodology

1.5.1 Study Area

The PAMP study is focused on the Eastwood town centre, as shown in Figure 2. The study area encompasses a 800 metres radius of Eastwood Station.

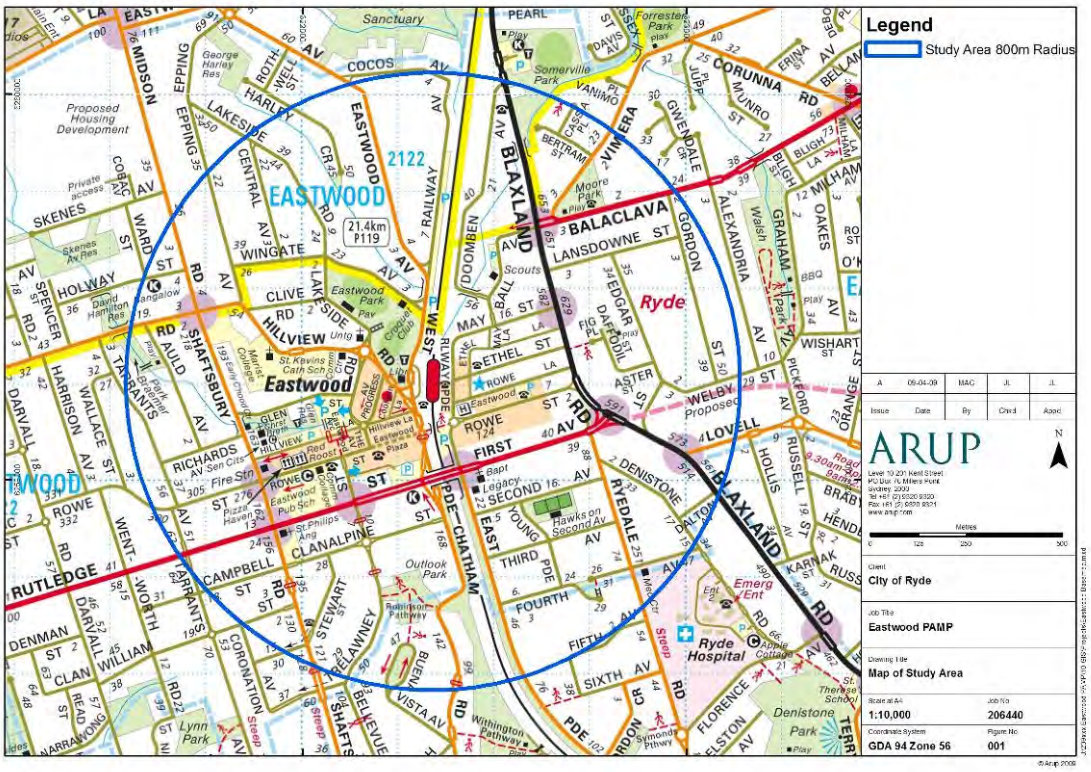


Figure 2 Study Area Map

1.5.2 Outline of Study Methodology

The methodology for the study involved a number of components including the following:

- define study area;
- data review;
- questionnaire surveys;
- community consultation;
- PAMP routes development;
- pedestrian audit of routes;
- action recommendations development; and
- consideration of Council policies and funding sources.

The process is illustrated in Figure 3.

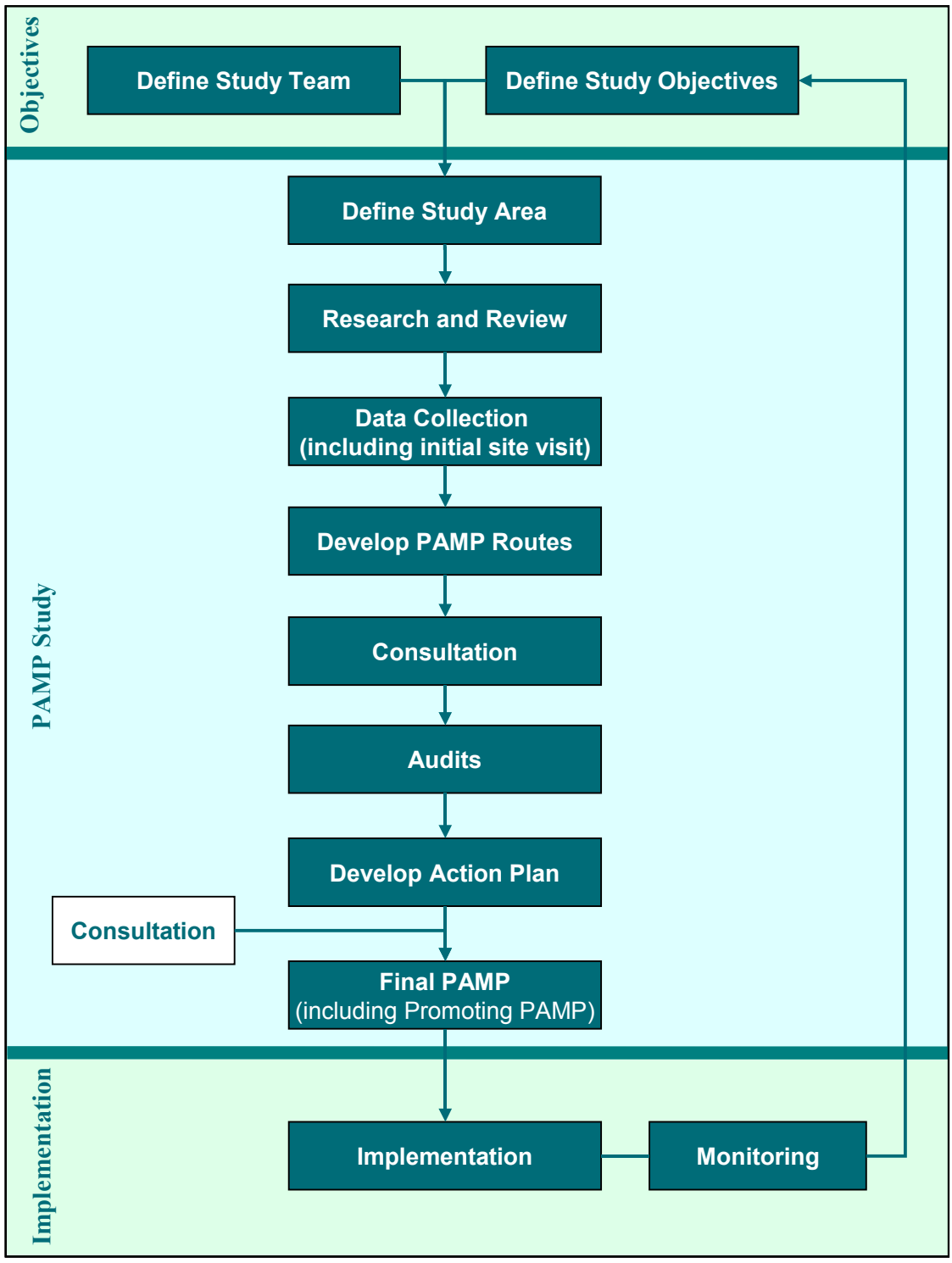


Figure 3 PAMP Methodology

1.6 Evaluation

1.6.1 Introduction

Planning specifically for pedestrians is a relatively new activity in Australia. Authorities such as Local Councils and the RTA have difficulty in addressing pedestrian problems and solutions without a clearly established framework for assessing problems, evaluating potential actions and developing priorities and implementation programs.

Transport authorities must compete for funding with other levels of government. Funding for pedestrians can usually be facilitated if the wider community benefits are identified.

Many expensive initiatives are applicable only to a small range of problems. The wider range of cheaper minor measures must also be accorded commensurate status.

A variety of objectives may exist for PAMPs, including:

- Economic objectives
    - travel time savings for pedestrians;
    - travel time savings for other road users;
    - accident cost reduction; and
    - economic sustainability.
- Social and political objectives
    - mobility of all members of the community;
    - redistribution of costs and benefits within community groups;
    - redistribution of costs between community groups;
    - effect on mode split;
    - decrease in fuel consumption;
    - equitable access to work, education and social opportunities;
    - healthy lifestyle; and
    - personal physical safety.
- Environmental objectives
    - reduction of atmospheric pollution/greenhouse gas emissions;
    - sustainability;
    - noise reduction; and
    - amenity.

Measurements of PAMP performance against these objectives is challenging because the objectives are qualitative, which makes measurement difficult, and rating of the importance of different (and in some cases, conflicting) objectives is a difficult task.

1.6.2 PAMP Actions

Possible actions for Council to be developed as part of the PAMP process are wide-ranging, and perhaps can be categorised in the same manner as planning for bicycles, the so - called 4E's approach:

- Encouragement;
- Enforcement;

- Engineering; and
- Education.

This PAMP study and the resulting Action Recommendations have focussed on the engineering actions and recommendations. The Action Recommendations were developed primarily through pedestrian audits undertaken on selected routes throughout the study area. The main considerations of the audit included:

- paths of travel;
- major intersections;
- pedestrian crossings;
- fixtures/furniture - seating, bus stops, rubbish bins etc;
- barriers to pedestrian movement;
- pedestrian/vehicle data; and
- general comments (land use, road user behaviour, road environment).

1.6.3 Implementation

A method for problem ranking and solution assessment has been developed as part of the PAMP methodology. The method identifies problems, audits problems in the field, identifies potential solutions, ranks these and recommends a set of actions in the form of Action Recommendations.

2 CHARACTERISTICS OF EASTWOOD

2.1 Population

The 2006 ABS Census indicates the Eastwood population was close to 11,708 (source: City of Ryde Community Profile), which has increased by 2.4% since the 2001 Census. The Eastwood population is characterised by a high proportion of residents born overseas (47.1%) with those born in Australia representing 46.8%. The proportion of overseas born residents was 10% higher than the general City of Ryde average. Pockets of high population density area (74 - 278 persons per hectare) in the eastern side of the study area, bounded by Rowe St, Railway Parade, Ball Avenue and Blaxland Road has been identified. The population characteristics will aid the development of the PAMP routes.

2.2 Geographic Features of the Study Area

The Eastwood town centre area is located approximately 14 kilometres north west of the Sydney CBD. There are wide socio-economic differences throughout the suburb. The northern part of Eastwood falls within the Parramatta Council area.

Eastwood is divided by some major built features. Blaxland Road runs from north to south, Rutledge Street runs from East to West are the two major roads dividing the study area. Eastwood is served by the Northern train line. The Northern railway line presents a major physical severance in the study area, creating a divide between the east and west of Eastwood and limits pedestrian movement. Currently, there are two pedestrian underpasses near Eastwood Station providing an east - west linkage within the study area. The footpath along Rutledge Street / First Avenue provides an additional linkage across the railway line.

Potential pedestrian attractors in the municipality include schools and colleges, shopping and retail precinct, Ryde Hospital, Eastwood Station, parks, sporting and recreational areas.

Eastwood town centre is predominantly commercial and retail in nature. Rowe Street west, Rowe Street Arcade, Progress Ave and Hillview Lane in the west and Rowe Street east are the major retail precincts. Low to medium residential uses surrounding the centre. The PAMP will examine the opportunity of providing an accessible pedestrian network within the town centre and to and from the town centre. The various land uses are shown in Figure 4.

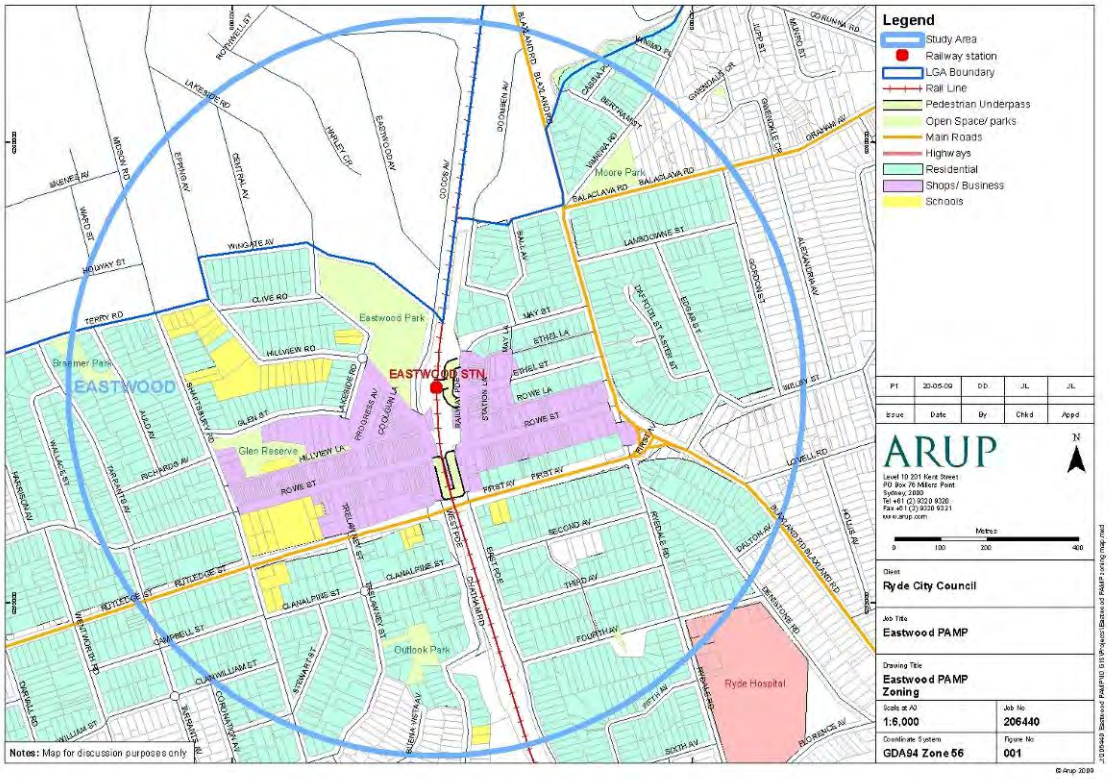


Figure 4 Eastwood zoning map

2.3 Road Hierarchy

Arterial roads often present problems for crossing opportunities for pedestrians due to high traffic volumes. Arterial roads are often the most direct route to retail and commercial centres and therefore are suitable for pedestrians.

Arterial Roads

- Blaxland Road
- Balaclava Road

Sub Arterial Roads

- Rutledge Street
- First Avenue

Major Local Roads

- Hillview Road
- Shaftsbury Road
- Terry Road
- Chatham Road
- Ryedale Road

2.3.1 Traffic Volumes

Traffic volume data (average annual daily traffic - AADT) on major roads within the study area was available from the RTA for year 2005 and is summarised in Table 1. The traffic

volume growth on Rutledge Street was steady over the period between 1996 and 2005. Blaxland Road experienced a small decline in traffic over the period.

Table 1 Traffic volumes

Location	Station No.	1996 Volume (AADT)	2002 Volume (AADT)	2005 Volume (AADT)
Rutledge Street	51210	36,680	37,232	37,777
Blaxland Road	51009	33,956	34,235	33,601

2.4 Public Transport

The majority of the area is relatively well connected to public transport with buses, trains and taxis operating in the area. A public transport interchange is located on the western side of Eastwood Station with bus stops and taxi stand.

2.4.1 Rail

Full disabled access to the rail network, as defined by the State Rail Authority/RailCorp, is where the station has either a lift, level access or a compliant ramp (1:14 grade) from street level to all platforms, and a portable platform to train ramp. Eastwood station easy access upgrade was completed in 2008. Three new lifts, a family-accessible toilet, and improved CCTV coverage and lighting were added as part of the upgrade.

Table 2 Patronage estimates for Eastwood

Station	2007 Ranking within CityRail Network	2005 Patronage Estimate (24 hour total)	Estimated % growth since 2005	2007 Patronage Estimate (24 hour total)
Eastwood	35	11, 960	11%	13, 460

2.4.2 Bus

State Transit is the sole bus service provider in Eastwood area. Currently, ten bus routes operate from Eastwood station and through the study area. These routes generally connect the Eastwood town centre to the neighbouring centres. There are also cross regional services to the major employment and education centres like City, Chatswood, Parramatta, and Macquarie Centre. A shuttle bus run by the Council travels through the area, connecting 6 main centres. There is a taxi zone located on the western side of Eastwood Station.

Due to the gradual nature of improvements to bus fleets across NSW there is a variety of buses operating within the study area. These can be summarised as follows:

1) Original Buses - these have a two-step entry and are the least accessible of the fleet;

2) Kneeling Buses - these have a two-step entry, however they can be lowered, or kneel, so that the bottom step can be made effectively level with the kerb. These buses also have bright yellow handrails, easier to read signs, better lighting, filtered air conditioning and elderly/frail priority seating. These buses therefore offer improved access for less mobile or visually impaired members of the community;

3) Scania Buses - These offer all the features of Kneeling Buses, but with a level entry rather than two steps, making them more easily accessible; and

4) Easy Access Buses - In terms of accessibility these buses offer all the features of a Scania Bus. In addition, they offer ramp access to allow for passengers in wheelchairs and parents with prams. Within the bus, room is provided for people in wheelchairs, or

alternatively babies in prams. These buses therefore provide access to the entire community.

It is recommended that all bus stops in the study area will require auditing to ensure that they meet the requirements for the successful use of Easy Access buses.

3 DATA COLLECTION AND REVIEW

3.1 Review of Relevant Documents

This section places the PAMP study in its broader context. The documents listed below were reviewed as they inter-relate with the PAMP, either because the PAMP study works towards meeting their aims and objectives or because they outline ideas and issues that are relevant to the development of this PAMP.

3.1.1 Draft Eastwood Master Plan Review 2007

The Draft Master Plan is currently on hold subject to the Eastwood Flood Study findings. The major opportunities suggested were:

- A proposed pedestrian and cycle overbridge over the rail line,
- Possible redevelopment of the Glen Street carpark into mixed commercial/ residential/ and community facilities,
- The proposed new development will provide for the displaced parking spaces at the existing Glen Street carpark.

3.1.2 Eastwood Transport Interchange Scoping Study 2008

The Ministry of Transport has recently completed a scoping study on Eastwood Transport Interchange. The preferred layout of the interchange proposed the following changes:

- Relocating existing pair of pedestrian zebra crossings on West Parade from directly in front of the station to the northern end of the station.
- Providing a new zebra crossing on West Parade south of the bus interchange
- Providing bus zone area to accommodate up to four buses along the western side of the station
- Modifying the existing one-way traffic circulation in the interchange area to two-way bus/taxi traffic only area
- Providing kiss-and-ride area on both sides of the station

3.1.3 Eastwood Town Centre Transport Management and Access Plan (TMAP) 2008

The key recommendations relating to pedestrians were:

Key recommendations	Other Opportunities
1. Implementation of a 40km/hr speed limit in Eastwood Core CBD area with consideration of the high pedestrian activity.	1. Lanes in eastern town centre precinct could be upgraded to provide additional pedestrian and cycle routes.
2. Raised marked foot crossings at the following locations to reduce vehicle speed and to improve pedestrian safety o The Avenue north of Rowe Street o Lakeside Road north of Hillview Lane o Lakeside Road south of Glen Street o West Parade at Rowe Street Mall o West Parade at Bus Interchange; and o Railway Parade south of Ethel Street	2. Mid-block links could be provided on the eastern side of the town centre to break up long blocks.
3. Pedestrian and Cycle railway overpass aligning to the Rowe Street pedestrian mall to provide a visual link to the town centre.	3. Additional outdoor dining area / retail on either side of the station to increase surveillance of the train station and the underpasses.
4. Shared zones at Hillview Lane and Coolgun Lane.	4. Redevelopment opportunity of Lakeside Road (Glen Street) carpark.
5. Wayfinding sign posting strategy to help orient pedestrian.	5. Signalised pedestrian crossing along Lakeside Road to access Glen Street carpark.
6. Widening of Hillview lane and Coolgun Lane to a minimum of 3.0 meters width to create a more attractive pedestrian link to the train station and transport interchange.	
7. Bus Shelters provision along Rutledge Street, First Avenue, Railway Parade and Ball Avenue.	

3.1.4 Ryde Integrated Transport and Land Use Strategy (RITLUS) – Centre Report for Eastwood 2007

The strategy has developed centre specific opportunities in improving pedestrian access in Eastwood town centre.

Identified constraints

- The railway line is a major barrier for east/west pedestrian movement. Currently, there are no crossing opportunities north of Eastwood Station underpass
- Disjointed local road network
- High demand for limited car parking spaces

Identified opportunities

- Opportunity to provide pedestrian crossings on Rutledge Street at West Parade, Shaftsbury Road between Terry Road and Rowe Street.
- Formalising informal or missing footpaths identified in the Pedestrian Network:
    - Lakeside Road (west side) between Wingate Avenue and Hillview Road
    - Tarrants Avenue (west side) between Terry Road and Rowe Street
    - Third Avenue (both sides) between East Parade and Ryedale Road
    - Forth Avenue (both sides) between East Parade and Ryedale Road
    - Auld Avenue (west side) between Terry Road and Richard Avenue; and
    - Blaxland Road (west side) north of Balaclava Road
- A detailed study of pedestrian accidents type should be carried out as part of the Eastwood PAMP study.

3.1.5 Ryde Bicycle Strategy and Master Plan 2007

Eastwood town centre is one of the major centres connected to the Ryde bicycle network. Bike routes often provide direct and level access which is similar to the requirement of PAMP routes development. The identified bicycle routes in Eastwood include:

Regional Bike Route	Local Bike Route
Terry Road Hillview Road Rowe Street underpass Rowe Street east East Parade May Street Ball Avenue; and Welby Street	Eastwood Avenue West Parade Rowe Street west Trelawney Street Clanalpine Street Second, Third and Forth Avenue; and Denistone Road

3.1.6 Ryde Local Environmental Plan No. 110 – Eastwood Urban Village (EUV)

The plan proposed the followings related to pedestrian movements:

- Provide an active street frontage at all retail/ pedestrian priority streets
- Identified Retail/Pedestrian Priority Streets
    - Rowe Street (both east and west)
    - Hillview Lane
    - Progress Avenue
    - The Avenue
    - West Parade
    - East Parade
    - Part of Ethel Street
- Integrated pedestrian network providing choice of routes
- Potential through-site pedestrian link from Rowe Street Arcade to Hillview Lane and Progress Ave

3.2 Data Review

3.2.1 Existing Facilities

There are many existing pedestrian facilities located within the study area including:

- footpaths,
- pedestrian mall,
- pedestrian railway underpass
- pedestrian crossings; and
- pedestrian refuges.

