NOTICES OF MOTION

ITEM-6 NOM 27/03/18 - FOOTPATH DELIVERY

Attachment A
Lake Macquarie City Council

Footpath Strategy
2013 to 2023

September 2013
Table of contents

1. Introduction ................................................................................................................................. 3
   1.1 Background .............................................................................................................................. 3
   1.2 Scope of Strategy ..................................................................................................................... 3
   1.3 Purpose of this report .............................................................................................................. 4
   1.4 Limitations ............................................................................................................................. 4

2. Study Area and Existing Network ........................................................................ 5
   2.1 Study Area .............................................................................................................................. 5
   2.2 Existing Footpath Network .................................................................................................... 7
   2.3 Crash History ......................................................................................................................... 7

3. Guiding Principles ............................................................................................. 16
   3.1 How to Prepare a Pedestrian Access and Mobility Plan (PAMP) ........................................ 16
   3.2 LMCC Assessment Criteria ................................................................................................. 17
   3.3 Development Control Plan (DCP) .......................................................................................... 17
   3.4 AUSTROADS Part 13: Pedestrians ....................................................................................... 18
   3.5 Austroads Guide to Road Design Part 6A: Pedestrian and Cyclist Paths ......................... 20
   3.6 Disability Standards for Accessible Public Transport 2002 ............................................. 20
   3.7 Lake Macquarie City Draft Lifestyle 2030 Strategy .......................................................... 21

4. Guidelines and Criteria ..................................................................................... 22
   4.1 General ................................................................................................................................. 22
   4.2 Assessment Criteria .............................................................................................................. 22
   4.3 Assessment Criteria Weighting ............................................................................................ 24
   4.4 Walking Distances ............................................................................................................... 24

5. Footpath Priority Register ................................................................................. 26
   5.1 Overview .............................................................................................................................. 26
   5.2 Heat Maps ............................................................................................................................. 26
   5.3 Preliminary Footpath Register ............................................................................................. 26
   5.4 Detailed Priority Assessment ............................................................................................... 27
   5.5 Capital Works Programs ....................................................................................................... 27

6. Funding ............................................................................................................. 31

7. References .......................................................................................................... 33
1. **Introduction**

1.1 **Background**

GHD Pty Ltd (GHD) has been commissioned by Lake Macquarie City Council (LMCC) to undertake a Footpath Strategy. This study has emerged to address LMCC’s need to provide pedestrian facilities in a consistent and sustainable manner, where they will provide the most benefit to the community in general, and to enable safe and convenient pedestrian travel.

While recognising that the road network and built environment must cater to the needs of all pedestrians (including older persons, pedestrians with mobility and vision impairments, residents, school children, tourists and recreational pedestrians), LMCC requires clear guidelines to implement these pedestrian facilities in a sustainable manner. Investment in infrastructure is costly, and a coordinated approach is required to obtain value for money.

The basis for these guidelines is to enable implementation of footpaths to facilitate greater connectivity, encourage more walking and place pedestrian facilities in areas that will deliver the greatest benefit.

The Draft Lifestyle 2030 Strategy recognises the importance of the pedestrian network to the movement system. Many trips in the LMCC area are for short distances, and can be readily undertaken on foot if safe and convenient infrastructure is provided. Much of the pedestrian network follows the road system. It is important that the design and implementation of the pedestrian system receives the same priority as motor vehicles, and results in a system which is equally convenient to use. Pedestrian paths should be designed to promote user safety and connectivity to enhance accessibility and convenience of use.

1.2 **Scope of Strategy**

This strategy has been developed to provide LMCC a systematic approach to the installation of footpath facilities. The guidelines and criteria developed as part of the strategy would be used to identify where future locations of key footpaths should be implemented to enhance the movement network connectivity, safety and convenience. They will also be used to respond to queries from the public regarding footpath implementation.

The strategy is aimed at the installation of formed footpath facilities. Council’s Cycling Strategy 2012-2022 incorporated a detailed assessment of shared pathways and ‘recreational’ trails. Whilst the preparation of the Footpath Strategy included a review of the strategies and objectives identified in the Cycling Strategy, its primary focus was on the assessment and planning for formed footpath.

It is not intended that this strategy replace any requirement for developers to install footpath as part of their development process. However, this strategy will provide guidelines that will assist in the assessment of development application conditions for footpaths.
It should be understood that this study is not a Pedestrian Access and Mobility Plan (PAMP) considering pedestrian desire lines and/or behavioural issues. The future footpath locations identified through the use of these guidelines and criteria will be subject to detailed investigation and design using the relevant standards and specifications.

1.3 Purpose of this report

The purpose of this report is to document the footpath strategy for the City of Lake Macquarie, including identifying existing infrastructure, developing a set of criteria for where footpath infrastructure would be provided and creating a capital works program for footpath construction.

1.4 Limitations

This report has been prepared by GHD for Lake Macquarie City Council and may only be used and relied on by Lake Macquarie City Council for the purpose agreed between GHD and the Lake Macquarie City Council as set out in section 1 of this report.

GHD otherwise disclaims responsibility to any person other than Lake Macquarie City Council arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD excludes and disclaims all liability for all claims, expenses, losses, damages and costs, including indirect, incidental or consequential loss, legal costs, special or exemplary damages and loss of profits, savings or economic benefit, Lake Macquarie City Council may incur as a direct or indirect result of the existing footpath network, for any reason being inaccurate, incomplete or incapable of being processed on Lake Macquarie City Council’s equipment or systems or failing to achieve any particular purpose. To the extent permitted by law, GHD excludes any warranty, condition, undertaking or term, whether express or implied, statutory or otherwise, as to the condition, quality, performance, merchantability or fitness for purpose of the existing footpath network.

GHD does not guarantee that the existing footpath network data is free of computer viruses or other conditions that may damage or interfere with data, hardware or software with which it might be used. Lake Macquarie City Council absolves GHD from any consequence of Lake Macquarie City Council’s or other person’s use of or reliance on, existing footpath network data provided to GHD prior to the commencement of the study.
2. Study Area and Existing Network

2.1 Study Area

The study area for the footpath strategy comprises the whole LGA for Lake Macquarie.

Reference is made to Figure 2.1 overleaf.
Figure 2.1 Lake Macquarie City Movement Systems

Source: Lake Macquarie City Councils Draft 2030 Lifestyle Strategy
2.2  Existing Footpath Network

Lake Macquarie has a vast network of footpaths within the LGA. The footpaths are managed using an asset management database. As part of this Strategy, this pathway data has been transferred into Council’s Geographical Information System (GIS) database that enables the infrastructure assets to be spatially linked throughout the City.

2.3  Crash History

The NSW Roads and Maritime Services (RMS) provided GHD with maps showing clusters of pedestrian crashes within the Lake Macquarie local government area. Crashes provided are over the five year period between 01 July 2006 and 30 June 2011.

The crash assessment has identified eight locations with a medium density of pedestrian crashes, and one location with a high density of pedestrian crashes. All of these identified crash locations have occurred at intersections, where there is high pedestrian and vehicle traffic.

High Density Crash Locations

- Cary Street, Toronto near the intersection with Bay Street

Medium Density Crash Locations

- Intersection of Main Road and Minmi Road, Edgeworth
- Intersection of Main Road and Harrison Street, Cardiff
- Intersection of King Street and Margaret Street, Warners Bay
- Pacific Highway at the intersection with Smart Street, Charlestown
- Charlestown Road near the intersection with the Pacific Highway, Charlestown
- Intersection of Pacific Highway and Floraville Road, Belmont North
- Intersection of Pacific Highway and Evans Street, Belmont
- Intersection of Dora Road and Station Street, Morisset

2.3.1  Intersection of Cary Street and Bay Street, Toronto

The RMS has identified a high density of pedestrian crashes at the signalised intersection of Cary Street and Bay Street, Toronto. Some of the features at this location include:

- Pedestrian crossing phases are provided on three of the four legs of the intersection (no pedestrian phase provided on the southern leg of the intersection);

- Even though no pedestrian crossing has been provided on the southern leg there is a pedestrian desire line across this leg of the intersection, due to the shared pathway to the south and the McDonalds Restaurant in the south eastern corner of the intersection;
Pedestrian surveys indicate a high pedestrian desire line across all four legs of the intersection due to the shared pathway;

Toronto Public School is located in the north eastern corner of the intersection. Pedestrian surveys indicate a high number of school children use the intersection to cross Cary Street/Bay Street;

Further discussion with Roads and Maritime Services (RMS) is required in regard to consideration of 40km/h school speed zone on Cary Street;

Further assessment is required on the impact of a residential driveway located within the intersection; and

Cary Street has a very high average annual daily traffic (AADT) volume (>25,000 vpd).

2.3.2 Intersection of Main Road and Minmi Road, Edgeworth

A medium density crash location has been identified at the signalised intersection of Main Road and Minmi Road, Edgeworth. This intersection is a 4 way intersection, with a minor one-way access road on the southern leg. Pedestrian crossings are available on all four legs with a pedestrian fence along the median on Main Road to the east of the intersection. Both Main Road and Minmi Road have high AADT volumes.
2.3.3  Main Road, Cardiff

Main Road through Cardiff is an extremely high pedestrian volume area. This section of Main Road is signposted at 40km/h between Kelton Street (west) to Margaret Street. This area is a designated a ‘High Pedestrian Area’. Within the 40km/h zone there are a number of different pedestrian crossing facilities, these include:

- Pedestrian crossing movements provided on all legs of the signalised intersection with Harrison Street;
- Formal pedestrian crossing to the west of Veronica Street; and
- Pedestrian refuge islands provided to the east of Kelton Street.

Within the area there are a number of bus zones and short term parking areas. Given the amount of potential vehicle movements that could occur in the area, combined with the high number of pedestrians, there is an increased potential for conflict between pedestrians and vehicles.
2.3.4 Intersection of King Street and Margaret Street, Warners Bay

At the intersection of King Street and Margaret Street, Warners Bay there are pedestrian crossings on all legs of the signalised intersection. The following features and issues were observed at this intersection in regards to pedestrian safety:

- The pedestrian crossings across the King Street legs cross six traffic lanes, a cycle lane and a road shoulder. The road width across the King Street phase is 24m wide between the kerb ramps.
- Further investigation with RMS is considered necessary in regard to the installation of a refuge and/or middle signal activator within the median to better facilitate staged crossings.
- There are no restrictions to the left and right turn vehicle movements from Margaret Street during the green crossing time on the King Street legs of the intersections. This could have the potential for conflict between pedestrians and vehicles turning right from Margaret Street into King Street (northbound).
- Upgrades are required to the kerb ramp located on the north eastern corner of the intersection.
2.3.5 Intersection of the Pacific Highway and Smart Street, Charlestown

The intersection of the Pacific Highway and Smart Street at Charlestown has been identified as a medium density crash location. This intersection is in the central commercial area of Charlestown and has high volumes of pedestrians and vehicles.

