

# COOKS RIVER PEDESTRIAN AND CYCLE PATH IMPROVEMENT STUDY

## PATHWAY DEVELOPMENT STRATEGY

Prepared for:

**Cooks River Foreshores Working Group**

With funding provided by:

Burwood, Canterbury, City of Sydney, Marrickville, Rockdale and Strathfield Councils and the NSW Government's Cooks River Foreshore Improvement Program

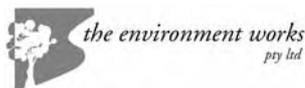
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## EXECUTIVE SUMMARY

### Introduction

The Cooks River Pathway is one of the oldest shared pedestrian and bicycle paths in Sydney. It is a largely off-road facility that runs from Homebush Bay in the west to Botany Bay in the east. Jamieson Foley, Sustainable Transport Consultants and The Environment Works were engaged by the Cooks River Foreshores Working Group to study the pathway and identify safety, access and other issues with a view to developing a strategy for the improvement of the walking and cycling environment. This report presents the pathway development strategy and is based on the findings of two previous reports by the study team, including a formal road safety audit and an issues and options paper.

### Route Description

The route is about 34.6km long from Mason Park at Homebush Bay Drive to the Cooks River entrance at Botany Bay. The study area also includes the Alexandra Canal from Perry Park at Bourke Road to the Cooks River, as well as strategic links to other pathways and local connections. Limits of the study area are boundaries of Strathfield, Burwood, Canterbury, Marrickville, Rockdale, Botany and City of Sydney Councils.

### Study Process

Key elements of the study process included:

- Monthly Project Steering Committee meetings.
- Saddle surveys with individual councils and group rides with all stakeholders.
- Issues and Options Paper.
- Formal Road Safety Audit.
- Route Development Strategy, including priorities and cost estimates (this document).
- Peer review by independent third party.

### Strategic Issues

- Multiple user groups - Shared paths have inherent conflicts between user groups, including bicycles, pedestrians, joggers, roller bladers, service vehicle, dog-walkers, etc. Several strategies are recommended for managing these issues, such as the location of the pathway away from areas of potential conflicts (BBQ, playground, meeting spots), behavioural signage, alternate back street cycling routes, clear sight lines, etc.





- Road and Rail Crossings - Many of the existing road and rail crossing are sub-standard and unsuitable for current usage patterns. Ideally fully grade-separated crossings should be available, but there has been no significant funding for this to date. Moreover, most existing road and rail bridges currently provide inadequate hydraulic flow capacity, which limits opportunities to use the existing bridge structures over the River. Accordingly, it is recommended to provide at-grade crossings with improved access for a wide range of pathway user groups.
- Cultural and Environmental Heritage - The corridor features a significant number of cultural and environmental heritage items, such as remnant vegetation, the former Sugar Mill and the Warren Park Tombs. These items present both opportunities to enhance the experience of the area and constraints to its future development.
- Social Infrastructure - Although the development of social infrastructure falls outside the scope of the current brief, the study team has developed some ideas based on stakeholder feedback and general observations which could be used as input into the development of a social infrastructure program.
- Accessibility and Equity - Although the recommended works program includes many accessibility improvements, additional improvements are required as part of separate accessibility programs by individual councils. In this context, it is recommended that a group of Council Works Engineers (responsible for physical works in the River corridor) and Council's disability/access officer join invited disabled groups for a bicycle ride along the River to experience first hand existing operating constraints.

### **Pathway Development Strategy**

The route development strategy for the Cooks River, Alexandra Canal and the Strategic Links is summarised in **Figure 5.1** (p63). It includes the following elements:

- High priority works to address urgent road safety audit findings.
- Improvements to the Existing Route - these are works required to address the issues identified in the road safety audit and through the stakeholder consultation process.
- Stage 1 Proposed Routes and Improvements - these are medium term opportunities for general pathway enhancements.
- Future Routes and Improvements - for longer term opportunities, largely focussed on expensive items such as new underpasses, new pathway links, path widening and lighting.

In addition to the site specific pathway improvements, there are a number of general requirements that apply throughout the pathway network in the study corridor, such as maintenance / minor repairs, adjustments to planning controls, the use of bollards, etc.

It is further noted that most of the existing pathway is situated on Class 1 or Class 2 Acid Sulphate Soils (ASS) and any works proposed would require the preparation of an ASS Management Plan as set out in the NSW ASS manual and submitted with any Development Application.





## Cost Estimates

- Total cost for the Cooks River, Alexandra Canal and the Strategic Links are \$4,140,000 for improvements to the existing pathway and \$17,789,000 for Stage 1 and Future Improvements.
- The most significant cost items for the existing pathway are widened footpaths on/under three bridges (\$2,025,000, including Canterbury Road Underpass, Unwins Bridge and Giovanni Brunetti Bridge), pavement replacement and realignment (\$571,000), kerb extensions/refuges (\$385,000), improved road crossing facilities to replace inter alia the dangerous existing staggered crossings (\$348,000) and signs and markings (\$308,000).
- The most significant Stage 1 and Future cost items are new sections of pathway (\$6,962,000), new underpasses (\$6,131,000), solar lighting (\$2,265,000) and widening of the existing paths (\$1,495,000).
- Total costs within each Local Government Area are shown in **Table S1**.