In general, the study area faces two key challenges. Within the study area the age of infrastructure in general, and footpaths in particular, means that many are either in poor condition because of their age and repeated repair over the years, or are of old-style designs with high barrier kerbs, no pram ramps and no tactile warning devices. Council has in recent years gradually upgrading the pedestrian facilities and environment. Major efforts include footpath program implementation and the Eastwood Master Plan review.

All traffic management devices should consider the use of areas by pedestrians. Local Area Traffic Management (LATM) devices, with careful design, can be beneficial to pedestrians. Local streets often provide attractive routes for pedestrians, particularly when running parallel to State or Regional roads.

3.2.2 Trip Generators and Attractors

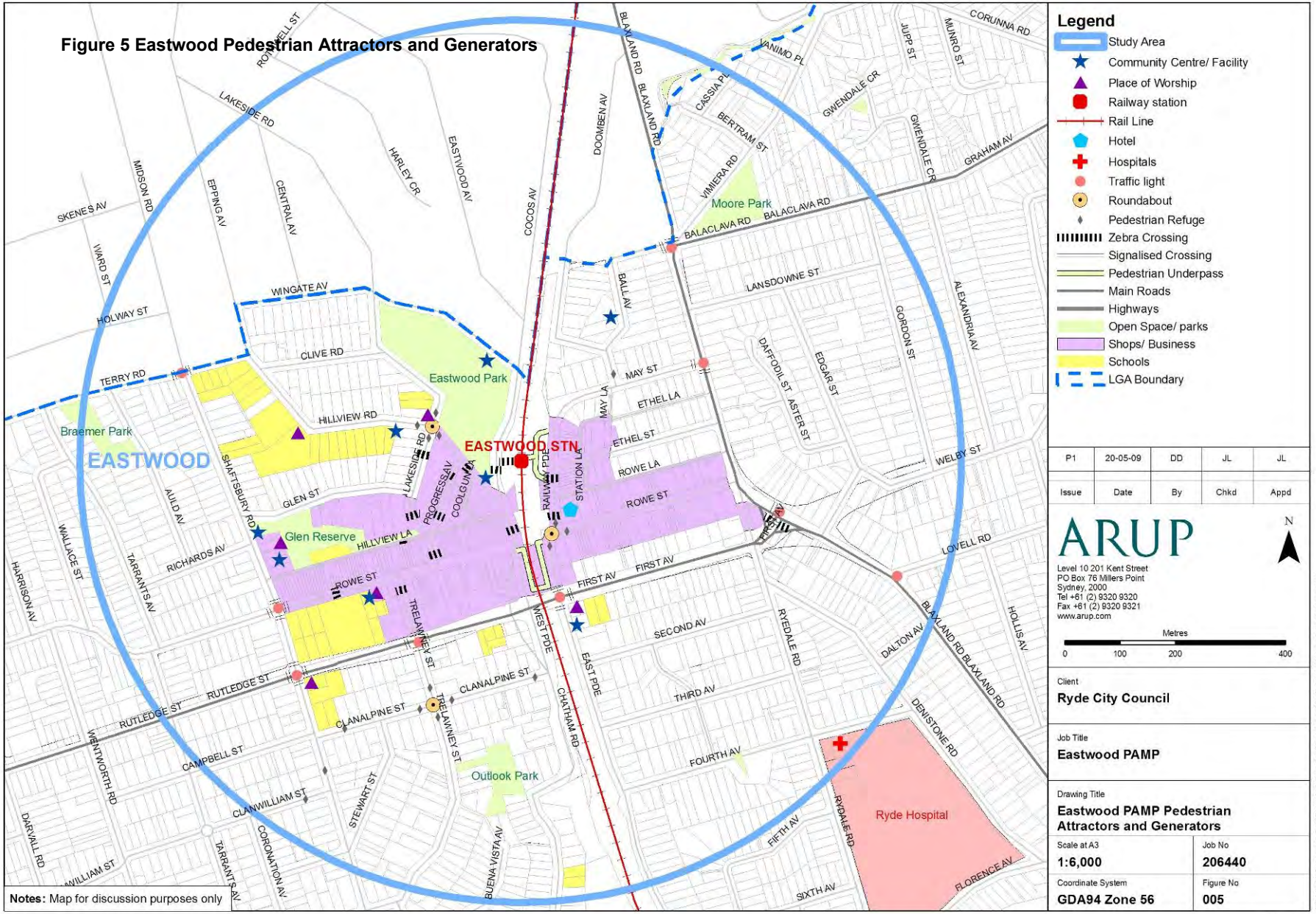
A number of trip or pedestrian generators and attractors are located within the study area as identified in Figure 5. Pedestrian generators and attractors include schools, child care and aged care centres, community centres, shopping centres and retail strips, recreation facilities (e.g. pools, sports facilities and parks), licensed clubs, places of worship and public transport facilities (railway station and bus stops). The prioritisation of the pedestrian network is closely linked to the proximity to facilities.

Major generators and attractors located within the study area include:

- Eastwood train station;
- Retail and restaurant uses along Rowe Street, Progress Ave, around the train station, West Parade and Railway Parade;
- Eastwood Shopping Centre
- Ryde Hospital;
- Local schools; and
- Eastwood Park

The location of trip generators and attractors was central to the PAMP network development and the prioritisation of the Action Recommendations.

Figure 5 Eastwood Pedestrian Attractors and Generators



3.2.3 Proposed Developments

The study identified several major proposed developments within the study area that have the potential to become a significant pedestrian attractor/generator.

Glen Street Carpark Redevelopment

Current multi-level carpark on Glen Street is proposed to be redeveloped into a mixed residential, commercial, community and retail development incorporating all current parking spaces. The redevelopment is still in the early planning stage pending to the development of the Eastwood Masterplan.

Eastwood Shopping Centre

Eastwood Shopping Centre on Rowe Street pedestrian mall is proposed to be redeveloped into mixed residential, commercial and retail development. The redevelopment will retain the existing parking spaces. New show fronts are proposed to be opened on First Avenue.

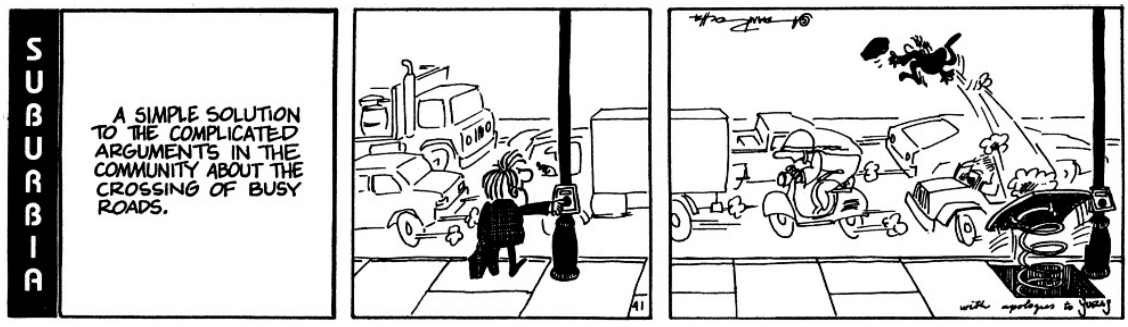
3.2.4 Opportunities

Recreation Reserves

Reserves and open space facilities throughout the study area provide some opportunities for walking paths, as well as passive and active recreational areas for walking. Larger parks present opportunities for pedestrian paths whilst smaller parks are useful in providing on-road routes with off-road access, improving the safety and aesthetic quality of the route. Open space facilities throughout the study area are shown in Figure 5. The major parks that can be found within the study area are Eastwood Park and Glen Reserve.

Road Crossing Opportunities

Opportunities for pedestrians to cross major roads safely occur at pedestrian crossings and central refuges. Crossing opportunities are particularly important on busy state and regional roads and across the railway line.



Through the community consultation process, as part of the PAMP development, concerns were raised regarding road crossing facilities at a number of locations throughout the study area. All sites raised during the consultation process have been included in Section 4 of this report.

In determining appropriate pedestrian crossing facilities, the recommendations of Section 3 - Treatments for Pedestrians Crossing Roads of Austroads Part 13, Pedestrians, 1995 should be taken into consideration.

3.2.5 Constraints

Railway Lines

Walking is constrained in the study area by the railway line. The rail line runs from north to south in the middle of the study area. It separates Eastwood town centre into east and west. An overbridge for vehicles and pedestrians is provided on First Avenue. Pedestrian underpasses are provided at Eastwood station and Rowe Street.

Major Roads

Pedestrian activities within the study area are also significantly restricted by major traffic routes. There are routes with high traffic volumes and high street side activities such as Blaxland Road, Balaclava Road, First Avenue and Rutledge Street.

Pedestrian Hazard Spots

Hazardous locations for pedestrians have been identified through community consultation and accident data. These are shown in Figure 11.

3.3 Pedestrian Accident Statistics

3.3.1 Pedestrian Accident Distribution and Type

The accident data was central to the PAMP network development and the prioritisation of the Action Recommendations. Locations with high accident history will be examined in the PAMP route audit.

RTA pedestrian accident data has been reviewed from 2003 to 2007 as shown in the tables below. Over the five year period, 33 pedestrian accidents were recorded in the study area. One of these accidents involved a fatality at First Avenue/ East Parade intersection in 2007.

The distribution of these pedestrian accidents through the areas is detailed in Table 3:

Table 3 Pedestrian Accidents (within the study area), 2003-2007

Degree of Accident	2003	2004	2005	2006	2007	Total	% Total
1 Fatal	0	0	0	0	1	1	3%
2 Injury	5	7	7	6	6	32	97%
Total	5	7	7	6	7	33	100%

Most of the accidents involving pedestrians occurred near to the side of the road (59%). The far side accidents (25%) are the second most common type of accident.

Table 4 summarises the pedestrian accidents by the location of pedestrians.

Table 4 Location of Pedestrians Involved in Accidents, 1997-2001

RUM code	Location of Pedestrian	2003	2004	2005	2006	2007	Total	% Total
00	Near Side	2	6	4	3	4	19	59%
01	Emerging	0	0	0	1	0	1	3%
02	Far Side	2	1	2	1	2	8	25%
03	Playing, Working etc.	0	0	0	0	0	0	0%
04	Walking with Traffic	0	0	0	0	0	0	0%
05	Facing Traffic	0	0	0	0	0	0	0%
06	On Footpath/Median	0	0	0	1	0	1	3%
07	Exiting/Entering Driveway	1	0	0	0	1	2	6%
09 and others	Others	0	0	1	0	0	1	3%
	Total							
		5	7	7	6	7	33	100%

Note: RUM refers to the Road User Movement codings used by the RTA to categorise accident types.

3.4 Pedestrian Count Surveys

Pedestrian count surveys were undertaken to gain further background data on pedestrian patronage within the study area. The surveys were undertaken on Thursday the 14th May 2009 at eight locations within the study area as shown in Figure 6:

1. Zebra Crossing, Railway Parade East south of Ethel Street
2. Pedestrian underpass, near Rowe Street
3. South of Eastwood Station, footpath on West Parade
4. West side of Progress Avenue
5. Zebra crossing between Progress Avenue/ Hillview Lane
6. Zebra crossing outside Glen St carpark, Lakeside Road
7. Hillview Lane west
8. Zebra crossing at The Avenue

Figure 6 Pedestrian Survey Locations

Data was collected during three main peak periods:

- 7 am – 9 am
- 12 noon – 2 pm
- 4 pm – 6 pm

3.4.1 Survey results

Results from the pedestrian count survey were gathered and a peak hour was identified for each survey period. The results are shown in Figure 7 and are represented in pedestrians (two-way)/ hour.

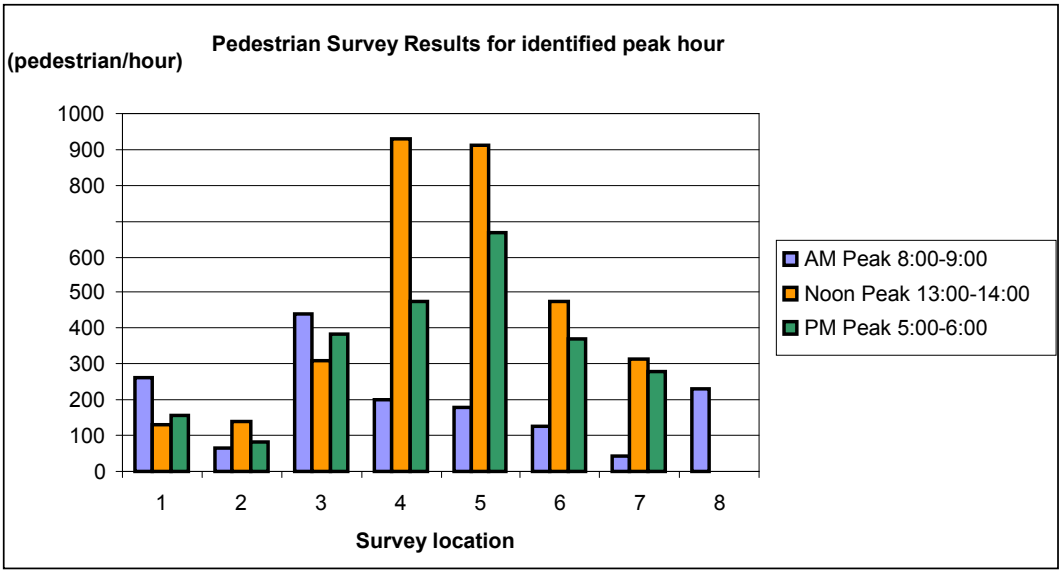


Figure 7 Pedestrian Survey Results Chart

The results show that significant pedestrian flows are experienced in the shopping areas in the Town Centre during the lunch time peak hour, from 1pm – 2pm. The highest pedestrian flows (930/hr) were recorded at Progress Avenue, on the western side of the footpath during the lunch peak, as people were using the shops and restaurants in the area. High pedestrian flows (913/hr) were recorded at the pedestrian crossing along The Avenue during the noon peak. Closer to the station, at location 1 and 3, the highest pedestrian flows were experienced at the AM peak hour.

The results are shown graphically in Figure 8.

Legend:
AM/Noon/PM Peak flow (pedestrian/hour)

AM Peak 8:00-9:00am
Noon Peak: 13:00-14:00pm
PM Peak: 17:00-18:00

Date of Survey: Thur. 14th May 2009

Figure 8 Pedestrian Count Peak Hour Results

The pedestrian count surveys help to identify high patronage routes and contribute to the development of the PAMP routes. They also assist in the prioritisation of recommended improvement measures.

4 COMMUNITY CONSULTATION

Throughout the study, community consultation was undertaken by a number of different means. Consultation was considered to be an essential part of the PAMP development to ensure public needs were considered and incorporated into the PAMP route development and action recommendations.

Findings from the consultation are summarised in the following section.

4.1 Media and Web Site Coverage

A media advertisement and web site information page were prepared by Arup and issued to Ryde Council for release (Appendix A). The information about the PAMP study was published in the City View issue 29 April 2009 and was posted on the Council's web page. These items sought input from the Eastwood community in the preparation of the PAMP.

Direct feedback was received from members of the public raising issues regarding to the pedestrian environment.

4.2 Questionnaire Surveys

100 questionnaires were distributed throughout the study area and to the wider Eastwood community. A sample of the questionnaire is included in Appendix B. They were sent to a selection of community organisations and businesses such as schools, churches, day care centres, health centres and Chamber of Commerce etc. The list of organisations contacted was compiled from the Ryde Council community directory.

Twenty completed questionnaires were returned. In general, the questionnaires focussed upon the following issues:

- What are the travel patterns of Eastwood residents?
- Where are the major problem locations in relation to pedestrian safety, access and mobility in the study areas?
- What facilities (and where) could be upgraded/provided in the study area to improve pedestrian safety, access and mobility?

Key issues were identified through questionnaires and summarised below.

4.2.1 Mode of Transport

When asked about the modes of transport the Eastwood community used to travel within the LGA, walking represented about 20% of the transport mode, as shown in Figure 9. It is important to note however, that the pedestrian environment is significant to all transport users as walking is used to travel between modes, walking to the train stations, bus stops, car parks etc.

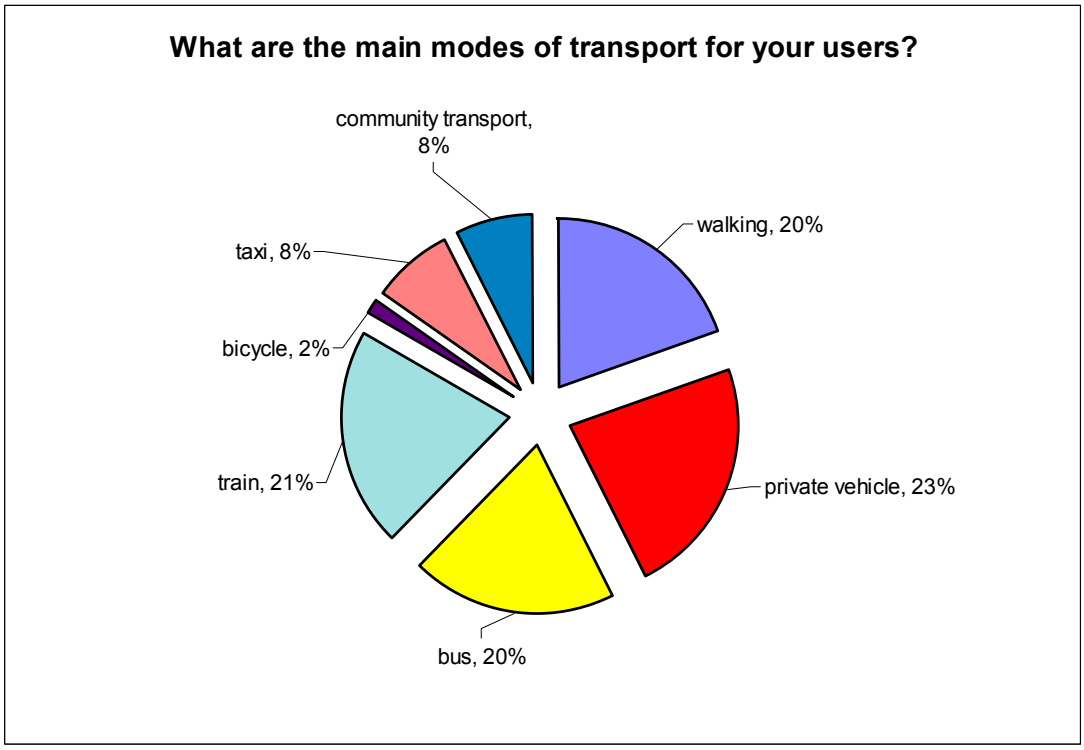


Figure 9 Mode of transport (questionnaire survey)

4.2.2 Concerns over facilities

In general the community in Eastwood have concerns regarding the safety of footpaths and pedestrian facilities and that they are not easy to use.

The five main facilities community members were concerned about included:

- Uneven footpath surface
- Poor lighting
- Lack of pedestrian crossings
- Lack of signage
- Overhanging trees

Examples of pedestrian concerns are shown in the following images.

Photograph 1 Uneven footpath surface on Lakeside Road

Photograph 2 Narrow footpath on Rutledge Street

The questionnaire also provided opportunities for the community to express their main issues and concerns of the Eastwood pedestrian environment. A summary of comments and issues are presented in Figure 10.