Pedestrian crossings have been provided on all legs of the intersection.

2.3.6 Charlestown Road, Charlestown

There is a medium density crash zone on Charlestown Road to the west of the intersection with the Pacific Highway, Charlestown. Features affecting pedestrian movements include:

- There is a set of mid-block pedestrian crossing signals located on Charlestown Road outside of the Hilltop Plaza and Centrelink;
- A pedestrian fence has been installed outside of the Mattara Hotel to the west of Stuart Street;
- Pedestrians are required to give way to cross the slip lanes from the Pacific Highway; and
- Pedestrian crossings have been provided on all legs of the signalised intersection with the Pacific Highway.

**Photo 2.17 Mid-Block Signals on Charlestown Road**

**Photo 2.18 Pedestrian Crossing on Slip Lane from the Pacific Highway**

**Photo 2.19 Pedestrian Crossing on Slip Lane to the Pacific Highway**
2.3.7 Intersection of Pacific Highway and Floraville Road, Belmont

A medium density crash zone has been identified at the signalised intersection between the Pacific Highway and Floraville Road, Belmont. This intersection has pedestrian movements on all legs of the intersection.

A key issue impacting on pedestrian safety at this intersection is the potential for conflict between vehicles turning left out of Floraville Road and pedestrians crossing the Pacific Highway. There is the potential for vehicles approaching the intersection from Floraville Road to not have adequate sight distance of pedestrians crossing the Pacific Highway until they are at the intersection, depending on queue lengths. Consideration could be given to installing pedestrian advance warning signposting on Floraville Road on approach to the intersection.
2.3.8 Intersection of the Pacific Highway and Evans Street, Belmont

Another medium density pedestrian crash location has been identified in Belmont along the Pacific Highway at the intersection with Evans Street. This intersection is a signalised T-Intersection with pedestrian movements provided on the northern Pacific Highway leg and the Evans Street leg. Features affecting pedestrians at the intersection include:

- There are a number of driveways within the intersection. One of the driveways also acts as the kerb ramp onto the Pacific Highway;
- There is no pedestrian crossing phase on the southern leg of the Pacific Highway;
- Upgrades are required to the kerb ramp in the north western corner of the intersection; and
- A number of short lengths of pedestrian fence have been installed along the southbound side of the Pacific Highway.

![Photo 2.24 Pacific Highway and Evans Street Intersection](image1)
![Photo 2.25 Pacific Highway and Evans Street Intersection](image2)

2.3.9 Intersection of Dora Street and Station Street, Morisset

Dora Street, Morisset has been identified as a medium density pedestrian crash location in the vicinity of Station Street. This location is out the front of the Morisset Train Station and high volumes of commuter pedestrians are anticipated. The intersection between Dora Street and Station Street is a non-signalised intersection. Features affecting pedestrians at the intersection include:

- The pedestrian crossing lines across Station Street are set back from the edge of the through alignment on Dora Street;
- There is a retaining wall around the north western corner of the intersection. This has the effect of reducing sight lines for vehicles approaching the intersection. The location of the pedestrian crossing on Station Street and its deep set back from Dora Street, compound the issue of limited sight at the intersection; and
The pedestrian desire line identified between the train station and Station Street creates the potential for pedestrians to cross near Station Street instead of using the formal pedestrian crossing further to the east. This has the effect of reducing both vehicle and pedestrian sight distance.

2.3.10 Pedestrian Crash Site Action Plan

The pedestrian crash history has been included in this strategy to highlight the locations and the relevance to assessment criteria used to determine footpath priority. A Pedestrian Crash Site Action Plan will also be prepared to manage and address other required actions and treatments to improve pedestrian safety at the sites with crash clusters.
3. Guiding Principles

In developing the footpath guidelines and criteria identified in this strategy, a number of principles and established points of reference were considered. The basis for forming the guidelines and assessment criteria were tested using internal and external stakeholder workshops.

This section provides extracts from existing guidelines and standards relevant to the planning and implementation of a footpath network and strategy for Lake Macquarie LGA.

3.1 How to Prepare a Pedestrian Access and Mobility Plan (PAMP)

While this study is not a PAMP the How to Prepare a Pedestrian Access and Mobility Plan (Roads and Traffic Authority of NSW (RTA), 2002) provides guidance on what is important in providing footpaths.

A PAMP is a strategic document that identifies pedestrian infrastructure and provides associated action plans for management. The strategic, high-level, objectives of a PAMP are based around:

- Integrating walking into the transport system as a legitimate form of transport to encourage more walking
- Linking and/or improving areas of high pedestrian activity
- Identifying clusters and patterns of pedestrian accidents

In implementing a PAMP work items are generally placed in order of priority because of budget and resource constraints. While a system should be developed to suit specific council areas according to local needs and the environment, the criteria that a PAMP considers are important include:

- The number of attractors or pedestrian generators
- Land use type
- Proximity to the pedestrian generators or attractors
- Future development with pedestrian generators or attractors
- Road hierarchy
- Identified as a hazardous area
- Identified pedestrian crash
- Demonstrated path
- Addition to existing facility
- Pedestrian route hierarchy
3.2 LMCC Assessment Criteria

LMCC has an existing assessment system for prioritising the implementation of footways, based on a ‘weighted points system’ (LMCC Asset Management – Infrastructure Planning for Cycleways & Footways – Weighting Points System). The total score prioritises when a footpath might be implemented within the short, medium or long term. However, it does not specify if a footpath should be implemented in the first instance.

This system has been used as the base for developing the guidelines and criteria for the proposed footpath strategy.

Comments on Council’s existing weighted criteria points system include:

- The use of a 500m radius catchment from a key pedestrian trip generator might be too far to benefit higher concentrations of pedestrians, particularly as 400m is considered the reasonable catchment area for a bus stop.
- It is unlikely that pedestrian volumes would be readily available for input into the scoring system. Notwithstanding, the inclusion of key pedestrian trip generators, such as commercial development, schools and public transport, takes pedestrian movement into account.
- The link to public transport should be afforded a higher profile, as all public transport trips start and end with walking. Whether there is a pedestrian crossing or not should not prejudice the construction of a footway.
- If a footpath is ordered by Council resolution it should not be placed on the priority list as it is assumed to have been assessed and warranted to receive Council approval and funding. Further, it might not score sufficiently high enough to qualify for funding and thus nullify the Council’s intent to implement it within a reasonable time frame.

3.3 Development Control Plan (DCP)

LMCC DCP No1 (Rev8) Part 2 – General Principles of Development – Section 2.6 Transport, Parking, Access and Servicing, adopted by Council on 23 July 2012, indicates in Section 2.6.4 that all pedestrian paths shall comply with the provisions of Austroads Parts 13, the Building Code of Australia and AS1428 Parts 1, 2, 3 and 4 – Design for Access and Mobility.

It also indicates that pedestrian paths must comply with the design and construction Specifications in Volume 2 Engineering Guidelines – Design and Construction Specifications (LMCC 2004), as amended from time to time. The design of the footpaths is not considered in these guidelines.

In the Urban Centre (Core) Zone pedestrian paths are fully paved and incorporate street-tree planting or other forms of landscape treatment. It is assumed for the purposes of this report, that footpaths will, as a matter of course, be constructed in compliance with the criteria.

Section 2.6.3 Road Design sets out the road hierarchy and designated functions to meet the needs of all road users within the road network. The following Council controlled road hierarchy is shown in Table 3.1 indicating which roads have a provision for footpaths with their road reserves:
### Table 3.1  Road hierarchy and footway provision

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Footpath Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial</td>
<td>Both sides of road - 1.2m wide</td>
</tr>
<tr>
<td>Sub-Arterial</td>
<td>Both sides of road - 1.2m wide</td>
</tr>
<tr>
<td>Non-Urban Living – 1(2) and 7(5)</td>
<td>None</td>
</tr>
<tr>
<td>Non-Urban</td>
<td>None</td>
</tr>
<tr>
<td>Industrial – 4(3)</td>
<td>Both sides of road - 1.2m wide</td>
</tr>
<tr>
<td>Industrial – 4(1) and 4(2)</td>
<td>None</td>
</tr>
<tr>
<td>Collector (Bus Route and/or cycle lane provision)</td>
<td>Both sides of road - 1.2m wide</td>
</tr>
<tr>
<td>Collector (Non Bus Route/ no cycle lane provision)</td>
<td>Both sides of road - 1.2m wide</td>
</tr>
<tr>
<td>Local – Primary (Bus Route)</td>
<td>One side of the road – 1.2m wide</td>
</tr>
<tr>
<td>Local – Primary</td>
<td>One side of the road – 1.2m wide</td>
</tr>
<tr>
<td>Local – Secondary(lots both sides)</td>
<td>One side of the road – 1.2m wide</td>
</tr>
<tr>
<td>Local – Secondary (lots one side)</td>
<td>None</td>
</tr>
<tr>
<td>Local – Access Place and Cul-de-sac</td>
<td>None</td>
</tr>
</tbody>
</table>


Some arterial roads and sub-arterial roads might require consultation with Transport NSW prior to the implementation of footpaths.

All road types have provision for nature strips and therefore possible refuge areas for pedestrians to walk out of the carriageway to avoid conflict with vehicles. However, these nature strips might not permit pedestrians to walk on them or may be difficult or inconvenient for foot traffic.

### 3.4  Austroads Part 13: Pedestrians


The guidelines indicate that appropriate town planning and land use activity zoning can aid pedestrian movement. Safety is enhanced by locating schools, shopping centres, recreational areas or other pedestrian traffic generators in a way which reduces conflicts between pedestrians and vehicles. Most pedestrian design relates to problems occurring in existing urban areas, where land uses and connectivity were determined many years ago with designers having to improve out-dated situations retrospectively. The basic geometry of the footpath network should reflect the pattern of land uses and building densities. Increasing densities and intensification of pedestrian movement should be reflected in the provision of pedestrian facilities.

It is interesting to note that those groups who are most dependent on walking are often those that do not have the option of driving a car. These include the elderly, children and people with disabilities. Particular consideration needs to be given to these road user groups.
According to the guidelines pedestrians are particularly vulnerable road users and should have direct, easy and safe access at all times to the transport system. To achieve maximum safety, the pedestrian network should be separate from, but integrated with, the main road and public transport system.

Table 3.2 indicates the recommended footpath requirements for streets based on its characteristics and street type.

**Table 3.2    Austroads – Footpath requirements**

<table>
<thead>
<tr>
<th>Road Type</th>
<th>LMCC Equivalent</th>
<th>Footpath Provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trunk Collector</td>
<td>Collector (Bus Route and/or cycle lane provision)</td>
<td>If required 1.2m wide footpath or part of 2.0m cycle path - Required only if part of a pedestrian / cycle network.</td>
</tr>
<tr>
<td>Collector</td>
<td>Collector (Non Bus Route/ no cycle lane provision)</td>
<td>1.2m wide footpath (both sides)</td>
</tr>
<tr>
<td>Access Street</td>
<td>Local – Primary</td>
<td>1.2m wide footpath (s) - A minimum of one footpath on one side of the street to be constructed initially with provision to construct a second footpath if required by residents in the future</td>
</tr>
<tr>
<td>Access Place</td>
<td>Local - Access Place and Cul-de-sac</td>
<td>None</td>
</tr>
</tbody>
</table>


From Table 3.2 it can be seen that LMCC’s provision for footpaths within different road classifications is consistent with Austroads guidelines.

Austroads also provides guidance on acceptable walking distances which are dependent on trip purpose, total travel time involved, physical conditions, walking environment, and perceived personal safety and security along the route. For example, many school children walk up to 2km to school and people walking for recreation and exercise may walk 4km or more at a time. The practical limit for most non-recreational walking trips is in the order of 1.5km, approximately 15 minute walk, for the average person with no disabilities.

Austroads provides the following general principles relating to the provision of footpaths:

- All roads (with the exception of Access Place) should have some type of walking facility out of the vehicle path. Although a separate walkway is preferable, a roadway shoulder can provide safer pedestrian accommodation than walking in traffic lanes. The presence of these facilities encourages segregation of pedestrian and vehicular traffic and reduces the potential for pedestrian related accidents.

- Footpath installation warrants based solely on pedestrian volume are not practical, partially because individuals tend to walk where there are footpaths and footpaths tend to be built where people walk. In addition, pedestrian volumes are not regularly collected by most agencies and cannot be easily forecast. Development density can be used as a surrogate for pedestrian usage in determining the need for footpaths.

- The need for footpaths should be related to the functional classification of streets.
• Footpaths and walkways can be constructed of materials other than the traditional concrete surface provided they result in a firm non-slippery surface in all weather conditions.
• Collector and arterial roads in the vicinity of schools should be provided with footpaths.

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


According to the guideline, in order to develop appropriate and practical design solutions road designers should have a sound understanding of what is required to ensure that pedestrian networks and facilities offer a high level of mobility and safety.

Walking is regarded as having significant benefits to the community. The key attributes of an environment required to encourage walking, referred to as the ‘5 Cs’ (DETR 2000), are that it should be:

- Connected – are there walking networks to give good access to key destinations?
- Comfortable – do local facilities meet design standards for footpath width, walking surfaces and planning for people with impairments?
- Convenient – can streets be crossed easily, safely and without delay?
- Convivial – are routes interesting, clean and free from threat?
- Conspicuous – are walking routes clearly signposted and are they published in local maps?

*Austroads Part 6*, reflects many of the same guidelines presented in the previous *Austroads Part 13*. The guidelines contained in both Part 6 and Part 13 were utilised in the development of this strategy.

3.6 **Disability Standards for Accessible Public Transport 2002**

The *Disability Standards for Accessible Public Transport 2002*, as made under subsection 31(1) of the *Disability Discrimination Act 1992*, provides guidance in the context of disabled pedestrian access to public transport facilities.

As the concentration of pedestrians increases closer to public transport stops and stations, greater consideration of the provision of pedestrian facilities is required in close proximity to these facilities.
3.7 Lake Macquarie City Draft Lifestyle 2030 Strategy

LMCC has released a draft Lifestyle Strategy through to year 2030. This strategy provides long-term direction for the overall development of the city and describes Council’s high level polices for managing private and public development in Lake Macquarie.

One of the particular focuses of the strategy in regards to urban structure is on the location of the supply of medium density housing to be located generally within:

- Five minute walk of a centre;
- Five minute walk of bus stops with frequent services to major centres;
- Ten minute walk of Regional and Town Centres; and
- Ten minute walk of major public transport nodes, such as railway stations or interchanges.

This footpath strategy looks to focus on the walking distances associated with a five minute and a 10 minute walk. It is generally accepted that a five minute walk equates to a 400m distance and a ten minute walk equates to an 800m distance. As such these distances have been adopted for the radius around a pedestrian generator that would likely attract pedestrians to walk.
4. Guidelines and Criteria

4.1 General
While there is economic benefit in providing footpath facilities where pedestrian volumes are high, there is also the need to provide safe and convenient pedestrian footpath facilities regardless of physical numbers. Pedestrian user types particularly affected include the elderly and disabled.

With these underlying assumptions in mind, a detailed analysis and review was undertaken on the guidelines and assessment criteria appropriate in the development of a footpath strategy.

If safe passage cannot be provided and there is a high potential risk of conflict between pedestrians and vehicles using the same shared space without the opportunity of a safe refuge, then a footpath should be considered.

4.2 Assessment Criteria
A number of criteria were identified and analysed to assess the need for footpath. This has been used to develop a Footpath Register (refer Section 5). These criteria include:

4.2.1 Proximity to Commercial Development
Commercial developments attract a high number of pedestrians from both a worker and customer type. Areas of commercial development are determined from the land zoning available in the LEP.

4.2.2 Proximity to Aged Citizen Facilities
A large proportion of movements around aged care facilities are by walking and public transport. As such an assessment criterion has been included for the proximity to an aged care facility. These facilities include nursing and retirement homes, community halls and aged citizen clubs.

4.2.3 Schools
The proximity of potential footpaths to schools is a very important assessment criterion due to the age of the pedestrians using the facility. As such a standard radius around a school has been adopted for this criterion. TAFE campuses have also been included in this criterion.

4.2.4 Pedestrian Hourly Volumes
Priority for footpaths has been made for areas that are currently used more by pedestrians. This is measured on a site by site basis, by a Council employee, when it is deemed necessary to be included in the assessment.

4.2.5 Public Transport
Generally, all public transport movements involve walking. Public transport locations included in the assessment are train stations and bus stops.
No weightings have been applied to public transport stops that attract more frequent stops. For instance, should a bus stop service multiple bus routes, it would be given the same weighting as a bus stop that only serviced a single route. This means that should timetables and bus routes change, it would not alter the assessment.

4.2.6 Road Hierarchy
Consideration has been given to the type of road that is adjacent to the footpath. This criterion is directly related to vehicle traffic volumes and vehicle speeds. High points are assigned to major roads as outlined in Table 3.1.

4.2.7 Safety Factors
It is important to identify potential routes that could create a hazardous environment for pedestrians. An allowance has been given for routes with:

- Exposure to traffic – This relates to the separation of pedestrians and vehicles, looking at the proximity of vehicles or the distance a pedestrian might be from vehicle traffic. Should a proposed road for footpath currently require pedestrians to walk on the road shoulder or on the road pavement, it would receive additional points to promote a footpath.
- Surface hazards – This specifically relates to conditions within the proposed footpath area that would create hazards for people walking along, such as slips or trips.

4.2.8 Proximity to Community Facilities
Similar to commercial developments and schools, a criterion has been used to capture the pedestrian trips to and from community facilities. These types of facilities include:

- Sporting fields;
- Parks and play equipment;
- Swimming pools; and
- Skate parks.

4.2.9 Residential Development Density
An allowance has been made in the selection of footpaths for areas with a higher residential population density. Initially, this should be taken from the land zoning available through the LEP.

LMCC has available more detailed information regarding the residential densities through the publicly available census data.

4.2.10 Missing Link between Existing Footpaths
Providing a connected network of footpath is an important priority for Council. As such, potential sites that link existing sections of footpath are given additional weighting.
4.2.11 **Identified Access for Disabled Use**

Areas identified for disabled use are specified by LMCC Age and Disability Officers. Contact should be made with these officers to determine if the proposed pathway is an identified disable use site.

4.2.12 **Identified Existing Pedestrian Desire Lines**

Where there is evidence of existing desire lines for pedestrians, these sites have been awarded points to support the installation of footpath. Evidence could include worn tracks in grassed areas, community communications with LMCC, or identified through other Council plans and strategies.

4.3 **Assessment Criteria Weighting**

Weightings applied to the selection criteria have been developed using a pair-wise analysis undertaken by a workshop of internal and external stakeholders. The pair-wise analysis provides weightings for the criteria by systematically comparing each criterion against the others.

Table 4.1 outlines the weightings to be applied to each of the selection criteria for footpaths.

<table>
<thead>
<tr>
<th>Selection Criterion</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proximity to commercial developments</td>
<td>15%</td>
</tr>
<tr>
<td>Proximity to aged care facilities</td>
<td>10%</td>
</tr>
<tr>
<td>Proximity to schools</td>
<td>11%</td>
</tr>
<tr>
<td>Pedestrian hourly volumes</td>
<td>3%</td>
</tr>
<tr>
<td>Link to public transport</td>
<td>14%</td>
</tr>
<tr>
<td>Road hierarchy</td>
<td>3%</td>
</tr>
<tr>
<td>Safety factors</td>
<td>8%</td>
</tr>
<tr>
<td>Proximity to community facilities</td>
<td>9%</td>
</tr>
<tr>
<td>Residential development density</td>
<td>14%</td>
</tr>
<tr>
<td>Link between existing footpaths</td>
<td>3%</td>
</tr>
<tr>
<td>Identified access for disabled</td>
<td>7%</td>
</tr>
<tr>
<td>Identified existing pedestrian desire line</td>
<td>3%</td>
</tr>
</tbody>
</table>

Discounts to these weightings have been applied as the subject sites for footpath fall further away for the pedestrian generators or attractors. Refer to Section 4.4. for discussion on the walking distances adopted for this strategy.

4.4 **Walking Distances**

In line with the recommendations from the draft Lake Macquarie Lifestyle Strategy 2030, this footpath strategy has adopted two different walking distances from pedestrian generators or attractors. The Lifestyle Strategy refers to the connections of a 5 minute walk and a 10 minute walk.

Austroads Guide to Traffic Engineering Practice, Part 13 – Pedestrians, specifies that the average walked speed ranges between 0.74 m/s and 2.39 m/s.
Equating these speeds to the walking times recommended in the Lifestyle strategy, the following distance ranges are obtained:

- 5 minute walk – 222m to 717m
- 10 minute walk – 444m to 1434m

This footpath strategy has adopted the walking distances of 400m and 800m associated with a 5 minute walk and a 10 minute walk. These distances reflect direct radii from the pedestrian generators, and not a distance following roads.
5. **Footpath Priority Register**

5.1 **Overview**

A Footpath Priority Register has been prepared for footpath installation in the Lake Macquarie LGA. This provides a list of footpath projects for the next 20 years, ranked in priority order. The process for developing the register is outlined in the following sections.