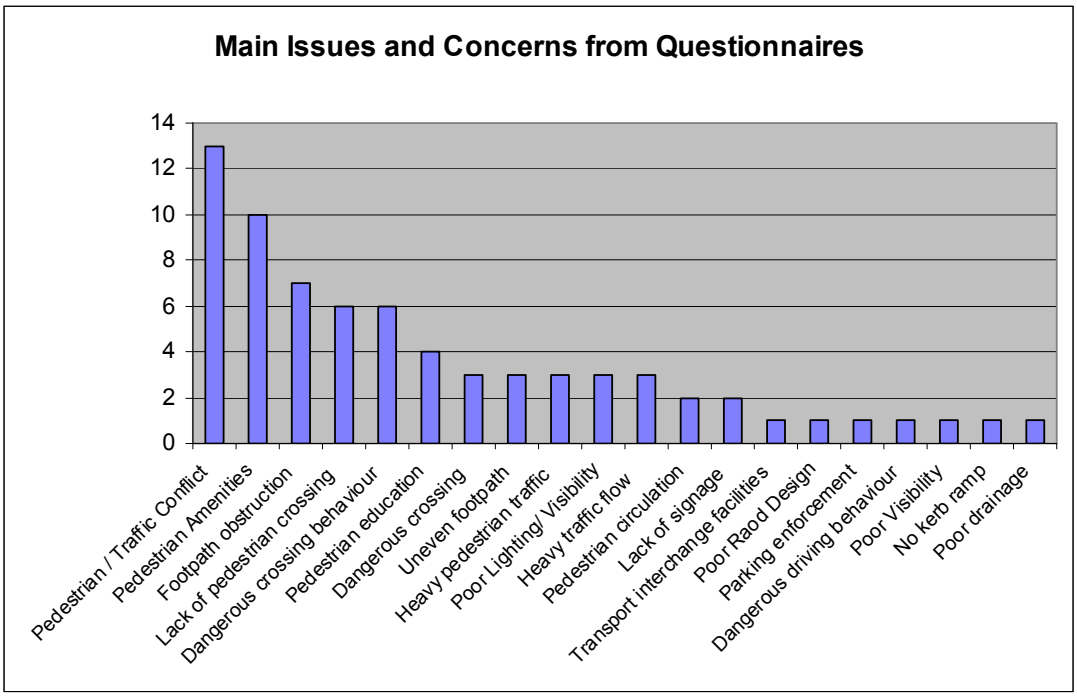


Figure 10 Main issues and concerns from questionnaires

The locations of the pedestrian issues are mapped in Figure 11. Particular areas of concern include:

- To the west of Eastwood station on Progress Avenue and Lakeside Road
- May Street
- Rowe Street on the east and western sides of the train line
- Glen Street

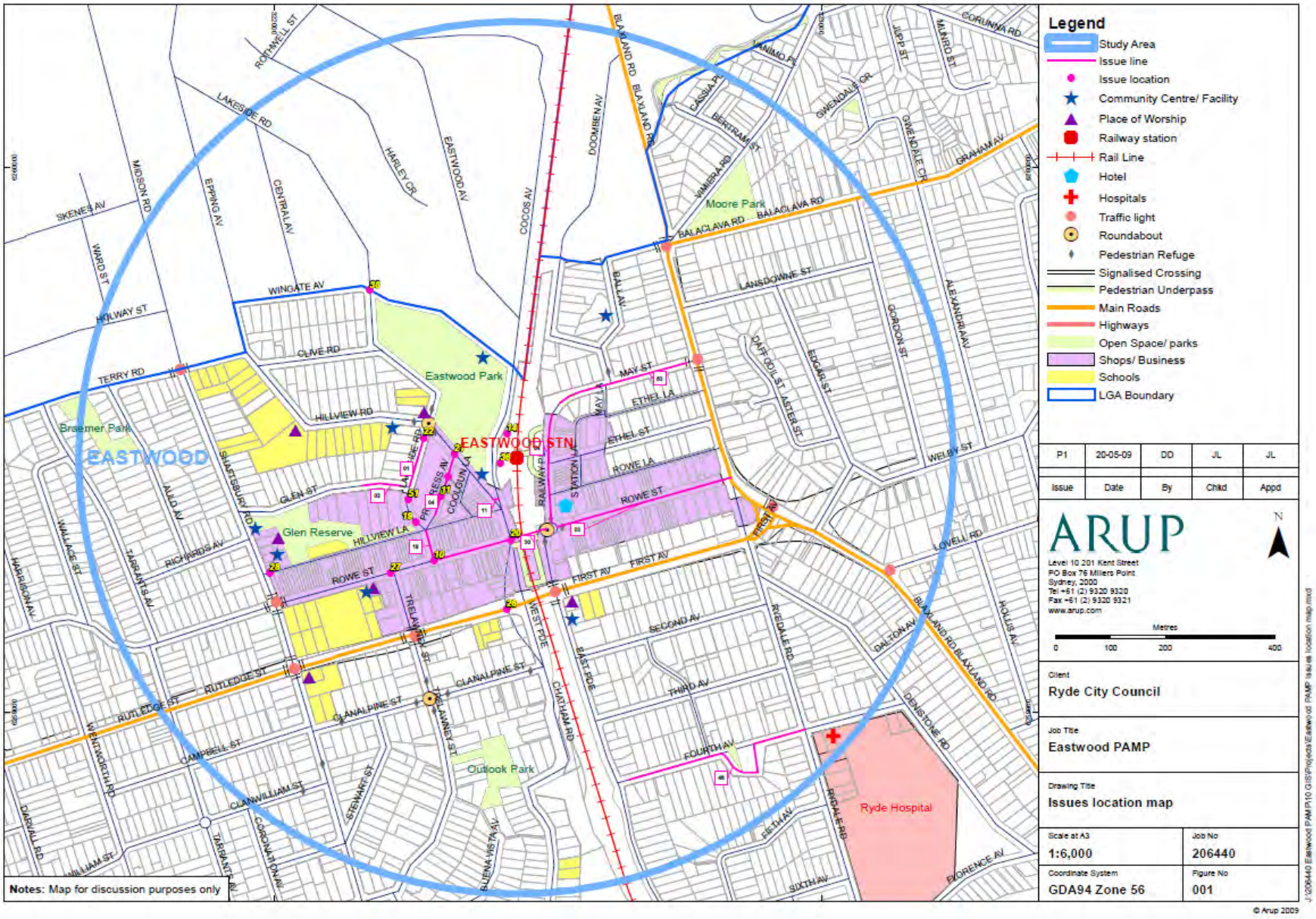


Figure 11 Issues Location Map

4.3 Focus Group Workshop

An important component of the PAMP development was a Focus Group Workshop. The group format of the workshop provides an opportunity for generation and exchange of ideas between key stakeholders in the PAMP process. The aim of the Focus Group Workshop was to identify issues pertinent to the PAMP development with specific reference to pedestrian issues within Eastwood Town Centre.

The workshop was held at Brush Farm House, Eastwood on Thursday 21 May 2009. Topics covered in the workshop included:

- Introduction to PAMP;
- Purpose of the Workshop;
- Outline of the Study Area;
- Aims of the PAMP;
- Objectives of the PAMP;
- The PAMP Methodology;
- The data collection process;
- The pedestrian network audit checklist;
- The Final PAMP; and
- Points of Discussion:
    - The main pedestrian routes in Eastwood
    - The hazardous locations within the study area
    - The issues relevant to pedestrian access and mobility within the study area

The workshop attendance list and summary notes are provided in Appendix C.

The pedestrian routes and hazardous locations raised in the workshop are incorporated in the development of the PAMP routes.

5 PEDESTRIAN NETWORK AND FACILITIES STANDARDS

5.1 Pedestrian Route Network

The Eastwood PAMP Route Network is shown in Figure 12. The high, medium and low priority routes were established by examining the following factors:

- pedestrian count surveys and observations of pedestrian patterns;
- the location of pedestrian generators and attractors
- the location of pedestrian accidents;
- hazardous locations identified through the community consultation process;
- key pedestrian routes identified through the community consultation process; and
- path nature / function.

5.2 Facilities Standard

A general facilities standard guideline was developed for the study area based on the literature review, comments from the public consultation process and nature of the pedestrian demand and environment in the study area. General standards and recommendations are presented in this section while recommendations for high priority routes and low priority routes are presented in Sections 5.5-5.35.

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.

5.2.1 Path Surface and Dimension

5.2.1.1 Path Provision

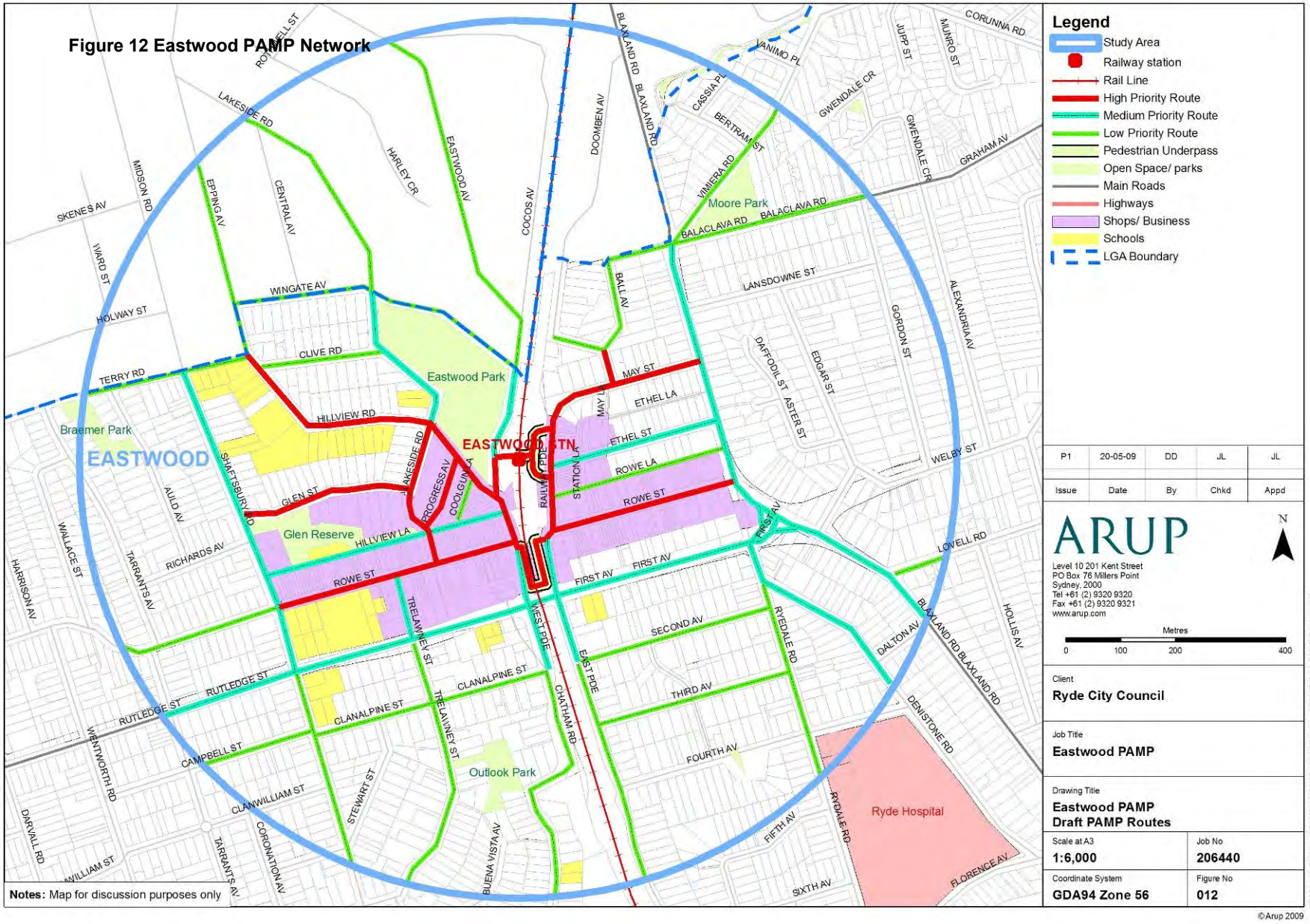
Path surface and dimensions standards and guidelines are addressed in Austroads Part 13: Pedestrians, Austroads Part 14: Bicycles and in the Australian Standard 1428 series. According to Austroads, all roads (with the exception of an Access Place) should have some type of walking facility out of the vehicle path. A separate walkway is preferable, however a roadway shoulder can also provide safer pedestrian accommodation than walking in traffic lanes.

The building edge should be kept clear of any obstructions such as outdoor dining areas, retail activities, and other structures, to provide for a consistent walking path. For locations where such obstruction is necessary, the clear width of the remaining footpath should meet the minimum standard and the obstruction should be delineated from the footpath with structure, texture, or colour where feasible to warn and direct all users including vision-impaired persons.

5.2.1.2 Path Surface

Surface treatments should be stable, firm even and relatively smooth but slip resistant. It is also important for many people that surfaces be flat.

Figure 12 Eastwood PAMP Network



5.2.1.3 Path Dimensions

Path dimensions are addressed in AS 1428 and Austroads Part 13 & 14. The width requirements outlined in these documents are provided in Table 5.

Table 5 Width Requirements for Paths

Type of Use	Required width
General minimum width Absolute minimum width	1.2m 0.9m
High pedestrian volumes	2.4m or greater depending on demand
For wheelchairs to pass Absolute minimum	1.8m 1.5m
For people with disabilities	1.0m to 1.8m
For shared (joint use with bicycles) where Cyclist passing in opposite directions are rare Two way cyclists are common, minimal pedestrians Two way cyclists and pedestrians are common	 2.0m 2.5m 3.0m

Source: Austroads Part 13: Pedestrians, p18

In general a minimum footpath width of 1.2m is considered adequate. However, in high demand locations, such as transport nodes, commercial and main retail locations and entrances to schools, etc., a minimum width of 2.4 metres is recommended.

AS 1428 adopts a minimum height clearance of 2.0m above the trafficable surface with a preferred height clearance of at least 2.4m.

In addition to this, AS1428 also lists requirements for the design of sloped footpaths. The requirements for landings of at least 1.2m long and maximum lengths of sloped footpaths are dependent on the gradient of the slope. These are included in Table 6 below.

Table 6 Design Requirements for Sloped Walkways

	Gradient (constant along whole length)	Maximum length between landing
Slope	1 in 33	25m(1)
	1 in 20	15m(1)
	Between 1:33 and 1:20	Linear interpolation from above
Ramp	1 in 14(2)	9m
	Between 1:20 and 1:14(2)	Calculated by linear interpolation

(1) Maximum length can be increased by 30% if one side of a walkway is bound by handrail as specified in AS 1428.1.
(2) Handrails as specified in AS 1428.1 shall be provided on both sides of the ramp.

Furthermore, crossfall on footpaths should be as flat as practicable, consistent with achieving an adequately drained surface. Steeper crossfalls may be provided if drainage problems are expected, but should not exceed 1:40.

5.2.1.4 Tactile Ground Surface Indicators (TGSI)

According to AS 1428.4, TGSI can be used to "alert people who are blind or vision impaired to pending obstacles or hazards on, or changes in direction and location points of, the continuous accessible path of travel, where those hazards or changes could not reasonably be expected or anticipated using existing tactile and environmental cues. Tactile tiles or grooving (as outlined in AS 1428.4) should be provided at road crossings to indicate the edge of the roadway to pedestrians with sight impairments.

5.2.1.5 Crossing Facilities

At all road crossings, kerb ramps should be provided for pedestrians to gain access to roadway with minimum impediment. They are also essential for people in wheelchairs and other pedestrians with mobility impairments. Kerb ramps should be aligned in the direction of travel.

For non-standard kerb ramp design and placement, the following should be satisfied:

- The ramp path should be at least 1 metre wide,
- The ramp should land within the pedestrian crossing zone and not into vehicle paths. This is of particular concerns for kerb ramps at corners.
- There should be no lip or step.
- The link between the path of travel and the offset kerb ramp should be paved.
- There should be at least 1 metre clear width of footpath around the kerb ramp to allow most wheelchairs to pass without being affected by the grade changes in the kerb ramp.

Determining the appropriate crossing facility to install is mostly dependent on pedestrian and traffic volumes as well as the nature of the surrounding area. According to Austroads the provision of formal pedestrian crossing facilities should be considered when at least one of the following conditions exist:

- Whenever there is the need for increase visibility and designation of the crossing area, where pedestrians cross at numerous locations along a short section of road and a formal crossing would serve to channel pedestrian crossing activity to a single point;
- Where there is substantial conflict between motorist and pedestrian movements;
- Where the best location for pedestrians to cross may be unclear due to geometric or traffic operational conditions; and
- At locations recommended as part of the “Safer Routes to Schools” scheme.

RTA specifies installation guidelines in the form of numerical warrants for the establishment of a crossing.

In additional to these numerical warrants, Austroads also provides a guide to the most appropriate crossing type for each road classification. This guide is included in Table 7.

Table 7 Suitability of Crossing Type

Facility	Road Classification			
	Primary Arterial (non-freeway)	Secondary/ Sub Arterial	Collector Road/Local Crossing Road	Local Street
Pedestrian operated signals	A	A	C	Pedestrian device should not be needed
Pelican	B	A	C	
Pedestrian operated school signals	A	A	B	
Pedestrian (zebra) crossing	C	B	B	
Children’s crossing	C	B	A	
Pedestrian refuges	B	B	A	
Footpath (kerb) extension	C	B	A	
Road narrowings indented parking, kerb extension, line marking	C	C	A	
A Most likely to be appropriate treatment B May be an appropriate treatment C Inappropriate treatment				

Source: Austroads Part 13: Pedestrians, pp 28-29

It should be noted that neither numerical warrants, nor the guidelines provided above should be taken as the sole criteria for determining the requirement for a particular facility. Austroads recommends that a careful engineering study be conducted, considering matters such as safety and capacity to fully determine the need for a crossing facility.

5.2.2 Other Facilities

Bus Shelters

Austroads recommends that all bus stops should be provided with adequate signage, lighting, and related treatments to clearly identify them. All shelters should be adequately lit, have Australian Standard seating and be as draught proof as possible. All bus stops should also be accessible.

Street Furniture

According to AS 1428.2 all items of street furniture should be positioned away from the path of travel and should be of a colour which contrasts with its background. Where possible, furniture should not be positioned along the building line as it is used as a physical cue for people with sight impairments.

All seating should meet the standard measurements listed in the design standards reference (Appendix D). In addition, AS 1428.2 states that in areas of high use by people with ambulatory disabilities, such as areas frequented by elderly peoples, seats should be provided no more than 60m apart alongside the path of travel.

Directional Signage

The issue of directional signage placement is addressed in Austroads Part 13. For a standing person signs should be placed less than 10° above or below eye level; for a seated person signs within 15° of eye level are acceptable. Signs mounted between 900mm and 1.5m from the group level provide the most appropriate compromise between the requirements of seated and standing people. All signs should be placed within 30° horizontally of the direction of travel to allow them to be easily read whilst maintaining a clear path of travel.

5.3 High Priority Routes

5.3.1 Definition

In general, high priority routes are routes that provide access to the most significant pedestrian attractors and generators, particularly those connecting to major public transport nodes. They also form the skeleton of the pedestrian network and provide the pedestrian trunk routes through the study area. These routes would often experience high pedestrian demand. Typical examples are routes accessing railway stations and major shopping areas.

5.3.2 Path Surface and Dimension

All roads in the study area should have paved footpaths on both sides, with a minimum width of 2.4 metres where possible. The paths provided should meet the minimum dimension requirements stated in Section 5.2.1.

All paths of travel along high priority routes should be fitted with Australian Standard kerb ramps. Tactile indicators (Section 5.2.1.4) should be provided at crossing points, steps, ramps and other obstacles. Additional requirements outlined in Section 5.2.1 such as type and positioning of grates should also be adhered to.

5.3.3 Crossing Facilities

The installation of crossing facilities would be dependent on the ability of a location to meet the numerical warrants, taking into account the local features of the area. At intersections with major traffic routes where crossing opportunities are limited, pedestrian crossings should be considered even if warrants are not met.

5.3.4 Lighting

Lighting meeting the AS 1158 requirements is recommended for all pedestrian generators and attractors and around any hazard spots. Adequate lighting should also be provided at crossing points.

5.3.5 Other Facilities

Additional facilities recommended along high priority routes include bus shelters at key stops, seating at all bus stops, directional signage, bins and seating at 60m to 100m intervals. All additional facilities should meet the requirements outlined in Section 5.2.1. Facilities should not be placed along the building edge as this is used as guidance by persons with vision impairment.

The building edge should be kept clear of any obstructions such as outdoor dining areas, retail activities, and other structures for the same reason. For locations where such obstruction is necessary, the clear width of the remaining footpath should meet the minimum standard and the obstruction should be delineated from the footpath with a structure that is solid along the ground.

5.4 Medium Priority Routes

5.4.1 Definition

In general, medium priority routes has similar requirements to the high priority routes. The medium routes extend the high priority routes to the wider network. Some examples are routes connecting the town centre to the surrounding regional roads.

5.4.2 Path Surface and Dimension

All roads in the study area should have a paved footpath on both sides, with width of 1.2 metres minimal and 2.4 metres adjacent to key pedestrian generators. The paths provided should meet the minimum dimension requirements stated in 5.2.1. Australian Standard kerb ramps should be provided at road crossings along the path of travel.

5.4.3 Crossing Facilities

The installation of crossing facilities would be dependent on the ability of a location to meet the numerical warrants, taking into account the local features of the area. At intersections with major traffic routes where crossing opportunities are limited, pedestrian crossings should be considered even if warrants are not met.

5.4.4 Lighting

Lighting meeting the AS 1158 requirements is recommended for all pedestrian generators and attractors and around any hazard spots. Lighting should also be adequate at crossing points.

5.4.5 Other Facilities

It is recommended that bus shelters be provided along medium priority routes at major stops where pedestrians are not already protected by other structures such as building awnings. As with the general route requirements, Australian Standard seating should also be provided in areas frequented by the elderly.

5.5 Low Priority Routes

5.5.1 Definition

In general, low priority routes provide access to pedestrian attractors and generators. They also connect with the core high priority routes and extend the pedestrian network over the study area. Some examples are routes to local shopping areas, bus routes and local parks.

5.5.2 Path Surface and Dimension

All roads in the study area should have a paved footpath on both sides, with width of 1.2 metres minimal and 2.4 metres adjacent to key pedestrian generators. The paths provided

should meet the minimum dimension requirements stated in 5.2.1. Australian Standard kerb ramps should be provided at road crossings along the path of travel.

5.5.3 Crossing Facilities

The installation of crossing facilities would be dependent on the ability of a location to meet the numerical warrants, taking into account the local features of the area. At intersections with major traffic routes where crossing opportunities are limited, pedestrian crossings should be considered even if warrants are not met.

5.5.4 Lighting

Lighting meeting the AS 1158 requirements is recommended for all pedestrian generators and attractors and around any hazard spots. Lighting should also be adequate at crossing points.

5.5.5 Other Facilities

It is recommended that bus shelters be provided along low priority routes at major stops where pedestrians are not already protected by other structures such as building awnings. As with the general route requirements, Australian Standard seating should also be provided in areas frequented by the elderly.

6 ROUTE AUDITS AND RECOMMENDED ACTIONS

6.1 Introduction

There are many actions that could be undertaken to improve conditions in the study area for all pedestrians including the elderly and people with disabilities. These actions are categorised as follows:

- all actions;
- actions for which City of Ryde Council is primarily responsible (i.e. not State or Federal Government, RTA, Education Department, Health Department etc);
- actions that differ by means of implementation (effectively the '4Es' approach to non-motorised transport used in Bikeplans: Engineering, Enforcement, Encouragement, Education); and
- engineering actions able to be undertaken by City of Ryde Council through the Action Recommendations.

The PAMP has been developed as shown in the PAMP Methodology flowchart (Figure 3). The Table 8 flowchart provides a more detailed summary of the solution assessment process.

6.1.1 Solution Assessment

For each problem that is considered worthy of further investigation, the potential solutions available vary with the problem type and the road environment. The different road environments are:

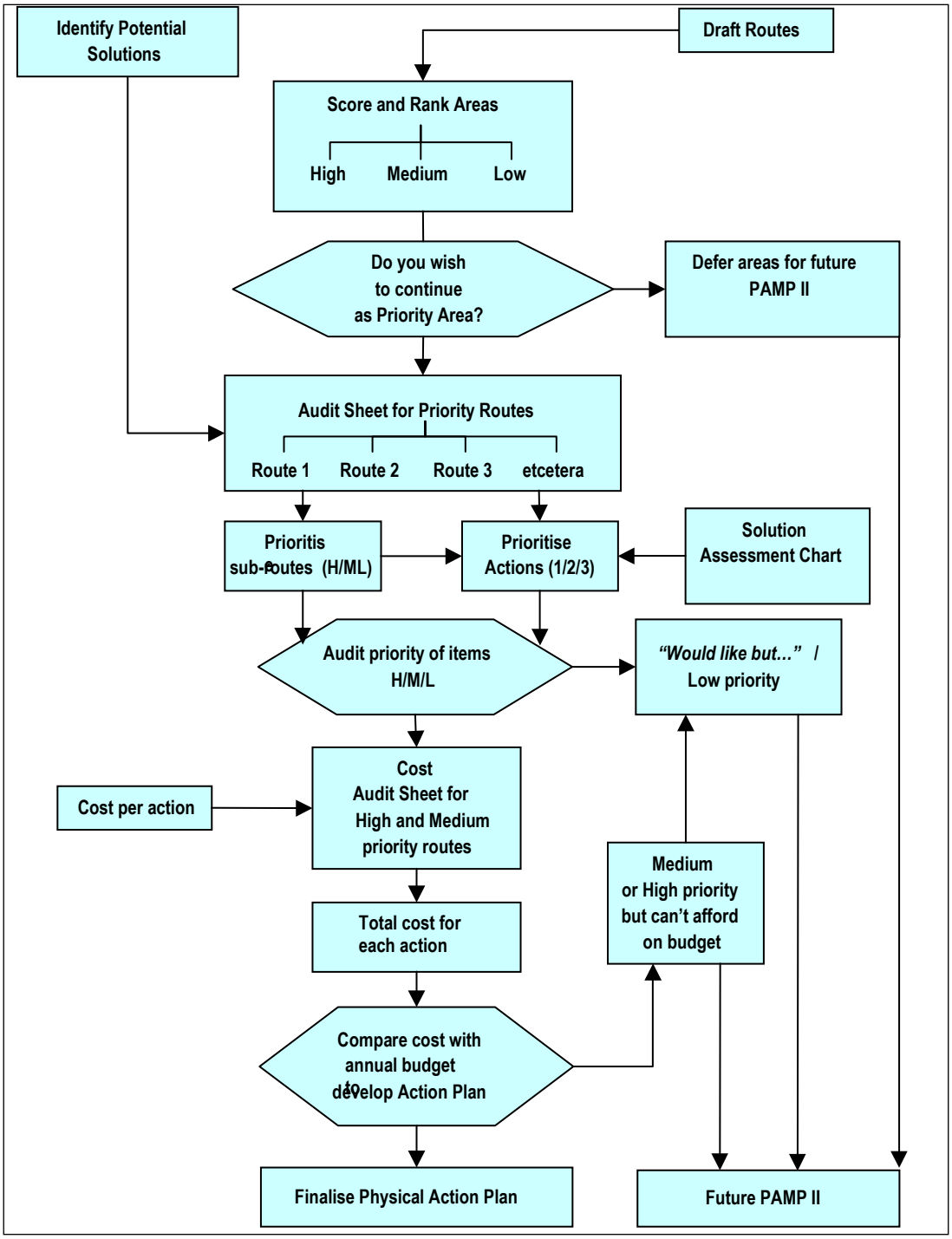
- State road;
- Regional road; and

Typical solutions for the various problem type/road environment combinations have been considered. For some problem types the optimal solution may be a combination of actions.

For each problem under investigation, each potential solution is assessed against a set of performance criteria. The five assessment criteria used are:

- benefit to pedestrians;
- impact on other road users (including 'cross' public transport routes);
- cost;
- assessment with respect to Government strategies; and
- local impacts (social, environmental etc).

Table 8 Problem Ranking and Solution Assessment Method



The performance of each potential solution is scored against each criterion using simple, easily identifiable measures. The overall performance of each potential solution is then established by combining its performance against the full set of criteria into a single score. This could be achieved by weighting the criteria according to their relative importance

Determination of the weights to be applied to the various criteria could be achieved by polling representatives of the various groups with an interest in maintenance, development and operations of transport infrastructure and government services. A mechanism for consolidating these views into common weighting of the criteria has been developed. This

is an extension of the method applied in the Social Audit approach used by Arup in ranking projects in other multi-dimensional evaluation framework (Singleton & Hulse, 1989).

Application of this method would allow each potential solution to be assigned an overall performance score. The scores of the range of potential solutions could be compared to identify the most appropriate solution (or combination of solutions) for the problem under investigation. In some cases, the scores may also identify that no solution is appropriate. For the current PAMP study, these assessments and weightings were estimated, rather than calculated for each problem and set of potential solutions.

6.1.2 Application

The data collection program was felt to represent the level of survey effort likely to be possible under full implementation of the assessment program.

Actions were assessed subjectively using the assessment procedure described above, applying arbitrary weights. Although no significance can be assigned to the final score because of the arbitrary weights applied, the procedure was considered to be able to provide differentiation in the rating of potential solutions.

This assessment confirms the value of the implementation procedure in a number of respects. Firstly, the procedure provides a mechanism for identifying operational problems worthy of attention. Secondly, it invites the designer to consider a range of potential solutions, rather than only the most obvious solution. Thirdly, it provides a means of assessing the performance of those potential solutions not only against operational objectives but also against broader community goals. The procedure therefore is likely to generate solutions, appropriate to operational and community needs, to the most important problems confronting the PAMP study.

The prioritisation approach adopted for the recommended actions arising from this study is described in detail in Section 6.6.2

6.2 The Audit Process

A physical access audit of the high and medium priority routes within the study area was completed in May 2009. Auditing of the low priority routes is outside of the scope of this study.

6.2.1 Pedestrian Facilities Deficiencies Identified

The key focus of the audit was to identify access barriers for pedestrians with a specific focus on access for less mobile pedestrians such as the elderly and people with disabilities. The identified barriers found in a number of cases included:

- lip, step or no kerb ramps;
- kerb ramps not perpendicular to the direction of travel;
- major cracking and raised paving in the path of travel;
- poor signage and surveillance of the pedestrian underpass south of Eastwood Station
- lack of tactile hazard indicators at major crossings;

Other individual barriers were identified and highlighted within audit spreadsheets (Appendix E). The locations of items that need to be addressed were also mapped by category as follows:

Figure 13 Kerb ramp issues

Figure 14 Footpath issues

Figure 15 Footpath obstructions

Figure 16 Bus stop issues and identified crossing locations

Figure 13 Footpath Audit - Kerb Ramp Issues

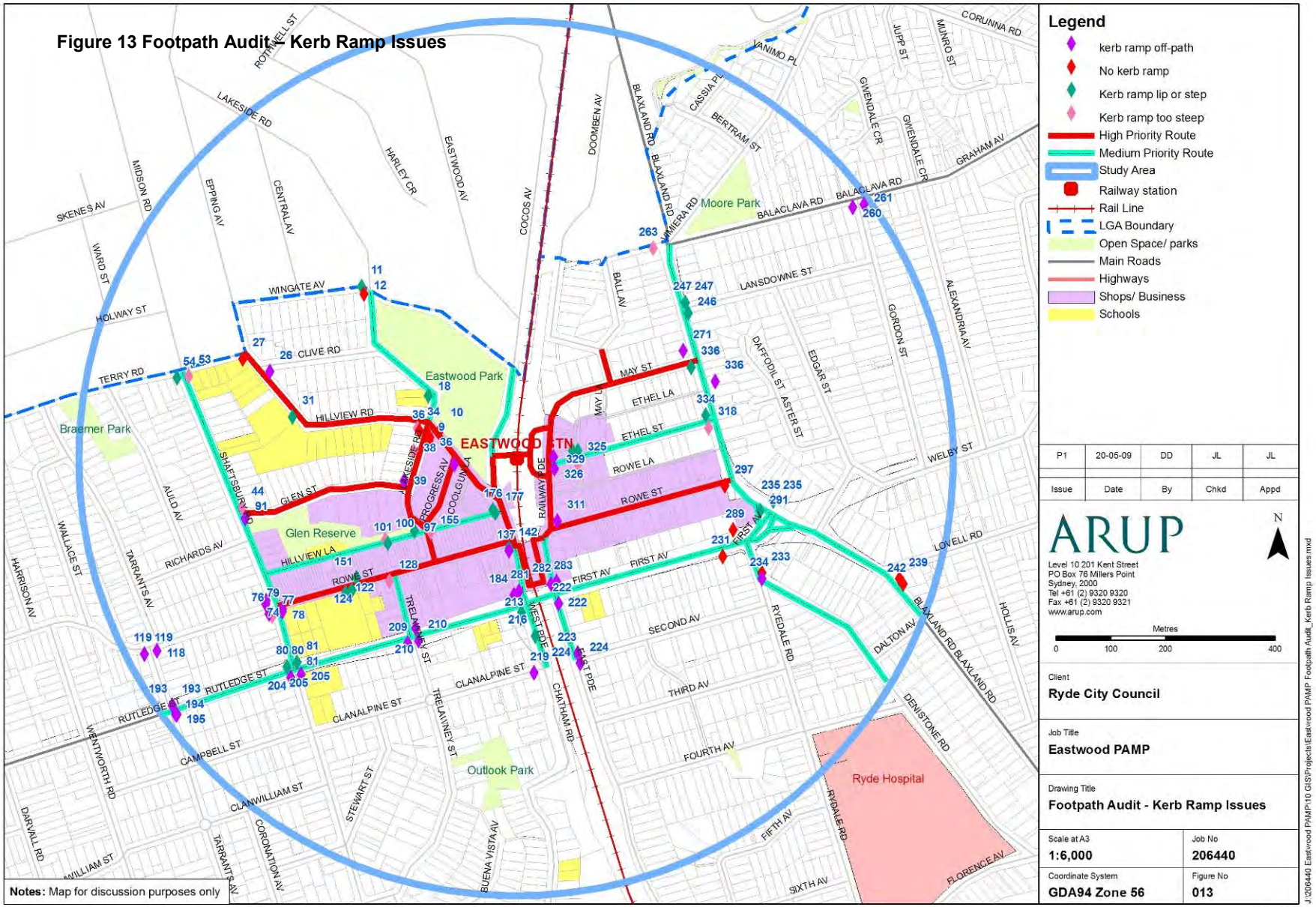


Figure 14 Footpath Audit – Footpath Issues

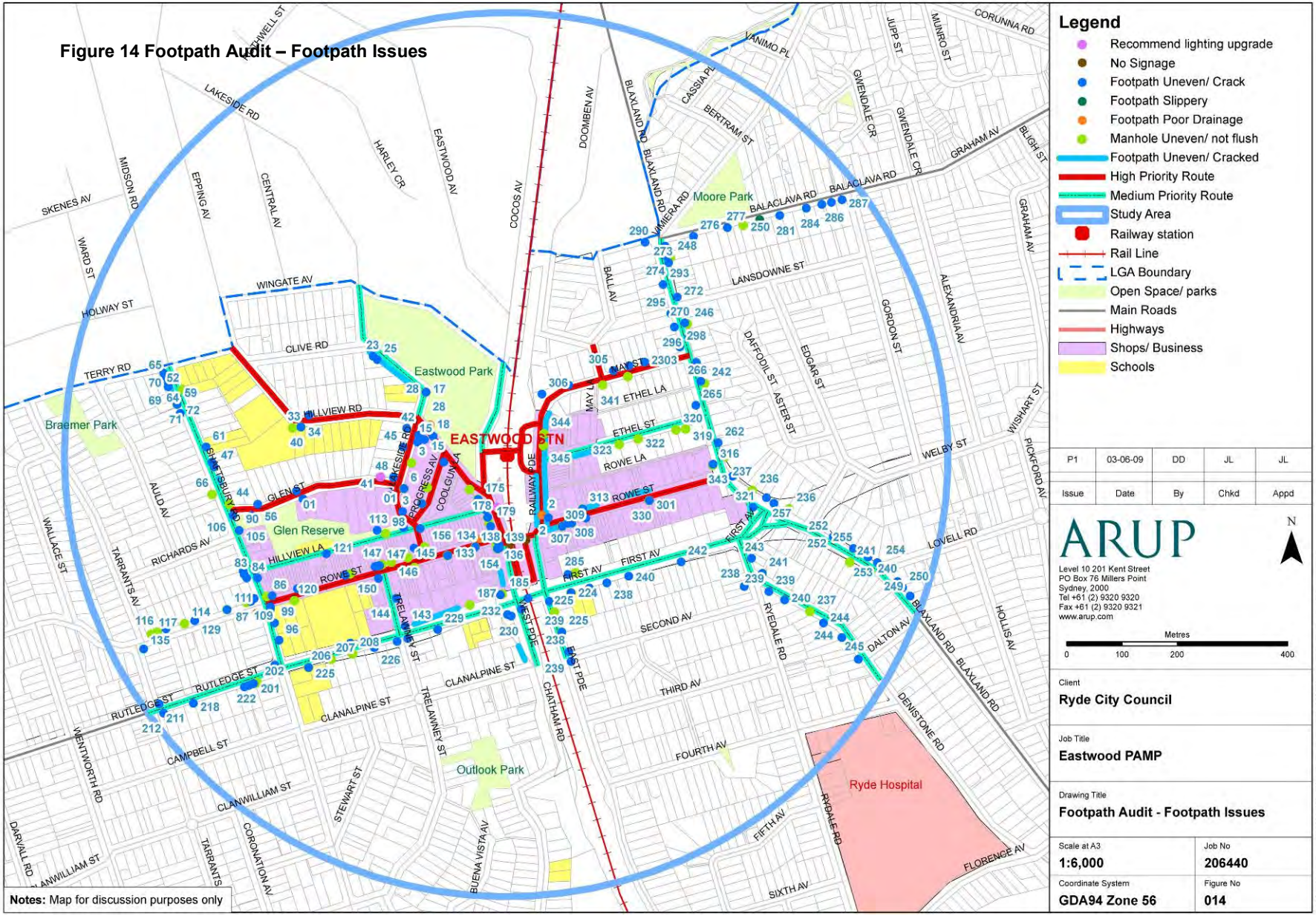


Figure 15 Footpath Audit - Footpath Obstructions

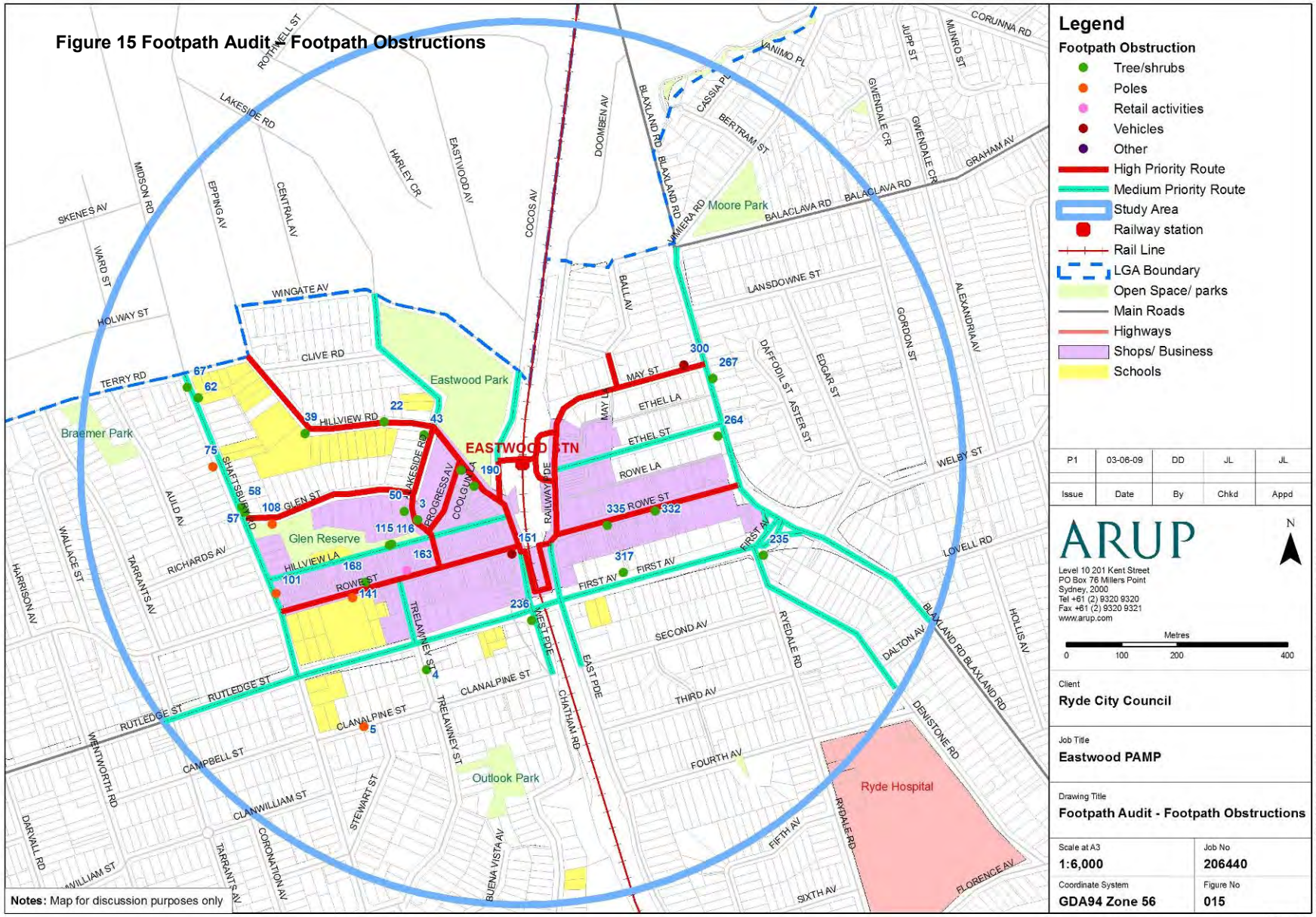
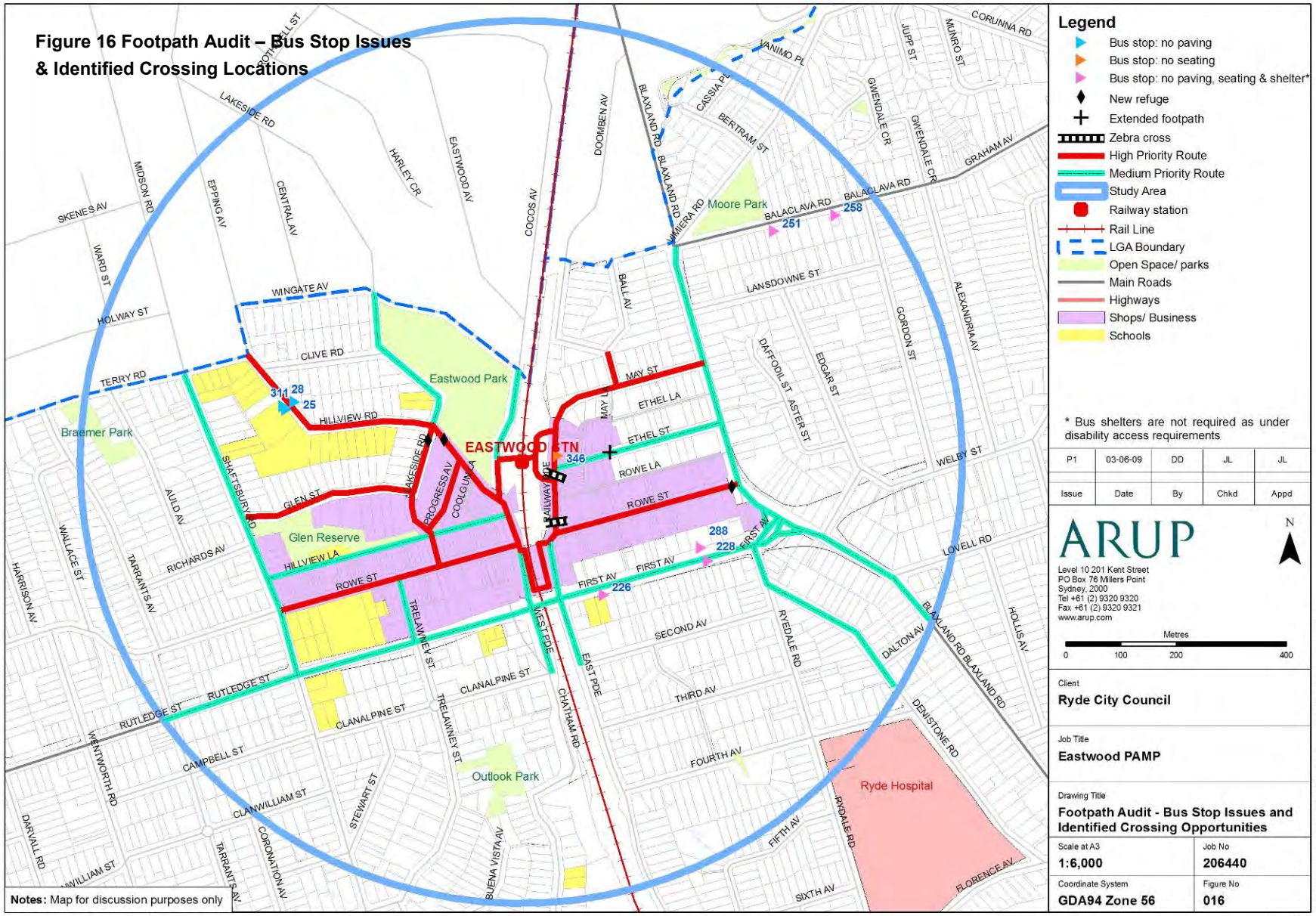


Figure 16 Footpath Audit – Bus Stop Issues & Identified Crossing Locations

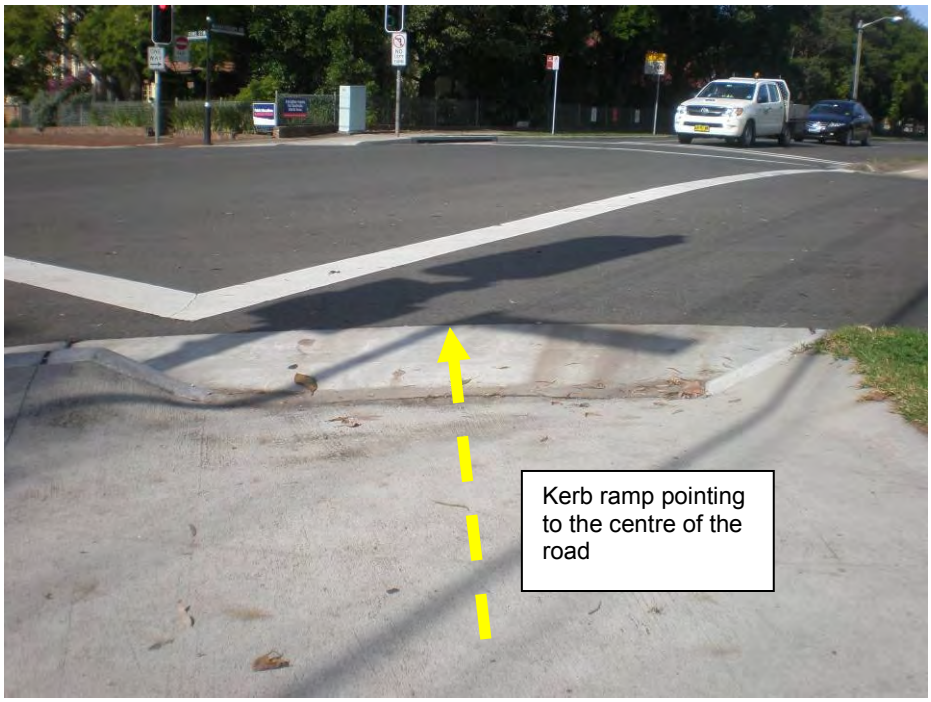


6.3 Issues Arising from the Audit

A full list of the issues arising from the footpath audit is included in Appendix E. Each issue has a unique ID number that links the issues maps (Figure 13 to Figure 16) to the audit spreadsheet. Photos of the audited issues are documented in the Audit Photos CD provided in Appendix F. Examples of key issues are included as Photograph 3 to Photograph 9 and discussed below.