5.2 **Heat Maps**

Initially a desktop assessment of the LGA was carried out to prepare heat maps which overlayed different assessment criteria. Seven of the assessment criteria identified in Section 4 were used in the development of the heat maps, as listed below:

- Proximity to Commercial development
- Proximity to Aged Care Centres
- Proximity to Schools
- Links to Public Transport
- Road Hierarchy
- Proximity to Community Facilities
- Residential Development Density

The assessment criteria were selected because they were able to be spatially located on maps using existing information. The other criteria used in the next stage in the process required site specific inspections to assess.

Due to the vast size of the City, this initial desktop assessment only covered areas within the Lake Macquarie LGA that fell into the zones of residential, business and industrial (urban centres). The areas outside of these zones were generally considered to have features that limited the priority for the installation of formed footpath. These include:

- Low pedestrian trips
- Sparse development
- Footpaths generally do not suit the characteristics of the land.

Overview heat maps of the LGA have been provided in Figure 5.1, Figure 5.2 and Figure 5.3. Further detailed maps at smaller scales have been prepared and included in Appendix B.

5.3 **Preliminary Footpath Register**

Based on the priorities identified in the heat maps, a preliminary register of footpath segments was prepared. These were placed in ranked order and a 20 year list of works identified. LMCC has performance targets to construct 1.6km of footpath within the LGA each year based on available funding. (This does not include the shared pathways constructed under the Cycling Strategy.) Given this performance target, the extent of the works identified in the register covered approximately 34km over the 20-year period.
5.4 Detailed Priority Assessment

To validate the information provided in the Preliminary Footpath Register, the first 10 years of footpath segments were then inspected and assessed in detail. Other footpath segments contained in earlier capital works programs that were identified by Council officers as possible inclusions also received the detailed assessment.

Based on the detailed assessment a 20 Year Footpath Priority Register has been prepared. This is presented in Appendix D. The second 10 years in this register have not yet been validated through field inspections. This process will occur as part of the preparation of capital works programs covered in section 5.5.

5.5 Capital Works Programs

Future annual capital works programs will be prepared using the Footpath Priority Register. Where appropriate the higher priority footpath segments will be investigated and assessed further before finalising the capital works programs.

The Footpath Assessment Matrix presented in Appendix A will also be used for assessing future requests for footpath on a case-by-case basis to determine their priority compared to the footpath segments in the Register and their possible inclusion in the capital works programs.
LEGEND

Pedestrian Generated Footpath Priority

- Railway
- Water Feature
- Local Government Area
- Suburbs

Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), TomTom, 2013

© 2013. Whilst every care has been taken to prepare this map, GHD, LPMA, LMCC, and ESRI make no representations or guarantees of any kind as to the accuracy, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind for any expenses, losses, damages and/or costs (including indirect or consequential damages) that may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.
6. Funding

6.1.1 Funding sources

The following funding sources are available to the LMCC for the construction of footpaths.

LMCC’s Footpath and Traffic Facilities Capital Works Program

The major source of funding for footpath construction will come from the local council footpath maintenance and upgrade programs.

Developer Consent Conditions

The future growth of Lake Macquarie presents a significant opportunity for ensuring that pedestrian infrastructure and facilities are included as a condition of development application approval. All new development, residential and commercial, should include the provision of pedestrian footpaths (this excludes single unit residential developments). The extent of which should be determined based on the development site’s proximity to the footpath network and the scale of development. Any external pedestrian connections requested of a developer would need to be fair and reasonable based on the scale of the proposed development.

New South Wales Roads and Maritime Services (RMS)

New roads and upgrades to existing roads may include provision for appropriate pedestrian facilities.

Council projects can be funded by Roads and Maritime Services (formerly Roads and Traffic Authority) through the Memorandum of Understanding (June 2009). This applies to cyclist, road safety, pedestrian and urban amenity, and regional road repair programs.

Community Funded

Should the community wish to construct a section of footpath not identified within the 20 year footpath priority register, they could acquire private funding to cover the construction of the footpath.
6.1.2 Funding mechanism

As Council funding is constrained to budgets, Council cannot be expected to fund the construction of every footpath to provide pedestrian connectivity, particularly with the large number of links required to deliver a fully comprehensive pedestrian footpath network.

Therefore the following rationale for apportioning funding is suggested:

- Every development application should be assessed in light of the Designated Footpath Network Plan and conditions imposed to ensure missing links within the pedestrian network are completed by the developer. The conditions, however, must be fair and reasonable and reflect the scale of development.

- Where road works are to be undertaken to upgrade a road, the provision of missing links within the pedestrian network should be considered under that project funding, either through funding from one or a combination of the following sources:
  - Financial Assistant Grant funding
  - Roads and Maritime Services

- Footpath applications on the priority list for implementation could be funded from a combination of the following sources:
  - LMCC’s Footpath and Traffic Facilities Capital Works Program
  - State, Federal grants and/or private funding sources
7. References

Australian Government, Disability Standards for Accessible Public Transport 2002
Lake Macquarie City Council, Cycling Strategy 2021, 2012
Lake Macquarie City Council, Development Control Plan No1 (Revision 8) Part 2 – General Principles of Development, 2012
Lake Macquarie City Council, Draft Lifestyle 2030 Strategy, 2012
New South Wales, Roads and Traffic Authority (RTA), How to Prepare a Pedestrian Access and Mobility Plan, 2002
Lake Macquarie City Council Local Environmental Plan (2004)
Lake Macquarie City Council Draft Local Environmental Plan (2012)
Appendix A

Footpath Assessment Matrix
# Footpath Assessment Matrix

<table>
<thead>
<tr>
<th>STREET NAME:</th>
<th>SUBURB:</th>
<th>FROM:</th>
<th>TO:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>LENGTH OF PROJECT:</th>
<th>WIDTH OF PROJECT:</th>
</tr>
</thead>
</table>

## Footpath Criteria

<table>
<thead>
<tr>
<th>Footpath Criteria</th>
<th>Available Points</th>
<th>Footpath Complies (Yes/No)</th>
<th>Score</th>
</tr>
</thead>
</table>

### 1. Proximity to Commercial Development
- 0 - 400m: 15
- 400m - 800m: 7.5

### 2. Proximity to Aged Citizens
- 0 - 400m: 10
- 400m - 800m: 5

### 3. Proximity to Schools
- 0 - 400m: 11
- 400m - 800m: 5.5

### 4. Pedestrian Hourly Volume
- Pedestrian hourly traffic volume 22 and greater: 3
- Pedestrian hourly traffic volume 11 to 21: 2
- Pedestrian hourly traffic volume 0 to 10: 1

### 5. Link to Public Transport
- 0 - 400m: 14
- 400m - 800m: 7

### 6. Road Hierarchy
- Arterial road: 3
- Sub-arterial road: 2
- Collector road: 1
- Local road: 0.5

### 7. Safety Factors
- Exposure to traffic: 4
- Surface hazards: 4

### 8. Proximity to Community Facilities
- 0 - 400m: 9
- 400m - 800m: 4.5

### 9. Residential Development Density (dwellings per hectare)
- 95% - 100%: 14
- 75% - 94%: 10
- 50% - 74%: 5
- Less than 50%: 0

---

GHD | Report for Lake Macquarie City Council - Footpath Strategy, 22/16374 | 35
## Footpath Assessment Matrix

10. PROVIDES A MISSING LINK BETWEEN EXISTING FOOTPATHS

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

11. IDENTIFIED ACCESS FOR DISABLED USE (as adv by Council’s Age and Disability Officers)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

12. IDENTIFIED EXISTING PEDESTRIAN DESIRE LINE

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL POINTS AVAILABLE** 100

**TOTAL POINTS SCORED** POINTS

**PRIORITY** POINTS

**ASSESSED BY:**

**DATE:**
Appendix B
Lake Macquarie Local Government Area – Footpath Heat Maps
LEGEND
Pedestrian Generated Footpath Priority
High : 10001
Low : 88

LMCC LEP 2004 Zone
3(2) Urban Centre (Support)
3(1) Residential (Urban Living)
3(3) Industrial (Urban Services)
2(1) Residential
2(2) Residential
2(3) Mixed Use
1(1) Urban Centre

Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

© 2013. Whilst every care has been taken to prepare this map, GHD, LPMA, LMCC, NSW Transport and ESRI make no ... completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind
whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or ... be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 T 61 2 4979 9556 F 61 2 4979 9588 E tntmail@ghd.com W www.ghd.com.au
LEGEND

Pedestrian Generated Footpath Priority

High : 10001
Low : 88

LMCC LEP 2004 Zone

2(1) Residential
2(2) Residential (Urban Living)
3(1) Urban Centre
3(2) Urban Centre (Support)
B3 Mixed Use
4(3) Industrial (Urban Services)

Bus Stop
Local Government Area
Railway
Suburb
Water Feature

Figure 2-3

Lake Macquarie City Council
LMCC Footpath Strategy

Lake Macquarie Council Area
Footpath Priorities

© 2013 GHD Pty Ltd or its related bodies corporate. All rights reserved. No part of this map may be reproduced or communicated in any manner or form without permission. Map content is provided 'as is' without warranty of any kind. GHD accepts no liability or responsibility for any indirect, incidental or consequential damages or impairments of functionality related to or arising from the use or misuse of this map.

Footpath Priorities


Created by: mabarnier

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 T 61 2 4979 9999 F 61 2 4979 9988 E ntmail@ghd.com W www.ghd.com.au
LEGEND

Pedestrian Generated Footpath Priority

High : 1000
Low : 88

LMCC LEP 2004 Zone

3(2) Urban Centre (Support)
3(1) Urban Centre
2(2) Residential (Urban Living)
2(1) Residential
B4 Mixed Use
4(3) Industrial (Urban Services)

Bus Stop
Railway
Water Feature

Local Government Area
Suburb

Figure 2-4
LEGEND

Pedestrian Generated Footpath Priority
High: 10001
Low: 88

LMCC LEP 2004 Zone
3(2) Urban Centre (Support)
2(1) Residential
2(2) Residential (Urban Living)
3(1) Urban Centre
4(3) Industrial (Urban Services)
B4 Mixed Use

Bus Stop
Railway
Local Government Area
Suburb
Water Feature

Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2012

© 2013. Whilst every care has been taken to prepare this map, GHD, LPMA, LMCC, NSW Transport and ESRI make no ... completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or ... be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Level 3, GHD Tower, 24 Honeychurch Drive, Newcastle NSW 2300 T 01 2 4979 9956 F 01 2 4979 9958 E info@ghd.com www.ghd.com.au

© 2013 GHD Pty Ltd. All rights reserved. This map is proprietary information of GHD Pty Ltd and contains property-related data, which must not be reproduced in its entirety or in any part without prior written permission from GHD Pty Ltd. This map and the display of content is for your personal use only and may not be used for any commercial purpose. GHD Pty Ltd takes reasonable care in preparing this map. However, GHD Pty Ltd, its employees, contractors and agents do not guarantee the accuracy, completeness or currency of the information or data contained in this map, or that the information or data contained in this map will be suitable for any purpose. GHD Pty Ltd accepts no responsibility for, and makes no representations or warranties in relation to, any inaccuracies or omissions in this map or the information or data contained in this map, or any reliance on this map or the information or data contained in this map. The information or data contained in this map is provided as a reference tool only and should not be relied upon for any purpose.
6,350,000

whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or...

be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.