6.3.1 Kerb Ramp Issues

The audit found that kerb ramps are provided along most of the footpaths in the study area. However, some kerb ramps are not aligned to the direction of travel (refer to Photograph 3), which could be a safety issue for pedestrians. The Australian Standards recommend kerb ramps should be aligned to the direction of travel. Some kerb ramps also have a "step" that could be a potential hazard for pram, scooter or wheelchair users to negotiate (Photograph 4).



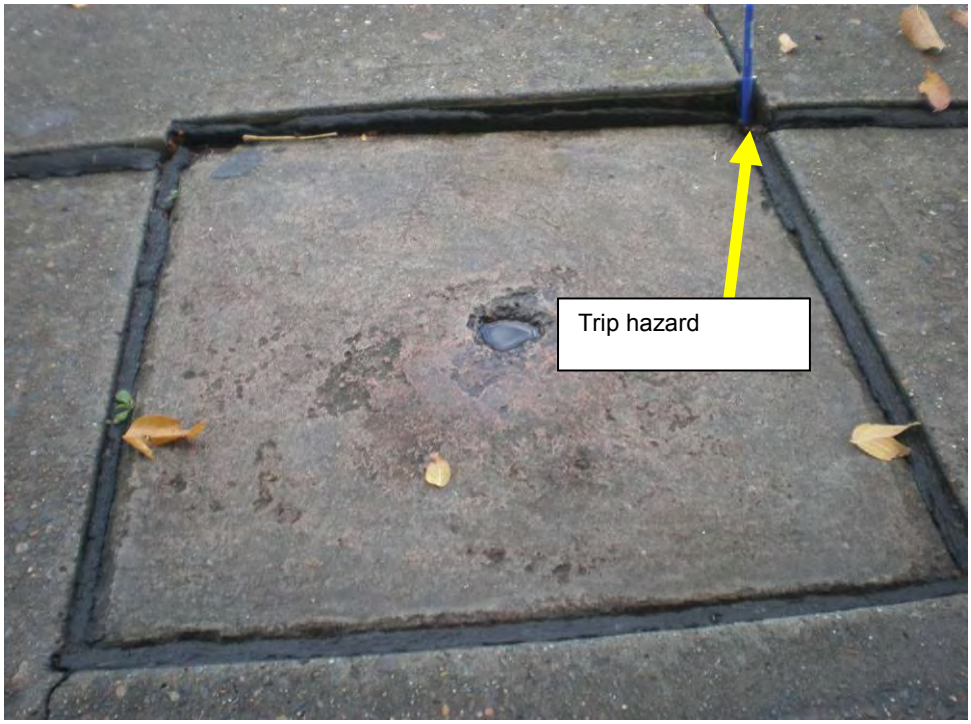
Photograph 3 Kerb ramp not aligned to the direction of travel at Shaftsbury Rd / Rowe St

Photograph 4 Kerb ramp with step at First Ave / East Parade intersection

6.3.2 Footpath Issues

Major footpath issues found during the audit were cracking and uneven surfaces. Manholes and utility covers are often not flush with the path creating trip hazards. Some paths have poor drainage that require pedestrians to walk around the affected area during rainy periods.

Photograph 5 Uneven footpath on Rutledge Street



Photograph 6 Utility cover not flush with path creating a trip hazard on Lakeside Road

Photograph 7 Poor footpath drainage at Lakeside Road opposite Glen Street carpark

6.3.3 Footpath Obstructions

Footpath obstacles identified during the route audit include tree foliages and overgrown shrubs on the side of the path. Poorly located signposts, bollards and power poles are also major obstructions encountered.

Photograph 8 Overhanging tree foliage outside Glen Street carpark with less than 2m clearance

Photograph 9 Bollards and large bin on Lakeside Road reducing the path to less than 1 m

6.4 Crossing Opportunities

Throughout the community consultation process, site visits and field audit period, several locations were identified where crossing opportunities could be provided or improved (refer to Figure 16).

Crossing opportunities at seven key locations are discussed in Table 9 and recommended actions are given for each. These recommended actions are **not** included in the engineering schedules of Appendix E. The recommended actions will require further review by Council and other stakeholders where appropriate.

Table 9 Crossing Opportunities – Issues and Recommendations

Locations	Issues	Recommended Action for Consideration by Council
1. Lakeside Road/ Hillview Rd roundabout	Pedestrian refuges are not provided at the east and south arms of the roundabout	Provide pedestrian refuges
3. Rowe St near Blaxland Road	No pedestrian crossing facilities	Provide pedestrian refuge
4. Rowe St East	No pedestrian crossing facilities within long distance (300m) of the road	Provide mid-block crossing (e.g. extended footpath crossing)
5. West Parade / Lakeside Road near the exit of the bus interchange	It is a direct route from the station to the town centre. Pedestrian were observed to cross at this point illegally	Consider pedestrians as part of the proposed roundabout construction through Council's capital works implementation
6. East Parade along the station	Lack of pedestrian crossing facilities on Rowe Street	Consider a pedestrian refuge at Rowe Street as part of the Railway Parade upgrade work
7. East Parade zebra crossings x 2	Conflict of pedestrian and car movements	Consider raised pedestrian crossings at Railway Parade East as part of the Railway Parade upgrade work

6.5 Design of Pedestrian Facilities

As agreed with the RTA's Traffic and Transport Directorate, pedestrian facilities identified within this PAMP must be constructed with consideration of the requirements of AS 1428 and Austroads Part 13, Pedestrians, as the best standards that are currently available. The standards provide the design basis of the unit costs identified in the following section.

To suit local conditions, Council may need to modify standard designs. Council can also refer to the "Manual of Best Practice – Access for people with Mobility Disabilities" (WSROC, 1998) and Designing Sidewalks and Trails for Access – Best Practices Design Guide (US DOT, 2001).

6.6 Recommended Engineering Actions

6.6.1 Engineering Schedules

The recommended engineering works are listed in Appendix E. Each item includes the following information (Table 10).

Table 10 Description of Terms in Engineering Schedules

Column	Description
ID	Unique ID number (cross-referenced with Figure 13 to Figure 16)
Street	Street location
Side	Side of street
Cross Street	Nearest cross street
Issue	Summary of issue
Recommended Action	Recommended engineering action
Length(m)/Unit	Length of recommended action or number of units
Photo No.	Unique photo number (refer to appendix F)
High/Medium Route	High or medium priority route (refer to Figure 12)
Action Priority	Ranking of priority from 1 (highest) to 3 (lowest) within either High or Medium priority routes
Indicative Cost	Indicative cost estimate based on unit costs in Table 11

The schedules are based on findings during field audits conducted in May 2009. Relevant standards for standard actions are listed in Appendix D.

6.6.2 Prioritisation

The engineering schedules have been sorted as follows:

- High priority routes
- Medium priority routes

Within each of these two groupings, the works have been sorted into the following categories, based on the type of recommended works:

- Kerb ramp
- Footpath
- Manhole / utilities
- Bus stop
- Signage
- Lighting

Prioritisation has been considered on two levels - the location of the works (high or medium priority route) and the nature of the works. The high and medium priority routes have been selected through the route network selection process as outlined in Section 5.1. Actions have then been assigned a priority of 1 to 3, with 1 being the highest and 3 being the lowest. i.e:

- 1 – Essential works
- 2 – Desirable works
- 3 – Low impact works that are dependent on funding

The assignment of priorities used a qualitative approach taking into consideration factors such as benefit to pedestrians, volume of pedestrians and other users, impact on other road users and cost.

6.7 Cost Estimates

6.7.1 Unit Costs

Cost estimates of the recommended works have been developed on the basis of indicative unit costs presented in Table 11. These estimates were developed based on Rawlinsons Australian Construction Handbook 2009, discussions with Council engineers and recent cost estimates undertaken for Councils throughout Sydney. These estimates are used as a guide only for the purpose of budget preparation.

Table 11 Estimated Unit Costs of Actions

Item	Reference (if applicable)	Estimated Unit Cost
Install tactile tiles per ramp	AS 1428	$400
Kerb ramp - typical	AS 1428.1 Austroads Pt 13 Fig 2.6	$1500
Move pedestrian crossing button (pedestrian activated), per button on new pole	Within 1m of kerb ramp	$4,000
Relocate bin/street furniture		$700
Remove trees/item		$4,000 large $1,200 small
Repaint line marking, per intersection		$4500
Repaint line marking, per zebra crossing		$3000
Repair roadway crossing		$4000
Replace footpath (1.2m)		$360/m
New footpath (1.2m)		$240/m
New footpath (2.5m)		$500/m
New footpath (3.6m)		$600/m
Standard sign and stem		$500
Supply and install AS bench seat	AS 1428	$4000
Supply and install new bin	AS 1428	$2000
Tactile/audible button (2)	AS 1742.10 p24	$2500
Trim trees to 2m clearance		$300-500/site
Marked zebra foot crossing (does not include lighting)	AS 1742.10 Austroads Pt 13 fig 3.10	$50,000
Upgrade Street Lighting		$8,000 (local) $15,000 (extended)
Bus Stop Upgrade to accessible		$4,000
Steel Handrail (32mm dia, Zinc chromate primed)		$120/m
Consultation with Major Services		$2,000
Steel pedestrian fencing along roadways		$1000/m
Street trees		$4000 each
Drinking fountain		$2500
Public art (budget allowance only)		$2000
New crossing - refuge		$50,000
New crossing - zebra		$50,000
New crossing - signalised		$150,000

Note: It should be noted that these cost estimates are based on typical unit costs for construction estimated from Rawlinsons Australian Construction Handbook and information from Council. The costs estimations have not taken into account specific conditions are each of the proposed work sites. The cost estimates are to be used as guide only for budget preparation.

6.7.2 Summary

The estimated cost for the works included in the engineering schedules are summarised in Table 12 below. The work priority and action plan should be reviewed by Council as part of the annual budget review process.

Table 12 Estimated Cost of Works included in Engineering Works Schedules

Route Priority	Action Priority			Total
	1	2	3	
High Priority Routes	$68,000	$25,000	$12,000	$106,000
Medium Priority Routes	$45,000	$86,000	$22,000	$153,000

7 CURRENT ISSUES - PEDESTRIAN ACCESS, MOBILITY AND SAFETY

7.1 Walking as a Sustainable Mode of Transport

7.1.1 Ecologically Sustainable Development - Transport

Ecologically sustainable development, or ESD, relates to four main objectives including:

- improving equity within and between generations;
- maintaining ecological processes;
- improving individual and community well being and welfare; and
- protecting biodiversity.

For a plan or project to be consistent with the principles of ESD, it must advance at least one objective and not adversely impact on any of the four objectives. The Eastwood PAMP is consistent with the principles of ESD specifically objectives one and three as listed. The PAMP network, if implemented, will improve the pedestrian environment within the study area therefore encouraging people to walk with health and environmental benefits such as improving air quality, decreasing noise levels and minimising the use of fossil fuels through the use of private vehicles. The provision of a safe and accessible pedestrian network increases personal mobility for all members of the community, particularly the elderly, persons with a disability and those who are unable to drive or cannot afford private transport.

7.1.2 The Promotion of Physical Activity

Wide ranging health, environmental, social and economic benefits result from increasing physical activity. Recent findings show that 30 minutes of physical activity every day result in major health benefits. This has led to the establishment of the NSW Physical Activity Task Force and both a state and national commitment to the promotion of physical activity.

7.2 Council Policy

There has been increasing recognition of the importance of walking in transport policy development. The benefits of increasing levels of walking, and in achieving mode shift from the private car for shorter journeys, have been gaining increasing prominence. If this is to be achieved, walking will clearly need to contribute and increase its mode share. To reduce the risks for vulnerable road users it is recommended that walking be promoted to encourage mode shift and increased safety. It was suggested that the means for achieving this should include more initiatives to encourage walking, broader design guidance to incorporate non-motorised modes such as walking and cycling.

7.2.1 Access for People with Disabilities

The Council must provide equal access for all residents and visitors to the study area including people with disabilities.

The provision of equal services is a base tenet of the Federal Disability Discrimination Act (1992) which legislates the right for equal participation of all members of the community in daily life.

The Disability Discrimination Act has three inherent themes including:

- equality;
- independence; and
- functionality.

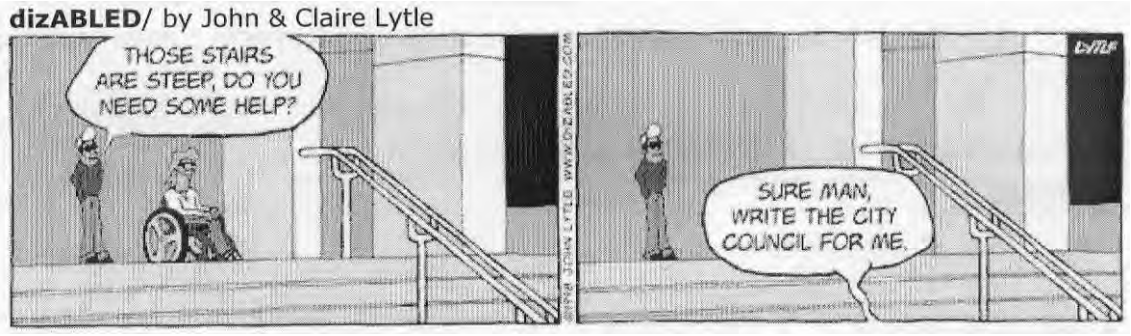
In their current condition the areas audited do not provide equal access, and thus are questionable under the spirit and intent of the legislation. This is due to a number of barriers on the streetscape (refer to Section 6.2 The Audit Process).

A time lined physical infrastructure improvement process must be initiated to remove identified barriers for people with disabilities. Should this occur, people with disabilities will have equal participation within the study area.

Aligned with the development of additional physical infrastructure, many barriers to access can be removed simply through the enforcement of existing Council Policy, which if enforced promotes functional and useable environs.

A further advantage in the development of greater access on the streetscape is the reduction of inherent design problems that create occupational health and safety issues.

To maximise access for people with disabilities, planners and designers must give consideration to relevant design guidelines, specifically the Australian Standards 1428 series with particular note of Part 2: Enhanced and Additional Requirements - Buildings and Facilities. In alignment with promotion of such design recommendations, consideration should be given to the implementation of staff training specific to functional design facilitating people with disabilities.



7.2.2 Off Road Pedestrian Facilities

Opportunities for recreational networks have only been identified in the Action Recommendations in so far as they provide links to key recreational activity generators and attractors.

7.2.3 Education, Encouragement and Enforcement

Encouraging walking as a mode could be tackled by the introduction of measures aimed at educating people of the benefits associated with walking. People are likely to consider alternative modes to the private car for shorter trips within the local community. Therefore, by targeting these trips, and demonstrating the environmental and health benefits of increased walking activity, benefits could be gained. Possible ways in which awareness could be raised include mobile exhibitions or demonstrations by school or community liaison officers and it is considered essential that parents of children are also involved. Other initiatives that address the wider community include such things as promotional banners on road overpasses with slogans such as that used by Concord Council: 'If you're not going far, leave the car'. It is recommended that Council should consider introducing such initiatives that could be linked into other areas including Community Pride, Safe Routes to Schools and the provision of special educational information.

Throughout the Action Recommendations (Appendix E), the enforcement of Council policy is listed as an action for numerous locations and issues throughout the Study Area. Problems include:

- A-frame boards blocking the path of travel;
- Retail activities on footpath; and

- Domestic wheelie bins or vehicles on footpath.

Council policy that considers these and other factors that cause the path of travel to be blocked should be regularly maintained and enforced by Council.

7.2.4 Security and Lighting

Public areas should be sufficiently lit at night to maintain a safe pedestrian environment. Railway stations are generally lit to daylight standards although the areas immediately surrounding stations are often in darkness. Areas such as these and other pedestrian precincts such as retail areas, parks and pedestrian underpasses should be well lit. A night time safety audit should be undertaken to ensure acceptable lighting standards are maintained. Regular maintenance checks should also be undertaken by Energy Australia or the relevant service provider to ensure sufficient lighting in public areas.

The installation of any lighting facilities in the area should be done with consideration to AS/NZS 1158.3.1 - 1999: Roadway Lighting Part 3.1: Pedestrian area (Category P) lighting - Performance and installation design requirements.

7.2.5 National Road Rules

The National Road Rules came into place throughout Australia on 1 December 1999. Rule 250 states that:

> "The rider of a bicycle who is 12 years old or older must not ride on a footpath if another law of this jurisdiction prohibits the rider from riding on the footpath."

For example, another law of this jurisdiction may provide that a commercial courier may not ride a bicycle on any footpath or any footpath in a particular area, or that an adult must not ride a bicycle on a footpath unless the adult is accompanying a child under 12 years who is also riding on the footpath.

In other words, cyclists under the age of 12, whether accompanied by an adult, are able to ride on the footpath. It is recommended that Council take into consideration the requirements for shared paths (Austroads Part 13, Pedestrians, 1995 and Part 14, Bicycles, 1999) when installing any new footpath facilities within the study area.

7.2.6 New Developments

Major new developments are occurring throughout the study area. As discussed in Section 7.3.2 below, Section 94 funding should be requested from developers for the provision of safe pedestrian facilities if the development will increase the number of pedestrians in the vicinity.

7.3 Funding Sources

7.3.1 The Roads and Traffic Authority

The development of this PAMP is likely to assist in gaining additional funding from the RTA specifically for the completion of actions identified as part of this PAMP, generally on a 50/50 basis with Council. All future RTA funding will be determined on an annual basis.

The current RTA document outlining this funding arrangement is *Council Projects Funded by the RTA Memorandum of Understanding* (February 2007).

7.3.2 Section 94 Contributions

Section 94 of the Environmental Planning and Assessment Act 1979 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 nexus 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 should be sort through Section 94 Contributions for the provision of such facilities.

7.3.3 Roads to Recovery Program

The Federal Government's Roads to Recovery Program has been extended to 2009. The program is not just confined to roads; it also includes footpaths and bicycle paths.

7.3.4 Local Area Traffic Management and other Council Works

Many of the gains that can be made in road safety and management of traffic through Local Area Traffic Management schemes can also assist in improving the road environment for pedestrians. The provision of traffic, pedestrian and cyclist facilities in the road space should be considered in an integrated way and the same should apply in the allocation of funding.

7.3.5 Community Works

Some works can be assisted by the community. An example would be the Community Cycleway construction program in Baulkham Hills Council area. Public liability in these matters should be investigated.

7.3.6 Sponsored Signage and Bus Shelters

Bus shelters, signage, seating and rubbish bins can be provided by the private sector by cross-subsidy from advertising. A condition of installation of such items could be adjacent kerb ramps or sections of path. However, it is understood that the bus shelters from the existing contractor is too large to allow sufficient clear path width behind the shelter in many locations if placed at the minimum 600mm from the kerb edge.

Council should reconsider the design and placement of bus shelters in order to address pedestrian accessibility requirements. If new bus shelters must be located along the building edge due to width restriction, Council should consider the design of the shelters and the use of tactile indicators to assist pedestrian with visual impairments.

7.3.7 Partnerships

Officers of the RTA have expressed a keen interest to approach the upgrading of pedestrian (and bicycle) accessibility in a 'partnership' approach with Council and CityRail's 'Easy Access' programs. There can be the opportunity to provide some facilities with developers as part of consent. An example cited was the Valley Heights overbridge where the RTA's highway crossing was enhanced by CityRail's connection to the railway station, and Council's links to the local network.

7.4 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 Action Recommendations.

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.

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.

8 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusion

The study concluded that the objectives of the PAMP could be achieved in the study area by a staged implementation of actions 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. To address the area of engineering, the proposed actions included as engineering schedules (Appendix E) should be implemented as funding permits.

8.2 Recommendations

It is recommended that the City of Ryde consider for adoption the PAMP Network and associated Action Recommendations and other actions in conjunction with the RTA and other Authorities.

In addition to items identified in the Action Recommendations in Appendix E, specific recommendations given throughout this report include:

- 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 continue the introduction of such initiatives, which could be linked into other areas including Safe Routes to Schools and the provision of special educational information.
- The development of Transport Access Guides (TAGs) for town centres and Green Travel Plans (GTP) for the community, businesses and residents would encourage more people to consider using alternative transport modes such as walking.
- Council should periodically review the PAMP routes and implementation of the Action Recommendations, with a view to consider auditing the low priority routes within the study area when funds become available. 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.
- PAMPs should be conducted for other town centres within City of Ryde to improve the conditions for pedestrians across the high-usage areas.
- A separate audit should be undertaken to check streetlight lux levels as per Australian Standards.
- A bus stop audit should be conducted along the bus routes in Eastwood to provide adequate pedestrian access and facilities for the bus users.

REFERENCES

Accessible Housing Strategy – Draft LEP 2002, November 2002, BMCC

Active Australia, Simply Active Everyday - A Plan to Promote Physical Activity in NSW, 1998 – 2002

AS/NZS 1158.3.1 - 1999: Roadway Lighting Part 3.1: Pedestrian area (Category P) lighting - Performance and installation design requirements

AS 1428.1 - 1998: Design for Access and Mobility, Part 1 - General Requirements for Access - New Building Work

AS 1428.2 - 1992: Design for Access and Mobility, Part 2 - Enhanced and Additional Requirements - Buildings and Facilities

AS 1428.4 - 1992: Design for Access and Mobility, Part 4 - Tactile Ground Surface Indicators for the Orientation of People with Vision Impairment

Austroads Guide to Traffic Engineering Practice Part 13: Pedestrians

Austroads Guide to Traffic Engineering Practice Part 14: Bicycles

Commonwealth Attorney General's Department (1999) Australian Road Rules

Hulse, A.M. & Singleton, D.J. - "Greater Hobart Metropolitan Area: Development of a Methodology for the Evaluation and Ranking of Road Projects", National Transport Conference, Institution of Engineers Australia, Melbourne, 1989

NSW Government, Action for Transport 2010, An Integrated Transport Plan for Sydney, 1998

NSW Government, NSW Healthy Ageing Framework, 1998 - 2003

NSW Government Disability Policy Framework, 1998

NSW Roads and Traffic Authority, Technical Direction 98/6, Use of Traffic Calming Devices as Pedestrian Crossings

NSW Roads and Traffic Authority, Traffic Volume Data for Sydney Region, 1996

NSW Government, Department of Local Government Circular to Councils 'A Guide to Major and Special Events Planning', Circular No. 97/65, 1997

State Transit & PPK Environmental (1999) Bus Stop Style Guide

Surface Transportation Policy Project (STPP), 2000, Mean Streets 2000

WSROC (1998) Manual of Best Practice – Access for People with Mobility Disabilities

US Department of Transport (2001) Designing Sidewalks and Trails for Access – Best Practices Design Guide

[1]

Appendix A

Eastwood PAMP - Media Coverage

City of Ryde

Eastwood Pedestrian Access and Mobility Plan (PAMP)

伊士活行人通達計劃

Eastwood 도보 계획

Do you want to have input into the development of improved pedestrian facilities in the Eastwood centre? The Eastwood centre study area is within 800m radius from Eastwood Station.

City of Ryde Council seeks the views and ideas of the community during the development of the Pedestrian Access and Mobility Plan (PAMP).

Issues involved include:

- The development of key routes to local attractions
- Access to public transport facilities
- Safe and accessible walking environments
- Pedestrian accidents, vehicle speeds, and crossing busy roads.

The ideas, views and proposals from any interested parties are needed before **Monday 11th May 2009**. If you would like further information or would like to become involved in the study, please contact Arup Transport Planning:

Joanna Lau
Arup
PO Box 76
Millers Point NSW 2000
Phone: 9320 9230
Fax: 9320 9321
joanna.lau@arup.com

CHINESE

如果您看不懂本文，請在周一至周五上午 8 時 30 分至下午 4 時 30 分前往 Ryde 市政中心詢問 (Ryde Civic Centre, 地址: 1 Devlin Street, Ryde)。你也可以打電話至電話傳譯服務中心，電話號碼是: 131 450。接通後你可以要求一位傳譯員爲你打如下電話和 Ryde 市政廳聯繫，電話是: 9952 8222。

KOREAN

이 문서가 무슨 의미인지 모르실 경우에는 1 Devlin Street, Ryde 에 있는 Ryde Civic Centre 로 오시거나 (월 – 금, 오전 8:30 – 오후 4:30), 전화 131 450 번으로 전화 통역 서비스에 연락하셔서 통역사에게 여러분 대신 Ryde 시청에 전화 9952 8222 번으로 연락을 부탁하십시오.

Appendix B

Eastwood PAMP Sample Questionnaire and Comments

City of Ryde

City of Ryde Council wants to know more about the needs of pedestrians travelling **within the Eastwood Centre study area (800m radius from Eastwood Station)** in order to provide a safer and more accessible pedestrian network.

The information you provide will be treated confidentially and will help City of Ryde Council to address the needs of **the whole community** including older people, children, people with disability and carers or companions. Please return this questionnaire in the pre paid envelope enclosed by **Monday 11th of May 2009.**

Organisation _____

Address _____

_____

Phone/Fax/Email _____

1. What is the nature of your organisation?

❑ Church / Religious organisation
❑ School
❑ Child Care
❑ Aged Care
❑ Community Group/Centre
❑ Other _____

2. What is the age range of the users of your organisation (you may select more than one)?

❑ 0-4
❑ 5-12
❑ 12-18
❑ 18-25
❑ 25-54
❑ 55-64
❑ 65-74
❑ 75+

3. How many people use your organisation's venue/s per day?

Users _____

Employees _____

Volunteers _____

City of Ryde

4. **A map of the study area is attached to this questionnaire. What percentage of users would walk through the study area to reach your organisation's venue/s?**

- ❑ 0-10%
- ❑ 11-20%
- ❑ 21-30%
- ❑ 31-40%
- ❑ 41-50%
- ❑ 51-60%
- ❑ 61-70%
- ❑ 71-80%
- ❑ 81-90%
- ❑ 91-100%

If there are any particular routes within the study area which you know are taken by your customers/clients could you please mark them on the attached map?

5. **What are the main modes of transport for your users between their homes and your organisation's venue/s (You may select more than one)?**

- ❑ Walking (includes wheelchair users)
- ❑ Private Vehicle
- ❑ Bus
- ❑ Train
- ❑ Bicycle
- ❑ Taxi
- ❑ Community Transport
- ❑ Other _____

6. **What are the main reasons for choosing the modes of transport stated in Question 5 (You may select more than one)?**

- ❑ Convenience/Availability
- ❑ Safety
- ❑ Assistance
- ❑ Efficiency
- ❑ Cost
- ❑ Too many hazards/lack of accessibility
- ❑ Lack of parking
- ❑ Other _____

7. **Do you think more people would walk to your organisation's venue/s if pedestrian facilities were improved?**

- ❑ Yes (go to Question 9)
- ❑ No

8. **If you answered no to Question 7, why not?**

_____

_____

City of Ryde

9. In general, are existing footpaths/pedestrian facilities <u>in Eastwood Centre</u> safe and easy to use for your users/members?

❑ Yes (go to Question 11) ❑ No

10. If you answered <u>no</u> to Question 9, what are your main concerns (You may select more than one)?

❑ Uneven footpath surfaces
❑ Poor kerb/pram ramp design
❑ Lack of kerb/pram ramps
❑ Lack of appropriate pedestrian signage (directional /informational signs)
❑ Lack of audible/tactile signals at crossings
❑ Lack of pedestrian crossings
❑ Poor lighting
❑ Overhanging trees
❑ Street furniture on the footpath (eg seats, bins, poles)
❑ Domestic rubbish bins left on the footpath (wheelie bins)
❑ Lack of visual indicators such as tactile ground surface indicators, colour contrasting and directional tiles
❑ Other obstructions or problems (please specify) _____

11. Should more facilities be provided <u>in Eastwood Centre</u> to improve pedestrian access, safety and mobility?

❑ Yes ❑ No (go to Question 13)

12. If you answered <u>yes</u> to Question 11, which facilities do you think should be provided (you may select more than one)?

❑ Increased pedestrian crossing opportunities (pedestrian lights, refuges, crossings, overpasses)
❑ Directional signage
❑ Pedestrian barriers on busy roads to stop illegal crossings
❑ Mobility maps for the area showing accessible locations
❑ Improved lighting and security
❑ Accessible transport options (eg access to stations/buses)
❑ Audible/tactile crossing facilities at signals for the sight impaired
❑ More telephones for the hearing impaired (TTY phones)
❑ Other _____

City of Ryde

13. Where are the most hazardous locations for pedestrians <u>within Eastwood Centre</u>? Please highlight them on the attached map.

Location (including street and nearest cross street)	Reason for Concern

14. Do you have any other comments you would like to make relating to pedestrian facilities <u>within Eastwood Centre study area</u> and ways of improving them?

_____

_____

_____

If you have any queries regarding this questionnaire, or would like any further information please contact the people listed below:

Joanna Lau
Arup
PO Box 76
Millers Point NSW 2000
Phone: 9320 9230
Fax: 9320 9321
joanna.lau@arup.com

Thank you for your time and cooperation in completing this questionnaire.

Eastwood PAMP -			Comments from Questionnaires and Submissions (Refer to Figure 8)				
Web/ Questionnaire	**Item ID**	**Repeated See Item**	**submission ID**	**Issues**	**Suburb**	**Location**	**Comment**
Q	1	M	01	Heavy pedestrian traffic	Eastwood	Lakeside Road	Business pedestrian
Q	2	M	02	Uneven footpath	Eastwood	Glen Street	Concern over slope of footpath as shoppers take trolleys to carpark
Q	3	M	03	Footpath obstruction	Eastwood	Rowe St	goods for sale from the shops are displayed on the footpath - many are even on fork lift pallets. These are particularly dangerous due to their uneven distribution, often covering more than 50% of the available area in front of the retail outlet.
Q	4	M	03	Footpath obstruction	Eastwood	Progress Ave	goods for sale from the shops are displayed on the footpath - many are even on fork lift pallets. These are particularly dangerous due to their uneven distribution, often covering more than 50% of the available area in front of the retail outlet.
W	5	G	03	Footpath obstruction	Eastwood		Shopkeepers should not be allowed display their wares on the footpath
W	6	G	03	Pedestrian circulation	Eastwood		Council's recent emphasis on legal parking through enforcement of restriction has done much to facilitate both vehicular access and pedestrian access
W	7	3	03	Footpath obstruction	Eastwood	Rowe St	Cordoned off outdoor eating areas should be encouraged (tables & chairs) particularly in Eastwood Plaza
W	8	M	03	Footpath obstruction	Eastwood	Progress Ave	Presence of pallets of for sale items
W	9	3	03	Footpath obstruction	Eastwood	Rowe St	Presence of items for sale
W	10	M	03	Dangerous crossing behaviour	Eastwood	The Avenue	Pedestrians crossing without consideration of vehicular traffic
W	11	M	03	Dangerous crossing behaviour	Eastwood	Progress Ave	Pedestrians crossing without consideration of vehicular traffic
W	12	M	03	Dangerous crossing behaviour	Eastwood	West Parade outside of station	Between 4.3- p.m. and 6.30 p.m. Mon - Fri. - erratic behaviour of pedestrians and vehicles
W	13	G	03	Pedestrian circulation	Eastwood	West Parade outside of station	From approx 4.30 p.m. to 6.30 p.m. (Mon to Fri) lack of control and direction for pedestrians from the station causes considerable congestion for vehicular and pedestrian traffic in West Parade, Hillview, East Parade, Ethel, Rowe streets, and also presents a danger to pedestrians who cross at inappropriate places.
W	14	M	03	Transport interchange facilities	Eastwood	West Parade outside of station	More commuter parking at the station would be wonderful. (A multideck parking facility similar to the one at Thornleigh station, constructed on the eastern side of West Parade, north of the station would seem practicable.
W	15	12	05	Poor Raod Design	Eastwood	West Parade outside of station	Broad intersection of Hillview Rd a/ West Parade
	16	12	05	Dangerous crossing behaviour	Eastwood	West Parade outside of station	Random road crossing from the station to the centre/ eastwood club/ etc
	17	G	05	Pedestrian education	Eastwood	At crossings in general	Educating to cross in groups
	18	M	05	Heavy pedestrian traffic	Eastwood	Trelawney St/ Rowe St	Consider closing off and make a pedestrian plaza so that cars coming from Rutledge St can only turn left up Rowe St. That would prevent cars snail trailing right through the middle of Eastwood to access the deckled parking area
	19	19	05	Heavy pedestrian traffic	Eastwood	The Avenue roundabout	Consider closing off and make a pedestrian plaza so that cars coming from Rutledge St can only turn left up Rowe St. That would prevent cars snail trailing right through the middle of Eastwood to access the deckled parking area
	20	M	05	Pedestrian education	Eastwood	West Parade at Rowe St Arcade	Education to cross in group
	21	M	05	Pedestrian education	Eastwood	Hillview Rd/ Progress Ave	Education to cross in group
	22	M	05	Poor Lighting/ Visibility	Eastwood	Hillview Rd/ Lakeside Rd zebra crossing	The ped xing in Lakeside along from the corner is a dangerous on the north western side as it is dark, there is a tree there, sometimes people appear suddenly
	23	G	05	Parking enforcement	Eastwood	The town centre	Illegal parking and the excessive vehicle penetration into the centre remains a major interference to mobility and pedestrian amenity in the centre
	24	G	05	Dangerous driving behaviour	Eastwood	General	On numerous occasions I have had cars drive straight across pedestrian crossings in front of me. I have also observed this happen to other people Very dangerous an illegal.
	25	12	06	Dangerous crossing behaviour	Eastwood	West Parade outside of station	Pedesrians not using crossings
	26	M	07	Lack of pedestrian crossing	Eastwood	First Ave near West Parade	First Ave can be a busy road and some cars can be travelling at farily high speeds. Pedestrians may be slower due to carring shopping or escorting children.
	27	M	08	Heavy traffic flow	Eastwood	Trelawney St/ Rowe St	Difficult to cross Rowe St
	28	M	08	Poor Visibility	Eastwood	Hillview Lane/ Shaftsbury Rd	Difficult to cross Hillview Lane. Poor visibility
	29	10	08	Heavy traffic flow	Eastwood	The Avenue/ Rowe St crossing	Need traffic lights at pedestrian crossing
	30	M	09	Poor Lighting/ Visibility	Eastwood	Rowe St underpass	Dangerous especially at night. Lack of surveillance, lighting
	31	G	09	Pedestrian / Traffic Conflict	Eastwood	Most pedestrian crossings on westerner side of sta	Too many conflicts with vehicles
	32	G	09	Pedestrian / Traffic Conflict	Eastwood	Town centre	Reduce accessibility of vehicles into main part of town centre (eg. Encourage access to council car park via Shaftsbury Rd rather than Trelawney St)
	33	G	10	Footpath obstruction	Eastwood	Town centre	Shops with goods out on footpath, vegetable refuse left on ground
	34	G	10	Pedestrian Amenities	Eastwood	Town centre	Toilet facilities at a street level
	35	21	10	Pedestrian / Traffic Conflict	Eastwood	Hillview Rd crossing at Progress Ave	Lack of giving way by traffic
	36	M	11	Dangerous crossing	Eastwood	West Parade outside of station	Crossing West Parade
	37	21	11	Dangerous crossing	Eastwood	Hillview Rd crossing at Progress Ave	Passing traffic, rest centre to Progress Ave
	38	M	11	Heavy traffic flow	Eastwood	Wingate Ave / Lakeside Rd	Busy corner
	39	20	11	Dangerous crossing	Eastwood	West Parade / Rowe St	Crossing West Parade
	40	G	11	Pedestrian / Traffic Conflict	Eastwood		Install pedestrian lights
	41	38	11	Lack of signage	Eastwood	Wingate Ave / Lakeside Rd	Crossing from lakeside Rd and turning left into Wingate Ave endanger pedestrians crossing Wingate Ave. Suggest a Clow Down sign on lakeside Rd may be helpful

Web/ Questionnaire	Item ID	Repeated See Item	submission ID	Issues	Suburb	Location	Comment
	42	26	11	Lack of pedestrian crossing	Eastwood	West Parade / First Ave	Cars travelling at speed from Rutledge St in Easterly direction
	43	12	11	Dangerous crossing behaviour	Eastwood	West Parade outside of station	People crossing to/from station between marked crossings, especially at mall and library
	44	10	11	Pedestrian / Traffic Conflict	Eastwood	The Avenue/ Rowe St crossing	Traffic banks up due to one or two pedestrians crossing at a time. Suggest some pedestrian lights be installed
	45	19	11	Pedestrian / Traffic Conflict	Eastwood	Lakeside Road/ Hillview Ln crossing	Traffic banks up due to one or two pedestrians crossing at a time. Suggest some pedestrian lights be installed
	46	M	12	Uneven footpath	Eastwood	Fourth Ave	Bad drianage, uneven footpaths, no access with prams, wheelchairs, very dark at night
	47	46	12	No kerb ramp	Eastwood	Fourth Ave	Bad drianage, uneven footpaths, no access with prams, wheelchairs, very dark at night
	48	46	12	Poor Lighting/ Visibility	Eastwood	Fourth Ave	Bad drianage, uneven footpaths, no access with prams, wheelchairs, very dark at night
	49	46	12	Poor drainage	Eastwood	Fourth Ave	Bad drianage, uneven footpaths, no access with prams, wheelchairs, very dark at night
	50	G	12	Lack of signage	Eastwood		Signage from hospital to train station
	51	M	13	Uneven footpath	Eastwood	Lakeside Rd opp. Council carpark	Uneven pathway, unpleasant smell
	52	10	13	Pedestrian / Traffic Conflict	Eastwood	The Avenue/ Rowe St crossing	Too busy for pedestrian and vehicle, change to traffic light
	53	M	14	Pedestrian / Traffic Conflict	Eastwood	May St	Street crowded with people getting on and off bus and train, a back way for traffic get into Blaxland Rd
	54	M	14	Pedestrian / Traffic Conflict	Eastwood	Railway Parade East	Street crowded with people getting on and off bus and train, a back way for traffic get into Blaxland Rd
	55	G	15	Pedestrian education	Eastwood	General	add signs to encourage people to walk on the left, and other "pedestrian ettiquette"
	56	G	15	Pedestrian Amenities	Eastwood	General	a) Countdown timers at pedestrian crossings, More bike racks in the centre of the shopping area (not on the outskirts). Bike racks should have roofs to protect bikes from the sun and the rain.
	57	M	15	Pedestrian / Traffic Conflict	Eastwood	Trelawney St/ Shaftsbury Rd	b) Re-route vehicular traffic away from Trelawney St to Shaftsbury Rd. Slow-moving, smelly, noisy vehicles spoil the shopping area as it snakes down from Rutledge St to reach the Franklins car park. Add a right-turn filter to allow traffic a safer turn on to Shaftsbury Rd so traffic reaches Franklins car park via Glen St.
	58	M	15	Pedestrian Amenities	Eastwood	The Avenue: between Masonic Centre and Progres	Close the road to traffic between the Masonic Centre and the Bakers Delight roundabout, ie. pedestrianise it.
	59	G	15	Pedestrian / Traffic Conflict	Eastwood	General	At pedestrian crossings because drivers get impatient with people crossing in small groups which means they have to force their way through: risk of accidentally hitting a pedestrian. Convert uncontrolled “zebra” crossings to Traffic Light Controlled crossings with a maximum pedestrian wait time of 30 seconds (and a countdown timer).
	60	M	15	Lack of pedestrian crossing	Eastwood	Library	Walking from the plaza to the library involces crossing from Hillview Rd to West Parade: have to make a deto
	61	M	17	Lack of pedestrian crossing	Eastwood	Ethel St (Railway Pde end)	Pedestrian crossing at Ethel St
	62	M	17	Pedestrian Amenities	Eastwood	Ethel St	Wider footpath at Ethel St bus stop as students blocking the footpath
	63	M	17	Pedestrian / Traffic Conflict	Eastwood	Rowe St	Blind Spot area
	64	M	17	Lack of pedestrian crossing	Eastwood	Progress Ave	No pedestrian crossing near Super Fresh
	65	M	17	Pedestrian Amenities	Eastwood	Hillview Lane	Lack of footpath, dirty and smelly
	66	M	18	Lack of pedestrian crossing	Eastwood	Ethel St cnr Railway Parade	No pedestrian crossing at busy intersection - high pedestrian traffic
	67	M	18	Pedestrian Amenities	Eastwood	Ball Ave nr May St	Very dark place to cross where cars travel fast
	68	M	18	Pedestrian Amenities	Eastwood	Ball Ave	Dark place to walk through and slippery especially when its raining
	69	G	19	Pedestrian Amenities	Eastwood	General	Clean up plants that are growing onto the footpath
	70	M	19	Pedestrian / Traffic Conflict	Eastwood	Rowe St	Should be replaced by traffic lights due to its heavy use
		M	20	Pedestrian Amenities	Eastwood	Library	Paving outside the Library is uneven
		M	20	Pedestrian amenities	Eastwood	Hillview Rd	During peak hour the round-about on the cnr of Hillview Rd & West Pde & the pedestrian crossing just past this intersection gets very congested.
M = mapped							
G = general comment							

Appendix C

Eastwood PAMP - Focus Group Workshop Notes

Project title	Eastwood PAMP	Job number	206440
Meeting name & number	Focus Group Workshop	File reference	
Location	Brush Farm House, Eastwood	Time & date	2:00 - 4:30pm 21 May 2009
Purpose of meeting	Focus Group Workshop		
Present	Peter Wells, STA Developments Sam Cappeli, CRC John Hanlon, Arup Safiah Moore, Arup		Brad Chan, Eastwood Centre Sarah Kinsela, CRC Joanna Lau, Arup
Apologies			
Circulation	Those present		

1. Council welcome the participants

- Outline of PAMP process in Council
- Outline of Ryde Integrated Land Use Strategy (RITLUS)
- Transport Management and Access Plan (TMAP)
- current transport initiatives

2. Arup's PAMP background presentation

Introduction of PAMP and Eastwood PAMP progress update

3. Group Discussion

3.1 Town Centre

- Slower traffic speeds in town centres
- Education of pedestrians on crossing facilities
- No signalised crossing near Eastwood Station on West Parade as it would slow traffic
- Traffic flow along Lakeside Rd and The Avenue not free flowing

3.2 The Plaza

- Need better connection between Eastwood Station and The Plaza

Prepared by	SM
Date of circulation	27 May 2009
Date of next meeting	

Project title	Job number	Date of Meeting
Eastwood PAMP	206440	21 May 2009

- Possible overhead link connecting Eastwood Station and the Plaza
- The mixed use redevelopment along the Plaza:
- Increase of 20% of retail from existing development
  - 195 residential apartments
  - Increased parking
- Post development – improve casual surveillance of The Plaza
- Development also has provisions to activate the Rutledge St frontage – visual shop fronts, however access from Rutledge St is unlikely
- Unstable paving along the Plaza

3.3 Pedestrian underpass

- Unsafe pedestrian environment
- Need to increase casual surveillance

3.4 Glen St Carpark

- Options for redevelopment are being explored by Council
- Options will include not loosing car parking spaces, but add mixed use.
- Access to Glen St car park needs to be considered to be prioritised along Shaftsbury Rd and Glen St
- Signalised crossing proposed by TMAP restricts smooth traffic flow and holds no direct benefit

3.5 Hillview Lane

- TMAP suggests a possible shared zone, however the lane seems very narrow
- Currently used as a service lane for deliveries, not much patronage hence developing into shared zone hold no direct benefits

3.6 Eastern side of Eastwood Station

- Large blocks and limited north – south connections, however it is recognised that creating those connections would be difficult
- Major concern over the severance between east and west side of Eastwood created by the train line

3.7 Eastwood Park

- High pedestrian attractor
- Should be integrated into the Town Centre more with better pedestrian connections

3.8 Blaxland Road

- Blaxland Road near Ethel Street → possible connection to continue pedestrian pathway from Fig Place.