Created by: manbarnier

G:\22\16374\GIS\Maps\Deliverables\22_16374_02_LMCCFootpathsHotSpotsA3P_Rev0.mxd

Level 3, GHD Tower, 24 Honeyeaster Drive, Newcastle NSW 2300 T 61 2 4979 9966 F 61 2 4979 9988 E info@ghd.com.au W www.ghd.com.au

© 2013 GHD. All rights reserved. No part of this map may be reproduced or transmitted in any way or by any means (except as permitted under copyright legislation) without the prior written consent of the owner.

Level 3, GHD Tower, 24 Honeyeaster Drive, Newcastle NSW 2300 T 61 2 4979 9966 F 61 2 4979 9988 E info@ghd.com.au W www.ghd.com.au

© 2013 GHD. All rights reserved. No part of this map may be reproduced or transmitted in any way or by any means (except as permitted under copyright legislation) without the prior written consent of the owner.
### Pedestrian Generated Footpath Priority

<table>
<thead>
<tr>
<th>Level of Priority</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>88</td>
</tr>
<tr>
<td>High</td>
<td>10001</td>
</tr>
</tbody>
</table>

#### LMCC LEP 2004 Zone

- **3(1) Urban Centre**
- **3(2) Urban Centre (Support)**
- **2(1) Residential**
- **2(2) Residential (Urban Living)**
- **2(3) Mixed Use**
- **2(4) Industrial (Urban Services)**
- **3(1) Urban Centre**

#### Map Details

- **Legend**
- **Projections**: Transverse Mercator
- **Grid**: GDA 1994 MGA Zone 56
- **Map Source**: LPMA: DCDB/DCTB - 2006; LMCC: LEP Zone data - 2013; NSW Transport: Bus Stops - 2013; ESRI: World Street Map - 2013
- **Revision**: 0
- **Date**: 03 May 2013
- **Job Number**: 22-16374
- **Created by**: mabarnier
- **Mail**: ntamba.ghd.com.au
- **Fax**: 61 2 4979 9999
- **Phone**: 61 2 4979 9988
- **Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300"
Lake Macquarie City Council
LMCC Footpath Strategy
Lake Macquarie Council Area
Footpath Priorities

Legend
Pedestrian Generated Footpath Priority
High: 10001
Low: 88

LMCC LEP 2004 Zone
3(2) Urban Centre (Support)
84 Mixed Use
3(2) Residential (Urban Living)
43 Industrial (Urban Services)
3(1) Urban Centre

Bus Stop
Railway
Local Government Area
Suburb

Source: Esri, DeLorme, NAVTEQ, Intermap, PC, NRCAN, ESRI Japan (METI), Esri China (Hong Kong), TomTom, 2012
Lake Macquarie City Council
LMCC Footpath Strategy

Lake Macquarie Council Area
Footpath Priorities

Figure 2-21

Pedestrian Generated Footpath Priority
High : 10001
Low : 88

LMCC LEP 2004 Zone
2(1) Residential
2(2) Residential (Urban Living)
3(2) Urban Centre (Support)

Bus Stop
Local Government Area
Railway
Suburb

3(1) Urban Centre

3(2) Urban Centre (Support)
8(4) Mixed Use
4(3) Industrial (Urban Services)

Water Feature

LEGEND

© 2013. Whilst every care has been taken to prepare this map, GHD, LPMA, LMCC, NSW Transport and ESRI make no ... completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or ... be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.


Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 T 61 2 4979 9555 F 61 2 4979 9588 E info@ghd.com.au W www.ghd.com.au

©2012 www.ghd.com.au

Catherine Hill Bay

South Pacific Ocean

Wyong Shire Council

Catherine Hill Bay
Appendix C

Proposed Footpath Maps
Figure C.1 Holmesville

Capital works features labeled with priority ranking

LEGEND

- Proposed Footpath Capital Works Program
- Existing Footpath
- Railway
- Suburbs

Lake Macquarie City Council
LMCC Footpath Strategy

Footpath Priority Register
Holmesville


Level 3, GHD Tower, 24 Honeyeaster Drive, Newcastle NSW 2300 T 61 2 4979 9999 F 61 2 4979 9988 E tmallmail@ghd.com W www.ghd.com.au

© 2013. Whilst every care has been taken to prepare this map, GHD, LPMA and LMCC make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential loss) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

GHD Tower, 24 Honeyeaster Drive, Newcastle NSW 2300 T 61 2 4979 9999 F 61 2 4979 9988 E tmallmail@ghd.com W www.ghd.com.au

Paper Size A3

Level 3, GHD Tower, 24 Honeyeaster Drive, Newcastle NSW 2300 T 61 2 4979 9999 F 61 2 4979 9988 E tmallmail@ghd.com W www.ghd.com.au

© 2013. Whilst every care has been taken to prepare this map, GHD, LPMA and LMCC make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential loss) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.


Level 3, GHD Tower, 24 Honeyeaster Drive, Newcastle NSW 2300 T 61 2 4979 9999 F 61 2 4979 9988 E tmallmail@ghd.com W www.ghd.com.au

© 2013. Whilst every care has been taken to prepare this map, GHD, LPMA and LMCC make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential loss) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.
Lake Macquarie City Council
LMCC Footpath Strategy

Footpath Priority Register
Dudley

Figure C.10

Dudley

**LEGEND**
- Proposed Footpath Capital Works Program
- Railway
- Existing Footpath
- Suburbs

Capital works features labeled with priority ranking

**DATA SOURCE:**
- LPMA: DCDB/DCTB - 2006
- LMCC: Aerial Image - 2011

**CREATED BY:**

- Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300
- T +61 2 4979 9999
- F +61 2 4979 9988
- ntlmail@ghd.com

**WEBSITE:**
www.ghd.com.au

**PAPER SIZE:**
A3

**Map Projection:**
Transverse Mercator

**Horizontal Datum:**
GDA 1994

**Grid:**
GDA 1994 MGA Zone 54

**Scale:**
1:7,500

© 2013. Whilst every care has been taken to prepare this map, GHD, LPMA and LMCC make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential losses) which may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.

Data source - LPRA: 3320003793 - LPRA: 30003793 - Aerial Image - 2011 - Created by -审核人：Mr. Sheen.
Appendix D