3.9 Shaftsbury Road

- No crossing facilities between Rowe Street and Terry Road
- Suggest works in conjunction with other works planned for that location

4. PAMP Funding Process

- Works arise from PAMP to be scheduled in 5 – 10 Years work program

Project title	Job number	Date of Meeting
Eastwood PAMP	206440	21 May 2009

- Works to be divided into high and low priority
- RTA provides kerb – to – kerb funding on State Roads
- 50/50 funding for local streets

5. Meeting Closed

- Concluding remarks from Arup and City of Ryde Council

Appendix D

Design Standard Reference

D1. DESIGN STANDARD REFERENCES

Features	Details	Reference Document	Relevant Section
Walkways and Footpaths	Path width requirements for various users	AS 1428.2 – 1992: Design for Access and Mobility, Part 2 – Enhanced and Additional Requirements – Buildings and Facilities	Figure 2
	Passing space for wheelchairs	AS 1428.2 – 1992: Design for Access and Mobility, Part 2 – Enhanced and Additional Requirements – Buildings and Facilities	Figure 3
	Width of path of travel	AS 1428.2 – 1992: Design for Access and Mobility, Part 2 – Enhanced and Additional Requirements – Buildings and Facilities	Clause 6.4
	Vertical clearance	AS 1428.2 – 1992: Design for Access and Mobility, Part 2 – Enhanced and Additional Requirements – Buildings and Facilities	Clause 6.7
	Acceptable fields of vision	AS 1428.2 – 1992: Design for Access and Mobility, Part 2 – Enhanced and Additional Requirements – Buildings and Facilities	Figure 30
Pedestrian crossing facilities		AS 1742.10-1990: Manual of uniform traffic control devices Part 10: Pedestrian control and protection	
Kerb ramp		AS 1428.1 – 2001: Design for access and mobility - General requirements for access - New building work	Figure 7 and 8
Seating		AS 1428.2 – 1992: Design for Access and Mobility, Part 2 – Enhanced and Additional Requirements – Buildings and Facilities	Figure 32
Ramping at public transport stop		WSROC (1998) Manual of Best Practice – Access for People with Mobility Disabilities	Page 62

Appendix E

High and Medium Priority Route Audit - Action Recommendations and Work Schedule

Appendix E Engineering Work Schedules - High and Medium Priority Routes

ID	Street	Side	Cross Street	Issue	Recommended Action	Length(m) /Unit	Photo No	High/Medium Route	Action Priority	Indicative Cost
High Priority Routes										
Type of Action: Kerb Ramp										
18	Lakeside Rd	West	Hillview Ln	Kerb ramp Lip	Install kerb ramp - AS standard	1	18	High	1	$1,500
31	Hillview Rd	West		Kerb ramp Lip	Install kerb ramp - AS standard	1	31	High	1	$1,500
122	Rowe St	South		Kerb ramp Lip	Install kerb ramp - AS standard	1	125	High	1	$1,500
176	Hillview Rd	West	Hillview Ln	Kerb ramp Lip	Install kerb ramp - AS standard	1	183	High	1	$1,500
177	West Pde	West	Hillview Ln	Kerb ramp Lip	Install kerb ramp - AS standard	1	184	High	1	$1,500
26	Hillview Rd	East	Terry Rd	Kerb ramp off-path	Install kerb ramp - AS standard	1	27	High	1	$1,500
137	West Pde	West	Rowe Street	Kerb ramp off-path	Install kerb ramp - AS standard	1	140	High	1	$1,500
39	Glen St	North	Lakeside Rd	Kerb ramp off-path	Install kerb ramp - AS standard	1	36	High	2	$1,500
74	Rowe St	North	Shaftsbury Rd	Kerb ramp off-path	Install kerb ramp - AS standard	1	73	High	2	$1,500
79	Rowe St	South	Shaftsbury Rd	Kerb ramp off-path	Install kerb ramp - AS standard	1	77	High	2	$1,500
160	Progress Ave	East	Hillview Rd	Kerb ramp off-path	Install kerb ramp - AS standard	1	167	High	2	$1,500
184	West Pde	West	Rutledge St	Kerb ramp off-path	Install kerb ramp - AS standard	1	2639	High	2	$1,500
350	Ball Ave	West	May Ave	Kerb ramp off-path	Install kerb ramp - AS standard	1	0	High	2	$1,500
311	Rowe St	North	Railway Pde	Kerb ramp off-path	Install kerb ramp - AS standard	1	2798	High	2	$1,500
124	Rowe St	South		Kerb ramp Step	Install kerb ramp - AS standard	1	127	High	1	$1,500
142	West Pde	East	Rowe St	Kerb ramp Step	Install kerb ramp - AS standard	1	145	High	1	$1,500
151	Rowe St	North		Kerb ramp Step	Install kerb ramp - AS standard	1	156	High	1	$1,500
216	West Pde	East		Kerb ramp Step	Install kerb ramp - AS standard	1	2671	High	1	$1,500
34	Hillview Rd	South	Lakeside Rd	Kerb ramp too steep	Install kerb ramp - AS standard	1	35	High	1	$1,500
38	Lakeside Rd	West		Kerb ramp too steep	Install kerb ramp - AS standard	1	0	High	1	$1,500
44	Glen St	North	Shaftsbury Rd	Kerb ramp too steep	Install kerb ramp - AS standard	1	43	High	1	$1,500
128	Rowe St	South	Trelawney St	Kerb ramp too steep	Install kerb ramp - AS standard	1	131	High	1	$1,500
155	The Avenue	East	Hillview Ln	Kerb ramp too steep	Install kerb ramp - AS standard	1	161	High	1	$1,500
9	Hillview Rd	East	Lakeside Rd	No kerb ramp	Install kerb ramp - AS standard	1	8	High	1	$1,500
10	Hillview Rd	West	Lakeside Rd	No kerb ramp	Install kerb ramp - AS standard	1	8	High	1	$1,500
36	Lakeside Rd	West	Hillview Rd	No kerb ramp	Install kerb ramp - AS standard	1	0	High	1	$1,500
36	Lakeside Rd	East	Hillview Rd	No kerb ramp	Install kerb ramp - AS standard	1	0	High	1	$1,500
Type of Action: Footpath										
5	Lakeside Rd	East		Footpath obstruction: bollards	Replace footpath	1	6	High	2	$360
141	West Pde	East		Footpath obstruction: fence	No action - temporary works	1	144	High	-	$0
163	Progress Ave	West		Footpath obstruction: retail activities	Review footpath trading license	1	170	High	1	$500
4	Lakeside Rd	East		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	5	High	1	$300
22	Hillview Rd	North		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	23	High	1	$300
39	Lakeside Rd	West		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	37	High	1	$300
115	Rowe St	North		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	117	High	1	$300
116	Rowe St	North		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	118	High	1	$300
168	Hillview Rd	East		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	175	High	1	$300
43	Glen St	North		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	42	High	2	$300
300	Rowe St	South		Footpath obstruction: vehicles	Law enforcement	1	2787	High	1	$0
92	Glen St	South		Path surface - crack	Replace footpath	1	94	High	1	$360
93	Glen St	South		Path surface - crack	Replace footpath	1	95	High	1	$360
96	Glen St	South		Path surface - crack	Replace footpath	1	0	High	1	$360
113	Rowe St	North		Path surface - crack	Replace footpath	1	112	High	1	$360
154	Lakeside Rd	West		Path surface - crack	Replace footpath	1	160	High	1	$360
165	Hillview Rd	West		Path surface - crack	Replace footpath	1	172	High	1	$360
277	May St	North		Path surface - crack	Replace footpath	1	2768	High	1	$360
304	Rowe St	South		Path surface - crack	Replace footpath	1	2790	High	1	$360

Appendix E Engineering Work Schedules - High and Medium Priority Routes										
ID	Street	Side	Cross Street	Issue	Recommended Action	Length(m) /Unit	Photo No	High/Medium Route	Action Priority	Indicative Cost
338	May St	South		Path surface - crack	Replace footpath	1	0	High	1	$360
351	Ball Ave	West		Path surface - crack	Replace footpath	4	0	High	1	$1,440
352	Ball Ave	East		Path surface - crack	Replace footpath	1	0	High	1	$360
353	Ball Ave	East		Path surface - crack	Replace footpath	1	0	High	1	$360
273	May St	North		Path surface - crack	Replace footpath	1	2761	High	2	$360
298	Rowe St	South		Path surface - crack	Replace footpath	1	2786	High	2	$360
2	Lakeside Rd	East	Glen St	Path surface - poor drainage	Improve footpath drainage	1	3	High	1	$360
18	Lakeside Rd	West	Hillview Rd	Path surface - poor drainage	Improve footpath drainage	1	18	High	1	$360
157	Progress Ave	East		Path surface - poor drainage	Improve footpath drainage	1	164	High	1	$360
287	May St	North		Path surface - slippery	Replace footpath	1	2775	High	1	$360
1	Lakeside Rd	East	Glen St	Path surface - uneven	Replace footpath	1	2	High	1	$360
3	Lakeside Rd	East		Path surface - uneven	Replace footpath	1	3	High	1	$360
6	Lakeside Rd	East	Hillview Rd	Path surface - uneven	Replace footpath	1	7	High	1	$360
19	Lakeside Rd	North	Lakeside Rd	Path surface - uneven	Replace footpath	1	22	High	1	$360
23	Hillview Rd	North		Path surface - uneven	Replace footpath	1	24	High	1	$360
25	Hillview Rd	East	Clive Rd	Path surface - uneven	Replace footpath	1	25	High	1	$360
28	Hillview Rd	West	Clive Rd	Path surface - uneven	Replace footpath	1	29	High	1	$360
32	Hillview Rd	West		Path surface - uneven	Replace footpath	1	32	High	1	$360
40	Glen St	North	Lakeside Rd	Path surface - uneven	Replace footpath	1	40	High	1	$360
42	Glen St	North		Path surface - uneven	Replace footpath	1	41	High	1	$360
94	Glen St	South		Path surface - uneven	Replace footpath	1	98	High	1	$360
94	Glen St	South		Path surface - uneven	Replace footpath	1	0	High	1	$360
110	Rowe St	North		Path surface - uneven	Replace footpath	1	109	High	1	$360
121	Rowe St	South		Path surface - uneven	Replace footpath	1	124	High	1	$360
123	Rowe St	South		Path surface - uneven	Replace footpath	1	126	High	1	$360
129	Rowe St	South	Trelawney St	Path surface - uneven	Replace footpath	1	132	High	1	$360
132	Rowe St	South		Path surface - uneven	Replace footpath	1	135	High	1	$360
143	Rowe St	North		Path surface - uneven	Replace footpath	1	146	High	1	$360
144	Rowe St	North		Path surface - uneven	Replace footpath	1	147	High	1	$360
15	Rowe St	North		Path surface - uneven	Replace footpath	5	158	High	1	$1,800
153	Rowe St	North		Path surface - uneven	Replace footpath	1	159	High	1	$360
155	Lakeside Rd	East		Path surface - uneven	Replace footpath	1	162	High	1	$360
159	Progress Ave	East		Path surface - uneven	Replace footpath	1	165	High	1	$360
166	Hillview Rd	West		Path surface - uneven	Replace footpath	1	173	High	1	$360
167	Hillview Rd	West		Path surface - uneven	Replace footpath	1	0	High	1	$360
169	Hillview Rd	East		Path surface - uneven	Replace footpath	1	176	High	1	$360
170	Hillview Rd	West		Path surface - uneven	Replace footpath	1	177	High	1	$360
171	Hillview Rd	West		Path surface - uneven	Replace footpath	1	178	High	1	$360
172	Hillview Rd	West		Path surface - uneven	Replace footpath	1	179	High	1	$360
174	Hillview Rd	West		Path surface - uneven	Replace footpath	1	181	High	1	$360
175	Hillview Rd	West		Path surface - uneven	Replace footpath	1	0	High	1	$360
180	West Pde	West		Path surface - uneven	Replace footpath	1	188	High	1	$360
217	West Pde	West		Path surface - uneven	Replace footpath	1	0	High	1	$360
218	West Pde	West	Clanalpine St	Path surface - uneven	Replace footpath	1	2672	High	1	$360
272	May St	North		Path surface - uneven	Replace footpath	1	2760	High	1	$360
303	Rowe St	South		Path surface - uneven	Replace footpath	1	2789	High	1	$360
305	Rowe St	South		Path surface - uneven	Replace footpath	1	2791	High	1	$360
306	Rowe St	South		Path surface - uneven	Replace footpath	1	2792	High	1	$360
306	Rowe St	South		Path surface - uneven	Replace footpath	1	2793	High	1	$360
310	Rowe St	South		Path surface - uneven	Replace footpath	1	2797	High	1	$360
312	Rowe St	North		Path surface - uneven	Replace footpath	1	2799	High	1	$360
314	Rowe St	North		Path surface - uneven	Replace footpath	1	2802	High	1	$360
315	Rowe St	North		Path surface - uneven	Replace footpath	1	2803	High	1	$360

Appendix E Engineering Work Schedules - High and Medium Priority Routes										
ID	Street	Side	Cross Street	Issue	Recommended Action	Length(m) /Unit	Photo No	High/Medium Route	Action Priority	Indicative Cost
337	May St	South		Path surface - uneven	Replace footpath	1	0	High	1	$360
339	May St	South		Path surface - uneven	Replace footpath	1	0	High	1	$360
340	May St	South		Path surface - uneven	Replace footpath	1	0	High	1	$360
342	May St	South		Path surface - uneven	Replace footpath	1	0	High	1	$360
343	Railway Pde	East		Path surface - uneven	Replace footpath	1	0	High	1	$360
349	Ball Ave	West		Path surface - uneven	Replace footpath	1	0	High	1	$360
135	Rowe St	South		Path surface - uneven	Replace footpath	1	138	High	2	$360
138	West Pde	West		Path surface - uneven	Replace footpath	1	141	High	2	$360
140	West Pde	West		Path surface - uneven	Replace footpath	1	143	High	2	$360
148	Rowe St	North		Path surface - uneven	Replace footpath	1	152	High	2	$360
274	May St	North		Path surface - uneven	Replace footpath	1	2762	High	2	$360
275	May St	North		Path surface - uneven	Replace footpath	1	2763	High	2	$360
276	May St	North		Path surface - uneven	Replace footpath	1	2764	High	2	$360
359	Railway Pde	East		Path surface: uneven (Work in progress)	No action - temporary works	400	0	High	1	$0
360	Railway Pde	West		Path surface: uneven (Work in progress)	No action - temporary works	250	0	High	1	$0
Type of Action: Manhole / Utilities										
131	Rowe St	South		Manhole not flush with path	Contact service provider	1	134	High	1	$100
162	Progress Ave	West		Manhole not flush with path	Contact service provider	1	169	High	1	$100
164	Progress Ave	West		Manhole not flush with path	Contact service provider	1	171	High	1	$100
344	Railway Pde	East		Manhole not flush with path	Contact service provider	1	0	High	1	$100
345	Railway Pde	East		Manhole not flush with path	Contact service provider	1		High	1	$100
3	Lakeside Rd	East		Manhole not flush with path	Contact service provider	1	4	High	2	$100
33	Hillview Rd	West		Manhole not flush with path	Contact service provider	1	33	High	2	$100
34	Hillview Rd	South		Manhole not flush with path	Contact service provider	1	34	High	2	$100
44	Glen St	North	Shaftsbury Rd	Manhole not flush with path	Contact service provider	1	43	High	2	$100
116	Rowe St	North		Manhole not flush with path	Contact service provider	1	119	High	2	$100
117	Rowe St	North		Manhole not flush with path	Contact service provider	1	120	High	2	$100
120	Rowe St	South		Manhole not flush with path	Contact service provider	1	123	High	2	$100
130	Rowe St	South		Manhole not flush with path	Contact service provider	1	133	High	2	$100
136	West Pde	West		Manhole not flush with path	Contact service provider	1	139	High	2	$100
139	West Pde	West		Manhole not flush with path	Contact service provider	1	142	High	2	$100
145	Rowe St	North		Manhole not flush with path	Contact service provider	1	148	High	2	$100
146	Rowe St	North		Manhole not flush with path	Contact service provider	1	149	High	2	$100
147	Rowe St	North		Manhole not flush with path	Contact service provider	1	150	High	2	$100
147	Rowe St	North		Manhole not flush with path	Contact service provider	1	151	High	2	$100
156	Lakeside Rd	East		Manhole not flush with path	Contact service provider	1	162	High	2	$100
173	Hillview Rd	West		Manhole not flush with path	Contact service provider	1	180	High	2	$100
175	Hillview Rd	West		Manhole not flush with path	Contact service provider	1	182	High	2	$100
178	West Pde	West		Manhole not flush with path	Contact service provider	1	185	High	2	$100
179	West Pde	West		Manhole not flush with path	Contact service provider	1	187	High	2	$100
225	East Pde	East		Manhole not flush with path	Contact service provider	1	2683	High	2	$100
225	East Pde	East		Manhole not flush with path	Contact service provider	1	2684	High	2	$100
301	Rowe St	South		Manhole not flush with path	Contact service provider	1	2788	High	2	$100
307	Rowe St	South		Manhole not flush with path	Contact service provider	1	2794	High	2	$100
308	Rowe St	South		Manhole not flush with path	Contact service provider	1	2795	High	2	$100
309	Rowe St	South		Manhole not flush with path	Contact service provider	1	2796	High	2	$100
313	Rowe St	North		Manhole not flush with path	Contact service provider	1	2800	High	2	$100
338	May St	South		Manhole not flush with path	Contact service provider	1	0	High	2	$100
341	May St	South		Manhole not flush with path	Contact service provider	1	0	High	2	$100
1	Lakeside Rd	East	Glen St	Manhole uneven	Contact service provider	1	2	High	1	$100
109	Rowe St	North		Manhole uneven	Contact service provider	1	108	High	1	$100
111	Rowe St	North		Manhole uneven	Contact service provider	1	110	High	1	$100

Appendix E Engineering Work Schedules - High and Medium Priority Routes

ID	Street	Side	Cross Street	Issue	Recommended Action	Length(m) /Unit	Photo No	High/Medium Route	Action Priority	Indicative Cost
114	Rowe St	North		Manhole uneven	Contact service provider	1	113	High	1	$100
149	Rowe St	North		Manhole uneven	Contact service provider	1	153	High	1	$100
150	Rowe St	North		Manhole uneven	Contact service provider	1	0	High	1	$100
133	Rowe St	South		Manhole uneven	Contact service provider	1	136	High	2	$100
134	Rowe St	South		Manhole uneven	Contact service provider	1	137	High	2	$100
Type of Action: Bus Stop										
25	Hillview Rd	East	Clive Rd	Bus stop: no paving	Upgrade to accessible bus stop	1	26	High	3	$4,000
28	Hillview Rd	West	Clive Rd	Bus stop: no paving	Upgrade to accessible bus stop	1	29	High	3	$4,000
346	Railway Pde	East		Bus stop: no seating	Upgrade to accessible bus stop	1	0	High	3	$4,000
Type of Action: Signage										
181	West Pde	East		No signage	Install standard sign and stem	1	189	High	1	$500
348	Pedestrian underpass	East		No signage	Install standard sign and stem	1	0	High	1	$500
Type of Action: Lighting										
347	Pedestrian underpass	West		Poor lighting	Upgrade street lighting	1	0	High	1	$8,000
41	Glen St	North	Lakeside Rd	Poor lighting	Upgrade street lighting	1	0	High	2	$8,000
								High Priority Routes - Sub Total		**$105,720**
Medium Priority Routes										
Type of Action: Footpath										
101	Hillview Ln	South		Footpath obstruction: bollards	Remove bollards - enforcement	1	103	Medium	2	$0
189	Rutledge St	North		Footpath obstruction: fence	No action - temporary works	1	2644	Medium	-	$0
75	Shaftsbury Rd	West	Rowe St	Footpath obstruction: power poles	Relocate power pole	1	74	Medium	2	$10,000
108	Hillview Ln	South		Footpath obstruction: power poles	Relocate power pole	1	110	Medium	3	$10,000
50	Shaftsbury Rd	East		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	49	Medium	1	$300
57	Shaftsbury Rd	West		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	55	Medium	1	$300
62	Shaftsbury Rd	West		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	60	Medium	1	$300
67	Shaftsbury Rd	West		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	66	Medium	1	$300
190	Rutledge St	North		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	2645	Medium	1	$300
192	Rutledge St	North		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	2646	Medium	1	$300
235	Blaxland Rd	East	First Ave	Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	2698	Medium	1	$300
236	Denistone Rd	South		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	2323	Medium	1	$300
264	Blaxland Rd	West		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	2752	Medium	1	$300
267	Blaxland Rd	West		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	2755	Medium	1	$300
317	Blaxland Rd	West		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	2805	Medium	1	$300
332	Ethel St	North		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	0	Medium	1	$300
335	Blaxland Rd	West		Footpath obstruction: trees/shrubs	Trim trees to 2m clearance	1	0	Medium	1	$300
45	Shaftsbury Rd	East		Path surface - crack	Replace footpath	1	44	Medium	2	$360
47	Shaftsbury Rd	East		Path surface - crack	Replace footpath	1	46	Medium	2	$360
48	Shaftsbury Rd	East		Path surface - crack	Replace footpath	1	47	Medium	2	$360
64	Shaftsbury Rd	West		Path surface - crack	Replace footpath	1	62	Medium	2	$360
82	Shaftsbury Rd	East		Path surface - crack	Replace footpath	1	81	Medium	2	$360
83	Shaftsbury Rd	East		Path surface - crack	Replace footpath	1	81	Medium	2	$360
84	Shaftsbury Rd	East		Path surface - crack	Replace footpath	1	82	Medium	2	$360
85	Shaftsbury Rd	East		Path surface - crack	Replace footpath	1	83	Medium	2	$360
99	Hillview Ln	North		Path surface - crack	Replace footpath	1	101	Medium	2	$360
105	Hillview Ln	South		Path surface - crack	Replace footpath	1	107	Medium	2	$360
106	Hillview Ln	South		Path surface - crack	Replace footpath	1	108	Medium	2	$360