20 Year Footpath Priority Register
<table>
<thead>
<tr>
<th>Rank</th>
<th>Suburb</th>
<th>Road Name</th>
<th>Segment From</th>
<th>Segment To</th>
<th>Length</th>
<th>Cost</th>
<th>Priority Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Charlestown</td>
<td>James Street</td>
<td>Dudley Road</td>
<td>Moto Street</td>
<td>450</td>
<td>$85,500.00</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Charlestown</td>
<td>Dickinson Street</td>
<td>Charles Street</td>
<td>James Street</td>
<td>245</td>
<td>$46,550.00</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Belmont</td>
<td>Hall Street</td>
<td>George Street</td>
<td>Existing Footpath</td>
<td>110</td>
<td>$20,900.00</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Charlestown</td>
<td>Mulbinga Street</td>
<td>Smith Street</td>
<td>Moto Street</td>
<td>355</td>
<td>$67,450.00</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Charlestown</td>
<td>Charles Street</td>
<td>Pacific Highway</td>
<td>Dickinson Street</td>
<td>285</td>
<td>$54,150.00</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Teralba</td>
<td>Anzac Parade</td>
<td>Margaret Street</td>
<td>Five Islands Road</td>
<td>250</td>
<td>$47,500.00</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Belmont North</td>
<td>Old Belmont Road</td>
<td>Macquarie Street</td>
<td>Pacific Highway</td>
<td>220</td>
<td>$41,800.00</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Belmont</td>
<td>Church Street</td>
<td>Church Street</td>
<td>Gibson Street</td>
<td>265</td>
<td>$50,350.00</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>Belmont</td>
<td>Ernest Street</td>
<td>Maude Street</td>
<td>Kyneton Street</td>
<td>85</td>
<td>$16,150.00</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Belmont</td>
<td>Church Street</td>
<td>Macquarie Street</td>
<td>Glover Street</td>
<td>125</td>
<td>$23,750.00</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Redhead</td>
<td>Hutchinson Street</td>
<td>Cowlishaw Street</td>
<td>Collier Street</td>
<td>120</td>
<td>$22,800.00</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Redhead</td>
<td>Woods Street</td>
<td>Cowlishaw Street</td>
<td>Collier Street</td>
<td>120</td>
<td>$22,800.00</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>Teralba</td>
<td>William Street</td>
<td>Rhonda Road</td>
<td>Anzac Parade</td>
<td>170</td>
<td>$32,300.00</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>Belmont North</td>
<td>Elidge Crescent</td>
<td>Cudersac</td>
<td>Park Street</td>
<td>80</td>
<td>$15,200.00</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>Belmont North</td>
<td>Park Street</td>
<td>Bell Street</td>
<td>Pacific Highway</td>
<td>200</td>
<td>$38,000.00</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>Belmont North</td>
<td>Wommarra Avenue</td>
<td>Pacific Highway</td>
<td>Chief Street</td>
<td>275</td>
<td>$52,250.00</td>
<td>2</td>
</tr>
<tr>
<td>17</td>
<td>Warners Bay</td>
<td>Mills Street</td>
<td>H/N 84</td>
<td>Jonathon street</td>
<td>235</td>
<td>$44,650.00</td>
<td>3</td>
</tr>
<tr>
<td>18</td>
<td>Teralba</td>
<td>York Street</td>
<td>125m north east of Short Street</td>
<td>Existing Footpath</td>
<td>280</td>
<td>$53,200.00</td>
<td>3</td>
</tr>
<tr>
<td>19</td>
<td>Teralba</td>
<td>York Street</td>
<td>Pitt Street</td>
<td>Cumberland Street</td>
<td>180</td>
<td>$34,200.00</td>
<td>3</td>
</tr>
<tr>
<td>20</td>
<td>Teralba</td>
<td>Short Street</td>
<td>William Street</td>
<td>York Street</td>
<td>75</td>
<td>$14,250.00</td>
<td>3</td>
</tr>
<tr>
<td>21</td>
<td>Teralba</td>
<td>Cumberland Street</td>
<td>York Street</td>
<td>Anzac Parade</td>
<td>250</td>
<td>$47,500.00</td>
<td>3</td>
</tr>
<tr>
<td>22</td>
<td>Caves Beach</td>
<td>Phillip Street</td>
<td>Macquarie Grove</td>
<td>Caves Beach Road</td>
<td>285</td>
<td>$54,150.00</td>
<td>3</td>
</tr>
<tr>
<td>23</td>
<td>Belmont</td>
<td>Hitchcock Avenue</td>
<td>Existing Footpath</td>
<td>Apex Street</td>
<td>245</td>
<td>$46,550.00</td>
<td>4</td>
</tr>
<tr>
<td>24</td>
<td>Belmont</td>
<td>May Street</td>
<td>Cul-de-sac</td>
<td>Macquarie Street</td>
<td>105</td>
<td>$19,950.00</td>
<td>4</td>
</tr>
<tr>
<td>25</td>
<td>Redhead</td>
<td>Woods Street</td>
<td>Stokes Street</td>
<td>Cowlishaw Street</td>
<td>230</td>
<td>$43,700.00</td>
<td>4</td>
</tr>
<tr>
<td>26</td>
<td>Redhead</td>
<td>Collier Street</td>
<td>Redhead Road</td>
<td>Macquarie Grove</td>
<td>265</td>
<td>$50,350.00</td>
<td>4</td>
</tr>
<tr>
<td>27</td>
<td>Caves Beach</td>
<td>Pacific Street</td>
<td>Macquarie Grove</td>
<td>Alexander Street</td>
<td>475</td>
<td>$90,250.00</td>
<td>4</td>
</tr>
<tr>
<td>28</td>
<td>Caves Beach</td>
<td>Martha Street</td>
<td>Macquarie Grove</td>
<td>Pearson Lane</td>
<td>205</td>
<td>$38,950.00</td>
<td>4</td>
</tr>
<tr>
<td>29</td>
<td>Belmont</td>
<td>Merleview Street</td>
<td>Existing Footpath</td>
<td>Elm Street</td>
<td>240</td>
<td>$45,600.00</td>
<td>4</td>
</tr>
<tr>
<td>30</td>
<td>Redhead</td>
<td>Steel Street</td>
<td>Cowlishaw Street</td>
<td>Redhead Road</td>
<td>315</td>
<td>$59,850.00</td>
<td>5</td>
</tr>
<tr>
<td>31</td>
<td>Charlestown</td>
<td>Moto Street</td>
<td>Milson Street</td>
<td>Kaleen Street</td>
<td>210</td>
<td>$39,900.00</td>
<td>5</td>
</tr>
<tr>
<td>32</td>
<td>Redhead</td>
<td>Cowlishaw Street</td>
<td>Hutchinson Street</td>
<td>Steel Street</td>
<td>220</td>
<td>$41,800.00</td>
<td>5</td>
</tr>
<tr>
<td>33</td>
<td>Redhead</td>
<td>Burns Street</td>
<td>Boundy Lane</td>
<td>Fordam Lane</td>
<td>325</td>
<td>$61,750.00</td>
<td>5</td>
</tr>
<tr>
<td>34</td>
<td>Belmont</td>
<td>Stanley Street</td>
<td>Pacific Highway</td>
<td>Culdersac</td>
<td>460</td>
<td>$87,400.00</td>
<td>5</td>
</tr>
<tr>
<td>Rank</td>
<td>Suburb</td>
<td>Road Name</td>
<td>Segment From</td>
<td>Segment To</td>
<td>Length</td>
<td>Cost</td>
<td>Priority</td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>-------------------------</td>
<td>-----------------------</td>
<td>---------------------</td>
<td>--------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td>35</td>
<td>Belmont</td>
<td>Kyneton Street</td>
<td>Merleview Street</td>
<td>Elm Street</td>
<td>255</td>
<td>$48,450.00</td>
<td>6</td>
</tr>
<tr>
<td>36</td>
<td>Charlestown</td>
<td>Algonia Road</td>
<td>Abraham's Lane</td>
<td>Dudley Road</td>
<td>200</td>
<td>$38,000.00</td>
<td>6</td>
</tr>
<tr>
<td>37</td>
<td>Belmont</td>
<td>Elm Street</td>
<td>Alexander Avenue</td>
<td>Kyneton Street</td>
<td>85</td>
<td>$16,150.00</td>
<td>6</td>
</tr>
<tr>
<td>38</td>
<td>Caves Beach</td>
<td>Milk Road</td>
<td>Phillip Street</td>
<td>Caldwell Street</td>
<td>370</td>
<td>$70,300.00</td>
<td>6</td>
</tr>
<tr>
<td>39</td>
<td>Belmont</td>
<td>Deane Street</td>
<td>York Street</td>
<td>Culdersac</td>
<td>425</td>
<td>$80,750.00</td>
<td>6</td>
</tr>
<tr>
<td>40</td>
<td>Teralba</td>
<td>Margaret Street</td>
<td>Hutchinson Street</td>
<td>White Cap Close</td>
<td>360</td>
<td>$64,400.00</td>
<td>7</td>
</tr>
<tr>
<td>41</td>
<td>Redhead</td>
<td>Redhead Road</td>
<td>Stanley Street</td>
<td>Pacific Street</td>
<td>100</td>
<td>$19,000.00</td>
<td>7</td>
</tr>
<tr>
<td>42</td>
<td>Charlestown</td>
<td>Frederick Street</td>
<td>Dickson Street</td>
<td>Milson Street</td>
<td>110</td>
<td>$20,900.00</td>
<td>7</td>
</tr>
<tr>
<td>43</td>
<td>Caves Beach</td>
<td>Middle Street</td>
<td>Park Avenue</td>
<td>Caves Beach Road</td>
<td>380</td>
<td>$72,200.00</td>
<td>7</td>
</tr>
<tr>
<td>44</td>
<td>Belmont</td>
<td>Redman Street</td>
<td>Livingstone Street</td>
<td>Stanley Street</td>
<td>100</td>
<td>$19,000.00</td>
<td>7</td>
</tr>
<tr>
<td>45</td>
<td>Caves Beach</td>
<td>Macquarie Grove</td>
<td>Rea Street</td>
<td>Caldwell Street</td>
<td>695</td>
<td>$132,050.00</td>
<td>7</td>
</tr>
<tr>
<td>46</td>
<td>Caves Beach</td>
<td>Macquarie Grove</td>
<td>Pacific Street</td>
<td>Middle Street</td>
<td>410</td>
<td>$77,900.00</td>
<td>8</td>
</tr>
<tr>
<td>47</td>
<td>Charlestown</td>
<td>Edward Street</td>
<td>Milson Street</td>
<td>Existing Footpath</td>
<td>355</td>
<td>$67,450.00</td>
<td>8</td>
</tr>
<tr>
<td>48</td>
<td>Teralba</td>
<td>William Street</td>
<td>Railway Street</td>
<td>Existing Footpath</td>
<td>365</td>
<td>$69,350.00</td>
<td>8</td>
</tr>
<tr>
<td>49</td>
<td>Charlestown</td>
<td>Elmore Street</td>
<td>Shielton Street</td>
<td>Elmore Street</td>
<td>90</td>
<td>$17,100.00</td>
<td>8</td>
</tr>
<tr>
<td>50</td>
<td>Charlestown</td>
<td>Camrose Street</td>
<td>Livingstone Street</td>
<td>End of Street</td>
<td>160</td>
<td>$30,400.00</td>
<td>9</td>
</tr>
<tr>
<td>51</td>
<td>Belmont</td>
<td>John Fisher Road</td>
<td>Wommarra Avenue</td>
<td>Old Belmont Road</td>
<td>140</td>
<td>$26,600.00</td>
<td>10</td>
</tr>
<tr>
<td>52</td>
<td>Teralba</td>
<td>Rodgers Street</td>
<td>Railway Street</td>
<td>Existing Footpath</td>
<td>100</td>
<td>$19,000.00</td>
<td>9</td>
</tr>
<tr>
<td>53</td>
<td>Charlestown</td>
<td>James Street</td>
<td>Moto Street</td>
<td>Biraban Street</td>
<td>380</td>
<td>$72,200.00</td>
<td>9</td>
</tr>
<tr>
<td>54</td>
<td>Charlestown</td>
<td>Tiral Street</td>
<td>Dudley Road</td>
<td>Wales Street</td>
<td>810</td>
<td>$153,900.00</td>
<td>9</td>
</tr>
<tr>
<td>55</td>
<td>Caves Beach</td>
<td>Civic Avenue</td>
<td>Park Avenue</td>
<td>Pacific Street</td>
<td>195</td>
<td>$37,050.00</td>
<td>9</td>
</tr>
<tr>
<td>56</td>
<td>Belmont North</td>
<td>John Fisher Road</td>
<td>Wommarra Avenue</td>
<td>Old Belmont Road</td>
<td>140</td>
<td>$26,600.00</td>
<td>10</td>
</tr>
<tr>
<td>57</td>
<td>Charlestown</td>
<td>Wakal Street</td>
<td>Keleen Street</td>
<td>Dudley Road</td>
<td>500</td>
<td>$95,000.00</td>
<td>10</td>
</tr>
<tr>
<td>58</td>
<td>Charlestown</td>
<td>Wales Street</td>
<td>Keal Street</td>
<td>Tiral Street</td>
<td>195</td>
<td>$37,050.00</td>
<td>10</td>
</tr>
<tr>
<td>59</td>
<td>Charlestown</td>
<td>Birababn Street</td>
<td>James Street</td>
<td>Kaleen Street</td>
<td>110</td>
<td>$20,900.00</td>
<td>10</td>
</tr>
<tr>
<td>60</td>
<td>Mount Hutton</td>
<td>Dunkley Parade</td>
<td>Wommarra Avenue</td>
<td>New Belmont Road</td>
<td>140</td>
<td>$26,600.00</td>
<td>10</td>
</tr>
<tr>
<td>61</td>
<td>Mount Hutton</td>
<td>Dunkley Parade</td>
<td>Existing Footpath East of Tennis Court Entrance</td>
<td>Progress Road</td>
<td>125</td>
<td>$23,750.00</td>
<td>10</td>
</tr>
<tr>
<td>62</td>
<td>Whitebridge</td>
<td>Dudley Road</td>
<td>Existing Footpath</td>
<td>Burwood Road</td>
<td>150</td>
<td>$28,500.00</td>
<td>10</td>
</tr>
<tr>
<td>63</td>
<td>Cardiff</td>
<td>Macquarie Road</td>
<td>John Street</td>
<td>Brown Street</td>
<td>175</td>
<td>$33,250.00</td>
<td>10</td>
</tr>
<tr>
<td>64</td>
<td>Glendale</td>
<td>Glendale Drive</td>
<td>Main Road</td>
<td>Alfred Street</td>
<td>65</td>
<td>$12,350.00</td>
<td>10</td>
</tr>
<tr>
<td>65</td>
<td>Cardiff</td>
<td>Myall Road</td>
<td>Drainage Channel</td>
<td>Newcastle Street</td>
<td>350</td>
<td>$66,500.00</td>
<td>10</td>
</tr>
<tr>
<td>66</td>
<td>Mount Hutton</td>
<td>Tennent Road</td>
<td>Warners Bay Road</td>
<td>Melody Lane</td>
<td>175</td>
<td>$33,250.00</td>
<td>10</td>
</tr>
<tr>
<td>67</td>
<td>Gateshead</td>
<td>Sydney Street</td>
<td>Goundry Street</td>
<td>O'Brien Street</td>
<td>250</td>
<td>$47,500.00</td>
<td>10</td>
</tr>
<tr>
<td>68</td>
<td>Morisset</td>
<td>Ourimbah Street</td>
<td>Existing Footpath</td>
<td>Culdersac</td>
<td>190</td>
<td>$36,100.00</td>
<td>11</td>
</tr>
<tr>
<td>69</td>
<td>Blacksmiths</td>
<td>Karog Street</td>
<td>Ninag Street</td>
<td>Pacific Highway</td>
<td>200</td>
<td>$38,000.00</td>
<td>11</td>
</tr>
<tr>
<td>Rank</td>
<td>Suburb</td>
<td>Road Name</td>
<td>Segment From</td>
<td>Segment To</td>
<td>Length</td>
<td>Cost</td>
<td>Priority</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>----------------------</td>
<td>--------------------</td>
<td>----------------------</td>
<td>--------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td>70</td>
<td>Blacksmiths</td>
<td>Lake View Parade</td>
<td>Ninag Street</td>
<td>Pacific Highway</td>
<td>525</td>
<td>$99,750.00</td>
<td>12</td>
</tr>
<tr>
<td>71</td>
<td>Fassifern</td>
<td>Fassifern Road</td>
<td>Ninag Street</td>
<td>Dora Street</td>
<td>425</td>
<td>$80,750.00</td>
<td>12</td>
</tr>
<tr>
<td>72</td>
<td>Fassifern</td>
<td>Macquarie Road</td>
<td>250m east of</td>
<td>Sydney Street</td>
<td>75</td>
<td>$14,250.00</td>
<td>12</td>
</tr>
<tr>
<td>73</td>
<td>Gateshead</td>
<td>Goundry Street</td>
<td>Willow Road</td>
<td>Bluebell Street</td>
<td>260</td>
<td>$49,400.00</td>
<td>12</td>
</tr>
<tr>
<td>74</td>
<td>Belmont</td>
<td>Cobbin Parade</td>
<td>Ninag Street</td>
<td>Train Station</td>
<td>240</td>
<td>$64,500.00</td>
<td>12</td>
</tr>
<tr>
<td>75</td>
<td>Teralba</td>
<td>Railway Street</td>
<td>Ninag Street</td>
<td>Dora Street</td>
<td>490</td>
<td>$93,100.00</td>
<td>12</td>
</tr>
<tr>
<td>77</td>
<td>Glendale</td>
<td>Manual Street</td>
<td>Main Road</td>
<td>Existing Footpath</td>
<td>70</td>
<td>$13,300.00</td>
<td>12</td>
</tr>
<tr>
<td>78</td>
<td>Glendale</td>
<td>George Street</td>
<td>Ninag Street</td>
<td>Fredrick Street</td>
<td>165</td>
<td>$31,350.00</td>
<td>13</td>
</tr>
<tr>
<td>79</td>
<td>Belmont</td>
<td>Mark Street</td>
<td>Ninag Street</td>
<td>Henry Street</td>
<td>270</td>
<td>$51,300.00</td>
<td>13</td>
</tr>
<tr>
<td>80</td>
<td>Belmont</td>
<td>Henry Street</td>
<td>Maude Street</td>
<td>Existing Footpath</td>
<td>145</td>
<td>$27,550.00</td>
<td>13</td>
</tr>
<tr>
<td>81</td>
<td>Belmont</td>
<td>Henry Street</td>
<td>Ninag Street</td>
<td>Marks Street</td>
<td>35</td>
<td>$6,650.00</td>
<td>13</td>
</tr>
<tr>
<td>82</td>
<td>Belmont</td>
<td>Henry Street</td>
<td>Ninag Street</td>
<td>Evans Street</td>
<td>200</td>
<td>$38,000.00</td>
<td>13</td>
</tr>
<tr>
<td>83</td>
<td>Mount Hutton</td>
<td>Judd Street</td>
<td>Cowmeadow Road</td>
<td>Warners Bay Road</td>
<td>185</td>
<td>$35,150.00</td>
<td>13</td>
</tr>
<tr>
<td>84</td>
<td>Swansea</td>
<td>Macquarie Street</td>
<td>Lake Road</td>
<td>Belmont Street</td>
<td>410</td>
<td>$77,900.00</td>
<td>13</td>
</tr>
<tr>
<td>85</td>
<td>Swansea</td>
<td>Murray Street</td>
<td>Old Pacific Highway</td>
<td>Culdersac</td>
<td>400</td>
<td>$76,000.00</td>
<td>14</td>
</tr>
<tr>
<td>86</td>
<td>Swansea</td>
<td>Swansea Street</td>
<td>Lake Road</td>
<td>Belmont Street</td>
<td>410</td>
<td>$77,900.00</td>
<td>14</td>
</tr>
<tr>
<td>87</td>
<td>Swansea</td>
<td>Milray Street</td>
<td>Old Pacific Highway</td>
<td>Culdersac</td>
<td>470</td>
<td>$89,300.00</td>
<td>14</td>
</tr>
<tr>
<td>88</td>
<td>Warners Bay</td>
<td>Sweet Street</td>
<td>Culdersac</td>
<td>Existing Footpath</td>
<td>50</td>
<td>$9,500.00</td>
<td>14</td>
</tr>
<tr>
<td>89</td>
<td>Warners Bay</td>
<td>Queens Street</td>
<td>Culdersac</td>
<td>Myles Avenue</td>
<td>230</td>
<td>$43,700.00</td>
<td>14</td>
</tr>
<tr>
<td>90</td>
<td>Blacksmiths</td>
<td>Pirlwil Street</td>
<td>Ninag Street</td>
<td>Existing Footpath</td>
<td>60</td>
<td>$11,400.00</td>
<td>15</td>
</tr>
<tr>
<td>91</td>
<td>Caves Beach</td>
<td>Caves Beach Road</td>
<td>Ninag Street</td>
<td>Mawson Close</td>
<td>180</td>
<td>$34,200.00</td>
<td>15</td>
</tr>
<tr>
<td>92</td>
<td>Gateshead</td>
<td>Pacific Highway</td>
<td>The Crescent</td>
<td>Hughes Street</td>
<td>170</td>
<td>$32,300.00</td>
<td>15</td>
</tr>
<tr>
<td>93</td>
<td>Gateshead</td>
<td>The Crescent</td>
<td>Pacific Highway</td>
<td>Existing Footpath</td>
<td>100</td>
<td>$19,000.00</td>
<td>15</td>
</tr>
<tr>
<td>94</td>
<td>Marks Point</td>
<td>Davis Street</td>
<td>Marks Point Road</td>
<td>Existing Footpath</td>
<td>100</td>
<td>$19,000.00</td>
<td>15</td>
</tr>
<tr>
<td>95</td>
<td>Speers Point</td>
<td>Park Road</td>
<td>The Esplanade</td>
<td>Main Road</td>
<td>255</td>
<td>$48,450.00</td>
<td>15</td>
</tr>
<tr>
<td>96</td>
<td>West Wallsend</td>
<td>Carrington Street</td>
<td>Laidley Street</td>
<td>Existing Footpath</td>
<td>140</td>
<td>$26,600.00</td>
<td>15</td>
</tr>
<tr>
<td>97</td>
<td>Windale</td>
<td>Myall Street</td>
<td>Laidley Street</td>
<td>Oxley Street</td>
<td>185</td>
<td>$35,150.00</td>
<td>15</td>
</tr>
<tr>
<td>98</td>
<td>Whitebridge</td>
<td>Station Street</td>
<td>Dudley Road</td>
<td>Hudson Street</td>
<td>235</td>
<td>$44,650.00</td>
<td>15</td>
</tr>
<tr>
<td>99</td>
<td>Charlestown</td>
<td>Ridley Street</td>
<td>Dudley Road</td>
<td>Milson Street</td>
<td>180</td>
<td>$34,200.00</td>
<td>15</td>
</tr>
<tr>
<td>100</td>
<td>Charlestown</td>
<td>Marie Street</td>
<td>50m East of</td>
<td>Canberra Street</td>
<td>200</td>
<td>$38,000.00</td>
<td>16</td>
</tr>
<tr>
<td>101</td>
<td>Glendale</td>
<td>Clare Street</td>
<td>Existing Footpath</td>
<td>Oakland Street</td>
<td>310</td>
<td>$58,900.00</td>
<td>16</td>
</tr>
<tr>
<td>Rank</td>
<td>Suburb</td>
<td>Road Name</td>
<td>Segment From</td>
<td>Segment To</td>
<td>Length</td>
<td>Cost</td>
<td>Priority</td>
</tr>
<tr>
<td>------</td>
<td>----------</td>
<td>----------------------------</td>
<td>----------------------</td>
<td>---------------------</td>
<td>--------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>102</td>
<td>Glendale</td>
<td>Fairleigh Street</td>
<td>Existing Footpath</td>
<td>Clare Street</td>
<td>50</td>
<td>$9,500.00</td>
<td>16</td>
</tr>
<tr>
<td>103</td>
<td>Glendale</td>
<td>Emily Street</td>
<td>Main Road</td>
<td>Clare Street</td>
<td>100</td>
<td>$19,000.00</td>
<td>16</td>
</tr>
<tr>
<td>104</td>
<td>Glendale</td>
<td>Hill Street</td>
<td>Culdersac</td>
<td>Main Road</td>
<td>150</td>
<td>$28,500.00</td>
<td>16</td>
</tr>
<tr>
<td>105</td>
<td>Glendale</td>
<td>Rose Avenue</td>
<td>Hill Street</td>
<td>Frederick Street</td>
<td>270</td>
<td>$51,300.00</td>
<td>16</td>
</tr>
<tr>
<td>106</td>
<td>Glendale</td>
<td>Oakland Street</td>
<td>Clare Street</td>
<td>Culdersac</td>
<td>215</td>
<td>$40,850.00</td>
<td>16</td>
</tr>
<tr>
<td>107</td>
<td>Glendale</td>
<td>Poyner Avenue</td>
<td>Main Road</td>
<td>50m North of Main Road</td>
<td>50</td>
<td>$9,500.00</td>
<td>16</td>
</tr>
<tr>
<td>108</td>
<td>Glendale</td>
<td>Stephens Avenue</td>
<td>Main Road</td>
<td>50m North of Main Road</td>
<td>50</td>
<td>$9,500.00</td>
<td>16</td>
</tr>
<tr>
<td>109</td>
<td>Glendale</td>
<td>Bruce Street</td>
<td>Main Road</td>
<td>Greenwood Parade</td>
<td>60</td>
<td>$11,400.00</td>
<td>16</td>
</tr>
<tr>
<td>110</td>
<td>Morisset</td>
<td>Doyalson Street</td>
<td>Wyong Street</td>
<td>Yambo Street</td>
<td>275</td>
<td>$52,250.00</td>
<td>17</td>
</tr>
<tr>
<td>111</td>
<td>Morisset</td>
<td>Yambour Street</td>
<td>Stockton Street</td>
<td>Existing Footpath</td>
<td>115</td>
<td>$21,850.00</td>
<td>17</td>
</tr>
<tr>
<td>112</td>
<td>Morisset</td>
<td>Newcastle Street</td>
<td>Stockton Street</td>
<td>Doyalson Street</td>
<td>220</td>
<td>$41,800.00</td>
<td>17</td>
</tr>
<tr>
<td>113</td>
<td>Morisset</td>
<td>Wyong Street</td>
<td>Stockton Street</td>
<td>Kahibah Street</td>
<td>240</td>
<td>$45,600.00</td>
<td>17</td>
</tr>
<tr>
<td>114</td>
<td>Morisset</td>
<td>Macquarie Street</td>
<td>Western culdersac</td>
<td>Rivergum Drive</td>
<td>250</td>
<td>$47,500.00</td>
<td>17</td>
</tr>
<tr>
<td>115</td>
<td>Morisset</td>
<td>Coorumbung Street</td>
<td>Mandolong Street</td>
<td>Macquarie Street</td>
<td>115</td>
<td>$21,850.00</td>
<td>17</td>
</tr>
<tr>
<td>116</td>
<td>Morisset</td>
<td>Mandolong Street</td>
<td>Western culdersac</td>
<td>Coorumbung Street</td>
<td>215</td>
<td>$40,850.00</td>
<td>17</td>
</tr>
<tr>
<td>117</td>
<td>Belmont</td>
<td>Victoria Street</td>
<td>Culdersac</td>
<td>Walters Street</td>
<td>75</td>
<td>$14,250.00</td>
<td>17</td>
</tr>
<tr>
<td>118</td>
<td>Belmont</td>
<td>Albert Street</td>
<td>Mark Street</td>
<td>Evans Street</td>
<td>260</td>
<td>$49,400.00</td>
<td>17</td>
</tr>
<tr>
<td>119</td>
<td>Belmont</td>
<td>Robb Street</td>
<td>Mark Street</td>
<td>Evans Street</td>
<td>365</td>
<td>$69,350.00</td>
<td>18</td>
</tr>
<tr>
<td>120</td>
<td>Cardiff</td>
<td>Mary Street</td>
<td>Culdersac</td>
<td>Culdersac</td>
<td>225</td>
<td>$42,750.00</td>
<td>18</td>
</tr>
<tr>
<td>121</td>
<td>Cardiff</td>
<td>Brown Street</td>
<td>Lachlan Road</td>
<td>Macquarie Road</td>
<td>130</td>
<td>$24,700.00</td>
<td>18</td>
</tr>
<tr>
<td>122</td>
<td>Cardiff</td>
<td>Henry Street</td>
<td>Railway Parade</td>
<td>Newcastle Street</td>
<td>240</td>
<td>$45,600.00</td>
<td>18</td>
</tr>
<tr>
<td>123</td>
<td>Cardiff</td>
<td>Vides Street</td>
<td>Fern Valley Road</td>
<td>Lovell Street</td>
<td>175</td>
<td>$33,250.00</td>
<td>18</td>
</tr>
<tr>
<td>124</td>
<td>Cardiff</td>
<td>Brown Street</td>
<td>Russell Street</td>
<td>Queens Avenue</td>
<td>85</td>
<td>$16,150.00</td>
<td>18</td>
</tr>
<tr>
<td>125</td>
<td>Cardiff</td>
<td>Lachlan Road</td>
<td>Emery Street</td>
<td>Munibung Road</td>
<td>700</td>
<td>$133,000.00</td>
<td>19</td>
</tr>
<tr>
<td>126</td>
<td>Cardiff</td>
<td>Merewether Street</td>
<td>Culdersac</td>
<td>Lachlan Road</td>
<td>125</td>
<td>$23,750.00</td>
<td>19</td>
</tr>
<tr>
<td>127</td>
<td>Cardiff</td>
<td>Gorleston Terrace</td>
<td>Culdersac</td>
<td>Lachlan Road</td>
<td>100</td>
<td>$19,000.00</td>
<td>19</td>
</tr>
<tr>
<td>128</td>
<td>Cardiff</td>
<td>William Street</td>
<td>Russell Street</td>
<td>Culdersac</td>
<td>170</td>
<td>$32,300.00</td>
<td>19</td>
</tr>
<tr>
<td>129</td>
<td>Cardiff</td>
<td>Russell Street</td>
<td>John Street</td>
<td>Culdersac</td>
<td>440</td>
<td>$83,600.00</td>
<td>19</td>
</tr>
<tr>
<td>130</td>
<td>Cardiff</td>
<td>Railway Parade</td>
<td>Culdersac</td>
<td>Myall Road</td>
<td>170</td>
<td>$32,300.00</td>
<td>19</td>
</tr>
<tr>
<td>131</td>
<td>Cardiff</td>
<td>Short Street</td>
<td>Henry Street</td>
<td>Myall Road</td>
<td>90</td>
<td>$17,100.00</td>
<td>19</td>
</tr>
<tr>
<td>132</td>
<td>Cardiff</td>
<td>Edward Street</td>
<td>Henry Street</td>
<td>Myall Road</td>
<td>110</td>
<td>$20,900.00</td>
<td>19</td>
</tr>
<tr>
<td>133</td>
<td>Cardiff</td>
<td>John Street</td>
<td>Lachlan Road</td>
<td>Macquarie Road</td>
<td>125</td>
<td>$23,750.00</td>
<td>20</td>
</tr>
<tr>
<td>134</td>
<td>Cardiff</td>
<td>Queens Avenue</td>
<td>Brown Street</td>
<td>William Street</td>
<td>200</td>
<td>$38,000.00</td>
<td>20</td>
</tr>
<tr>
<td>135</td>
<td>Mount Hutton</td>
<td>Cowmeadow Road</td>
<td>Thurlers Drive</td>
<td>Existing Footpath</td>
<td>235</td>
<td>$44,650.00</td>
<td>20</td>
</tr>
<tr>
<td>136</td>
<td>Mount Hutton</td>
<td>Helen Street</td>
<td>100m South of Tennant Road</td>
<td>Tennant Road</td>
<td>100</td>
<td>$19,000.00</td>
<td>20</td>
</tr>
<tr>
<td>137</td>
<td>Swansea</td>
<td>Albert Street</td>
<td>Charles Street</td>
<td>Belmont Street</td>
<td>260</td>
<td>$49,400.00</td>
<td>20</td>
</tr>
<tr>
<td>Rank</td>
<td>Suburb</td>
<td>Road Name</td>
<td>Segment From</td>
<td>Segment To</td>
<td>Length</td>
<td>Cost</td>
<td>Priority Year</td>
</tr>
<tr>
<td>------</td>
<td>----------</td>
<td>------------</td>
<td>---------------</td>
<td>--------------</td>
<td>--------</td>
<td>------------</td>
<td>---------------</td>
</tr>
<tr>
<td>138</td>
<td>Swansea</td>
<td>Pelican St</td>
<td>Charles St</td>
<td>Belmont St</td>
<td>260</td>
<td>$49,400.00</td>
<td>20</td>
</tr>
<tr>
<td>139</td>
<td>Toronto</td>
<td>Nelson St</td>
<td>Oak St</td>
<td>Cary St</td>
<td>110</td>
<td>$20,900.00</td>
<td>20</td>
</tr>
<tr>
<td>140</td>
<td>Toronto</td>
<td>Oak St</td>
<td>Nelson St</td>
<td>Day St</td>
<td>170</td>
<td>$32,300.00</td>
<td>20</td>
</tr>
</tbody>
</table>
GHD
Level 3 GHD Tower 24 Honeysuckle Drive Newcastle NSW 2300
PO Box 5403 Hunter Region Mail Centre NSW 2310
T: (02) 4979 9999   F: (02) 4979 9988   E: ntlmail@ghd.com.au