Appendix E Engineering Work Schedules - High and Medium Priority Routes										
ID	Street	Side	Cross Street	Issue	Recommended Action	Length(m) /Unit	Photo No	High/Medium Route	Action Priority	Indicative Cost
107	Hillview Ln	South		Path surface - crack	Replace footpath	1	109	Medium	2	$360
200	Rutledge St	South		Path surface - crack	Replace footpath	1	2655	Medium	2	$360
211	Rutledge St	South		Path surface - crack	Replace footpath	1	2667	Medium	2	$360
225	First Ave	South		Path surface - crack	Replace footpath	1	2685	Medium	2	$360
230	Ryedale Rd	East		Path surface - crack	Replace footpath	1	2693	Medium	2	$360
238	Blaxland Rd	East		Path surface - crack	Replace footpath	1	2702	Medium	2	$360
238	Blaxland Rd	East		Path surface - crack	Replace footpath	1	2703	Medium	2	$360
238	Blaxland Rd	East		Path surface - crack	Replace footpath	1	2704	Medium	2	$360
238	Denistone Rd	South		Path surface - crack	Replace footpath	1	2705	Medium	2	$360
238	Denistone Rd	South		Path surface - crack	Replace footpath	1	2706	Medium	2	$360
240	Blaxland Rd	East		Path surface - crack	Replace footpath	1	2713	Medium	2	$360
241	Blaxland Rd	East		Path surface - crack	Replace footpath	1	2717	Medium	2	$360
241	Blaxland Rd	East		Path surface - crack	Replace footpath	1	2718	Medium	2	$360
242	Blaxland Rd	East		Path surface - crack	Replace footpath	1	2726	Medium	2	$360
243	Blaxland Rd	East		Path surface - crack	Replace footpath	1	2730	Medium	2	$360
244	Blaxland Rd	East		Path surface - crack	Replace footpath	1	2729	Medium	2	$360
245	Blaxland Rd	East		Path surface - crack	Replace footpath	1	2732	Medium	2	$360
266	Blaxland Rd	West		Path surface - crack	Replace footpath	1	2754	Medium	2	$360
270	Blaxland Rd	West		Path surface - crack	Replace footpath	1	2758	Medium	2	$360
287	First Ave	North		Path surface - crack	Replace footpath	1	2776	Medium	2	$360
88	Shaftsbury Rd	East		Path surface - uneven	Replace footpath	1	87	Medium	1	$360
13	Lakeside Rd	West	Clive Rd	Path surface - uneven	Replace footpath	1	14	Medium	2	$360
13	Lakeside Rd	West	Clive Rd	Path surface - uneven	Replace footpath	1	14	Medium	2	$360
13	Lakeside Rd	West	Clive Rd	Path surface - uneven	Replace footpath	1	14	Medium	2	$360
14	Lakeside Rd	West		Path surface - uneven	Replace footpath	1	16	Medium	2	$360
14	Lakeside Rd	West		Path surface - uneven	Replace footpath	1	16	Medium	2	$360
15	Lakeside Rd	West		Path surface - uneven	Replace footpath	1	17	Medium	2	$360
15	Lakeside Rd	West		Path surface - uneven	Replace footpath	1	17	Medium	2	$360
46	Shaftsbury Rd	East		Path surface - uneven	Replace footpath	2	45	Medium	2	$720
49	Shaftsbury Rd	East		Path surface - uneven	Replace footpath	1	48	Medium	2	$360
55	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	54	Medium	2	$360
56	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	54	Medium	2	$360
56	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	54	Medium	2	$360
58	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	57	Medium	2	$360
61	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	59	Medium	2	$360
63	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	0	Medium	2	$360
65	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	63	Medium	2	$360
68	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	0	Medium	2	$360
69	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	67	Medium	2	$360
70	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	68	Medium	2	$360
71	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	69	Medium	2	$360
72	Shaftsbury Rd	West		Path surface - uneven	Replace footpath	1	70	Medium	2	$360
87	Shaftsbury Rd	East		Path surface - uneven	Replace footpath	1	86	Medium	2	$360
102	Hillview Ln	North		Path surface - uneven	Replace footpath	1	104	Medium	2	$360
103	Hillview Ln	South		Path surface - uneven	Replace footpath	1	105	Medium	2	$360
103	Hillview Ln	South		Path surface - uneven	Replace footpath	1	106	Medium	2	$360
127	Trelawney St	East		Path surface - uneven	Replace footpath	1	130	Medium	2	$360
186	Rutledge St	North		Path surface - uneven	Replace footpath	1	2641	Medium	2	$360
188	Rutledge St	North		Path surface - uneven	Replace footpath	1	2643	Medium	2	$360
196	Rutledge St	South		Path surface - uneven	Replace footpath	1	2651	Medium	2	$360
197	Rutledge St	South		Path surface - uneven	Replace footpath	1	2652	Medium	2	$360
198	Rutledge St	South		Path surface - uneven	Replace footpath	1	2653	Medium	2	$360
199	Rutledge St	South		Path surface - uneven	Replace footpath	1	2654	Medium	2	$360

Appendix E Engineering Work Schedules - High and Medium Priority Routes										
ID	Street	Side	Cross Street	Issue	Recommended Action	Length(m) /Unit	Photo No	High/Medium Route	Action Priority	Indicative Cost
203	Rutledge St	South		Path surface - uneven	Replace footpath	1	2658	Medium	2	$360
208	Rutledge St	South		Path surface - uneven	Replace footpath	1	2664	Medium	2	$360
212	Rutledge St	South		Path surface - uneven	Replace footpath	1	2668	Medium	2	$360
220	First Ave	South		Path surface - uneven	Replace footpath	1	2676	Medium	2	$360
221	First Ave	South		Path surface - uneven	Replace footpath	1	2677	Medium	2	$360
222	First Ave	South		Path surface - uneven	Replace footpath	1	2678	Medium	2	$360
226	First Ave	South		Path surface - uneven	Replace footpath	1	2686	Medium	2	$360
227	First Ave	South		Path surface - uneven	Replace footpath	1	2688	Medium	2	$360
227	First Ave	South		Path surface - uneven	Replace footpath	1	2689	Medium	2	$360
227	First Ave	South		Path surface - uneven	Replace footpath	1	2690	Medium	2	$360
229	Ryedale Rd	East		Path surface - uneven	Replace footpath	1	2692	Medium	2	$360
232	First Ave	South		Path surface - uneven	Replace footpath	1	2695	Medium	2	$360
236	Denistone Rd	North		Path surface - uneven	Replace footpath	1	2701	Medium	2	$360
237	Denistone Rd	South		Path surface - uneven	Replace footpath	1	2701	Medium	2	$360
239	Denistone Rd	South		Path surface - uneven	Replace footpath	1	2711	Medium	2	$360
240	Blaxland Rd	West		Path surface - uneven	Replace footpath	1	2712	Medium	2	$360
240	Blaxland Rd	East		Path surface - uneven	Replace footpath	1	2714	Medium	2	$360
242	Blaxland Rd	East		Path surface - uneven	Replace footpath	1	2727	Medium	2	$360
242	Blaxland Rd	East		Path surface - uneven	Replace footpath	1	2728	Medium	2	$360
244	Blaxland Rd	East		Path surface - uneven	Replace footpath	1	2731	Medium	2	$360
249	Blaxland Rd	East		Path surface - uneven	Replace footpath	1	2737	Medium	2	$360
249	Blaxland Rd	East		Path surface - uneven	Replace footpath	1	2738	Medium	2	$360
265	Blaxland Rd	West		Path surface - uneven	Replace footpath	1	2753	Medium	2	$360
268	Blaxland Rd	West		Path surface - uneven	Replace footpath	1	2756	Medium	2	$360
269	Blaxland Rd	West		Path surface - uneven	Replace footpath	1	2757	Medium	2	$360
284	First Ave	North		Path surface - uneven	Replace footpath	1	2772	Medium	2	$360
285	First Ave	North		Path surface - uneven	Replace footpath	1	2774	Medium	2	$360
290	First Ave	North		Path surface - uneven	Replace footpath	1	2779	Medium	2	$360
293	Blaxland Rd	West	First Ave	Path surface - uneven	Replace footpath	1	2782	Medium	2	$360
295	First Ave	West		Path surface - uneven	Replace footpath	1	2783	Medium	2	$360
296	Blaxland Rd	West		Path surface - uneven	Replace footpath	1	2784	Medium	2	$360
321	Ethel St	South		Path surface - uneven	Replace footpath	1	2806	Medium	2	$360
324	Ethel St	South		Path surface - uneven	Replace footpath	1	2809	Medium	2	$360
330	Ethel St	North		Path surface - uneven	Replace footpath	1	0	Medium	2	$360
333	Ethel St	North		Path surface - uneven	Replace footpath	1	0	Medium	2	$360
Type of Action: Kerb Ramp										
97	Hillview Ln	North	Lakeside Rd	Kerb ramp Lip	Install kerb ramp - AS standard	1	99	Medium	1	$1,500
328	Ethel St	North		Kerb ramp Lip	Install kerb ramp - AS standard	1	0	Medium	2	$1,500
334	Ethel St	North	Blaxland Rd	Kerb ramp Lip	Install kerb ramp - AS standard	1	0	Medium	2	$1,500
219	West Pde	West	Canalpine St	Kerb ramp off-path	Install kerb ramp - AS standard	1	2674	Medium	2	$1,500
224	East Pde	East	Second Ave	Kerb ramp off-path	Install kerb ramp - AS standard	1	2681	Medium	2	$1,500
223	East Pde	East	Second Ave	Kerb ramp Lip	Install kerb ramp - AS standard	1	2680	Medium	2	$1,500
73	Shaftsbury Rd	West	Rowe St	Kerb ramp off-path	Install kerb ramp - AS standard	1	72	Medium	2	$1,500
76	Shaftsbury Rd	West	Rowe St	Kerb ramp off-path	Install kerb ramp - AS standard	1	74	Medium	2	$1,500
78	Shaftsbury Rd	East	Rowe St	Kerb ramp off-path	Install kerb ramp - AS standard	1	76	Medium	2	$1,500
91	Shaftsbury Rd	East	Glen St	Kerb ramp off-path	Install kerb ramp - AS standard	1	91	Medium	2	$1,500
126	Trelawney St	East	Rutledge St	Kerb ramp off-path	Install kerb ramp - AS standard	1	129	Medium	2	$1,500
234	Denistone Rd	South	Ryedale Rd	Kerb ramp off-path	Install kerb ramp - AS standard	1	2697	Medium	2	$1,500
271	Blaxland Rd	West	May St	Kerb ramp off-path	Install kerb ramp - AS standard	1	2759	Medium	2	$1,500
281	First Ave	North	West Pde	Kerb ramp off-path	Install kerb ramp - AS standard	1	2769	Medium	2	$1,500
282	First Ave	North		Kerb ramp off-path	Install kerb ramp - AS standard	1	2770	Medium	2	$1,500
283	First Ave	North	Railway Pde	Kerb ramp off-path	Install kerb ramp - AS standard	1	2771	Medium	2	$1,500

Appendix E Engineering Work Schedules - High and Medium Priority Routes										
ID	**Street**	**Side**	**Cross Street**	**Issue**	**Recommended Action**	**Length(m) /Unit**	**Photo No**	**High/Medium Route**	**Action Priority**	**Indicative Cost**
326	Ethel St	South	Railway Pde	Kerb ramp off-path	Install kerb ramp - AS standard	1	0	Medium	2	$1,500
327	Ethel St	North		Kerb ramp off-path	Install kerb ramp - AS standard	1	0	Medium	2	$1,500
336	Blaxland Rd	West	May St	Kerb ramp off-path	Install kerb ramp - AS standard	1	0	Medium	2	$1,500
193	Rutledge St	North	Tarrants Ave	Kerb ramp off-path	Install kerb ramp - AS standard	1	2647	Medium	2	$1,500
194	Rutledge St	South	Tarrants Ave	Kerb ramp off-path	Install kerb ramp - AS standard	1	2648	Medium	2	$1,500
195	Rutledge St	South	Tarrants Ave	Kerb ramp off-path	Install kerb ramp - AS standard	1	2650	Medium	2	$1,500
204	Rutledge St	South	Shaftsbury Rd	Kerb ramp off-path	Install kerb ramp - AS standard	1	2659	Medium	2	$1,500
205	Rutledge St	South	Shaftsbury Rd	Kerb ramp off-path	Install kerb ramp - AS standard	1	2660	Medium	2	$1,500
209	Rutledge St	South	Trelawney St	Kerb ramp off-path	Install kerb ramp - AS standard	1	2665	Medium	2	$1,500
210	Rutledge St	South	Trelawney St	Kerb ramp off-path	Install kerb ramp - AS standard	1	2666	Medium	2	$1,500
11	Lakeside Rd	West	Wingate Ave	Kerb ramp Step	Install kerb ramp - AS standard	1	10	Medium	1	$1,500
54	Shaftsbury Rd	West	Terry Rd	Kerb ramp Step	Install kerb ramp - AS standard	1	53	Medium	1	$1,500
80	Shaftsbury Rd	West	Rutledge St	Kerb ramp Step	Install kerb ramp - AS standard	1	79	Medium	1	$1,500
213	Rutledge St	South	West Pde	Kerb ramp Step	Install kerb ramp - AS standard	1	2670	Medium	1	$1,500
215	Rutledge St	South	West Pde	Kerb ramp Step	Install kerb ramp - AS standard	1	2669	Medium	1	$1,500
246	Blaxland Rd	East	Landsdowne St	Kerb ramp Step	Install kerb ramp - AS standard	1	2734	Medium	1	$1,500
291	First Ave	North	Blaxland Rd	Kerb ramp Step	Install kerb ramp - AS standard	1	2780	Medium	1	$1,500
329	Ethel St	North	Ethel Ln	Kerb ramp Step	Install kerb ramp - AS standard	1	0	Medium	1	$1,500
336	Blaxland Rd	West	May St	Kerb ramp Step	Install kerb ramp - AS standard	1	0	Medium	1	$1,500
53	Shaftsbury Rd	East	Terry St	Kerb ramp too steep	Install kerb ramp - AS standard	1	52	Medium	1	$1,500
77	Shaftsbury Rd	West	Rowe St	Kerb ramp too steep	Install kerb ramp - AS standard	1	75	Medium	1	$1,500
80	Shaftsbury Rd	West	Rutledge St	Kerb ramp too steep	Install kerb ramp - AS standard	1	80	Medium	1	$1,500
81	Shaftsbury Rd	East	Rutledge St	Kerb ramp too steep	Install kerb ramp - AS standard	1	78	Medium	1	$1,500
100	Hillview Ln	North		Kerb ramp too steep	Install kerb ramp - AS standard	1	102	Medium	1	$1,500
213	Rutledge St	South	West Pde	Kerb ramp too steep	Install kerb ramp - AS standard	1	2670	Medium	1	$1,500
247	Blaxland Rd	East	Landsdowne St	Kerb ramp too steep	Install kerb ramp - AS standard	1	2735	Medium	1	$1,500
263	Blaxland Rd	West	Balaclava Rd	Kerb ramp too steep	Install kerb ramp - AS standard	1	2751	Medium	1	$1,500
325	Ethel St	South	Ethel Ln	Kerb ramp too steep	Install kerb ramp - AS standard	1	2810	Medium	1	$1,500
12	Lakeside Rd	West	Wingate Ave	No kerb ramp	Install kerb ramp - AS standard	1	13	Medium	1	$1,500
27	Terry Rd	West	Hillview Rd	No kerb ramp	Install kerb ramp - AS standard	1	28	Medium	1	$1,500
231	First Ave	South		No kerb ramp	Install kerb ramp - AS standard	1	2694	Medium	1	$1,500
233	Denistone Rd	North	Ryedale Rd	No kerb ramp	Install kerb ramp - AS standard	1	2696	Medium	1	$1,500
239	Blaxland Rd	East	Lovell Rd	No kerb ramp	Install kerb ramp - AS standard	1	2707	Medium	1	$1,500
242	Blaxland Rd	East	Lovell Rd	No kerb ramp	Install kerb ramp - AS standard	1	2720	Medium	1	$1,500
289	First Ave	North	Ryedale Rd	No kerb ramp	Install kerb ramp - AS standard	1	2778	Medium	1	$1,500
297	Blaxland Rd	West	Rowe St	No kerb ramp	Install kerb ramp - AS standard	1	2785	Medium	1	$1,500
Type of Action: Manhole / Utilities										
17	Lakeside Rd	West		Manhole not flush with path	Contact service provider	1	18	Medium	2	$100
47	Shaftsbury Rd	East		Manhole not flush with path	Contact service provider	1	46	Medium	2	$100
52	Shaftsbury Rd	East		Manhole not flush with path	Contact service provider	1	51	Medium	2	$100
59	Shaftsbury Rd	West		Manhole not flush with path	Contact service provider	1	58	Medium	2	$100
86	Shaftsbury Rd	East	Rowe St	Manhole not flush with path	Contact service provider	1	85	Medium	2	$100
90	Shaftsbury Rd	East		Manhole not flush with path	Contact service provider	1	90	Medium	2	$100
185	Rutledge St	North		Manhole not flush with path	Contact service provider	1	2640	Medium	2	$100
187	Rutledge St	North		Manhole not flush with path	Contact service provider	1	2642	Medium	2	$100
201	Rutledge St	South		Manhole not flush with path	Contact service provider	1	2656	Medium	2	$100
202	Rutledge St	South		Manhole not flush with path	Contact service provider	1	2657	Medium	2	$100
206	Rutledge St	South		Manhole not flush with path	Contact service provider	1	2661	Medium	2	$100
208	Rutledge St	South		Manhole not flush with path	Contact service provider	1	2663	Medium	2	$100
224	First Ave	South		Manhole not flush with path	Contact service provider	1	2686	Medium	2	$100
236	Blaxland Rd	East		Manhole not flush with path	Contact service provider	1	2700	Medium	2	$100
237	Blaxland Rd	East		Manhole not flush with path	Contact service provider	1	2699	Medium	2	$100

Appendix E Engineering Work Schedules - High and Medium Priority Routes										
ID	**Street**	**Side**	**Cross Street**	**Issue**	**Recommended Action**	**Length(m) /Unit**	**Photo No**	**High/Medium Route**	**Action Priority**	**Indicative Cost**
237	Denistone Rd	South		Manhole not flush with path	Contact service provider	1	2700	Medium	2	$100
241	Blaxland Rd	West		Manhole not flush with path	Contact service provider	1	2715	Medium	2	$100
242	Blaxland Rd	East		Manhole not flush with path	Contact service provider	1	2721	Medium	2	$100
246	Blaxland Rd	East		Manhole not flush with path	Contact service provider	1	2733	Medium	2	$100
248	Blaxland Rd	East		Manhole not flush with path	Contact service provider	1	2736	Medium	2	$100
285	First Ave	North		Manhole not flush with path	Contact service provider	1	2773	Medium	2	$100
316	Blaxland Rd	West		Manhole not flush with path	Contact service provider	1	2804	Medium	2	$100
322	Ethel St	South		Manhole not flush with path	Contact service provider	1	2807	Medium	2	$100
323	Ethel St	South		Manhole not flush with path	Contact service provider	1	2808	Medium	2	$100
66	Shaftsbury Rd	West		Manhole uneven	Contact service provider	1	65	Medium	2	$100
98	Hillview Ln	North		Manhole uneven	Contact service provider	1	100	Medium	2	$100
239	Blaxland Rd	East		Manhole uneven	Contact service provider	1	2708	Medium	2	$100
239	Blaxland Rd	East		Manhole uneven	Contact service provider	1	2709	Medium	2	$100
239	Denistone Rd	South		Manhole uneven	Contact service provider	1	2710	Medium	2	$100
Type of Action: Bus Stop										
226	First Ave	South		Bus stop: no shelter, no seating, no paving	Upgrade to accessible bus stop	1	2687	Medium	3	$4,000
228	First Ave	South		Bus stop: no shelter, no seating, no paving	Upgrade to accessible bus stop	1	2691	Medium	3	$4,000
288	First Ave	North		Bus stop: no shelter, no seating, no paving	Upgrade to accessible bus stop	1	2777	Medium	3	$4,000
								Medium Priority Routes - Sub Total		**$152,800**
*note: as audits were being conducted on the 28th and 29th of May 2009, construction work was being undertaken on Railway Pde East.										

Appendix F

Audit Photos CD