© GHD 2013

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

N:\AU\Newcastle\Projects\22\16374\WP\101558.docx

Document Status

<table>
<thead>
<tr>
<th>Rev No.</th>
<th>Author</th>
<th>Reviewer</th>
<th>Approved for Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Name</td>
<td>Signature</td>
<td>Name</td>
</tr>
<tr>
<td>0</td>
<td>S Burns</td>
<td>G Wood</td>
<td>Signed Original</td>
</tr>
<tr>
<td></td>
<td>G. Wood</td>
<td>Signed Original</td>
<td>Date</td>
</tr>
<tr>
<td>1</td>
<td>S Burns</td>
<td>G Wood</td>
<td>Signed Original</td>
</tr>
<tr>
<td></td>
<td>G. Wood</td>
<td>Signed Original</td>
<td>24/04/2013</td>
</tr>
<tr>
<td>2</td>
<td>S Burns</td>
<td>G Robinson</td>
<td>Signed Original</td>
</tr>
<tr>
<td></td>
<td>G Robinson</td>
<td>Signed Original</td>
<td>03/05/2013</td>
</tr>
<tr>
<td>3</td>
<td>S Burns</td>
<td>G Robinson</td>
<td>Signed Original</td>
</tr>
<tr>
<td></td>
<td>G Robinson</td>
<td>Signed Original</td>
<td>10/05/2013</td>
</tr>
<tr>
<td>4</td>
<td>S Burns</td>
<td>G Wood</td>
<td>Signed Original</td>
</tr>
<tr>
<td></td>
<td>G Wood</td>
<td>Signed Original</td>
<td>24/05/2013</td>
</tr>
<tr>
<td>5</td>
<td>S Burns</td>
<td>G Wood</td>
<td>Signed Original</td>
</tr>
<tr>
<td></td>
<td>G Wood</td>
<td>Signed Original</td>
<td>21/08/2013</td>
</tr>
<tr>
<td>6</td>
<td>S Burns</td>
<td>G Wood</td>
<td></td>
</tr>
<tr>
<td></td>
<td>G Wood</td>
<td></td>
<td>19/09/2013</td>
</tr>
</tbody>
</table>