In addition to the recommended physical infrastructure works, there is a need for other actions, including:

- General pathway maintenance and the development of suitable maintenance strategies, eg removal of bollards, pavement repairs
- Development or adjustment of administrative and planning instruments such as Masterplans, REPs, LEPs and, importantly, Council 5 Year Management Plans (even in areas where there is little or no requirement for improvements to the existing pathway)

**Table S1 - Summary of Costs by LGA**

LGA	Total Pathway Length	Improvements to the Existing Pathway	Stage 1 and Potential Future Improvements
Strathfield	9,630m	\$445,000	\$1,970,000
Burwood	1,170m	\$128,000	\$213,000
Canterbury	18,540m	\$1,222,000	\$6,128,000
Marrickville	11,760m	\$1,095,000	\$4,334,000
Rockdale	12,520m	\$1,159,000	\$2,604,000
Botany	2,810m	\$91,000	\$721,000
Sydney	2,860m	\$0	\$1,819,000
<b>Total</b>	<b>59,290m</b>	<b>\$4,140,000</b>	<b>\$17,789,000</b>



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**Appendix A - Photographic Report**

**Appendix B - Cooks River Usage Data**

**Appendix C - Extract DIPNR Pathway Development Criteria**

**Appendix D - Extract Melbourne Water Pathway Design Requirements**

**Appendix E - Detailed Maps and Diagrams**

**Appendix F - Cost Estimates**





# 1 INTRODUCTION

The Cooks River Pathway is one of the oldest shared pedestrian and bicycle paths in Sydney. It is a largely off-road facility that runs from Botany Bay in the east to Homebush Bay in the west. It is commonly referred to as either the Bay to Bay Walk or the Cooks River Cycleway.

Jamieson Foley, Sustainable Transport Consultants and The Environment Works were engaged by the Cooks River Foreshores Working Group to study the pathway and identify safety, access and other issues with a view to developing an improvement strategy.

The steering committee for this project includes representatives from the following organisations:

- Strathfield Council
- Burwood Council
- Canterbury Council
- Marrickville Council
- Rockdale Council
- City of Sydney Council
- RTA
- Sydney Water.

This study was funded by the above councils with assistance from the NSW Government through its Cooks River Foreshore Improvement Program.

This report presents the pathway development strategy and is based on the findings of two previous reports by the study team, including a formal road safety audit and an issues and opportunities paper.

The project emphasis is on short to medium term improvement to the existing pathway to make it safer and more comfortable and to bring it up to modern standards. The strategy also includes recommendations for longer term improvements.

For consistency, the discussion of the pathway and the maps generally lead from the head of the Cooks River catchment in the northwest to the base of the catchment at Botany Bay and then from the head of the Alexandra Canal catchment to Botany Bay.





## 2 BACKGROUND

### 2.1 Study Objectives

The aim of the project is to develop design principles, guidelines and selected specific solutions to path design and usage problems that will be adopted by all Cooks River and Alexandra Canal Foreshore councils to ensure that future development and enhancement of foreshore pedestrian and cycle paths will:

- Contribute to the functional and visual integrity and cohesiveness of the path as a significant regional facility
- Be implemented at a standard that is consistent and of high quality across council boundaries
- Be compatible with and complement other objectives for the Cooks River open space corridor as identified in key strategic planning documents, including objectives for environmental protection, enhancement and ecological restoration, passive and active recreation, cultural and educational values, aesthetics and public safety
- Optimise the function of the selected route as a significant regional recreational and transport facility, providing continuous, coherent, safe and comfortable pedestrian and bicycle access to and within the Cooks River Foreshores open space corridor.

### 2.2 Methodology

Key elements of the study process included:

- Monthly Project Steering Committee meetings
- Saddle surveys with individual councils
- Group rides with stakeholders
- Issues and Opportunities Paper (separate report)
- Formal Road Safety Audit (separate report)
- Route Development Strategy, including priorities and cost estimates (this document).





## 2.3 Geographical Extent

Figures 2.1 and 2.2 show the location of the study area. Table 2.1 summarises the length of pathway within each jurisdiction, including the existing and potential future paths along the Cooks River, the Alexandra Canal and the various strategic links. Appendix A provides a photographic report of the route and its surrounds.

The following comments are offered for consideration:

- Existing pathway lengths<sup>1</sup>:
  - Cooks River 30.6km
  - Alexandra Canal 1.7km
  - Strategic Links 2.3km
- Breadth: width of the Cooks River foreshore open space corridor; proposed Alexandra Canal corridor; intersections with north - south cycleway linkages (Cup & Saucer Creek, Cooks River to Iron Cove GreenWay, Wolli Creek, etc.)
- Limits: within the limits of the participating councils:
  - Strathfield
  - Burwood
  - Canterbury
  - Marrickville
  - Rockdale
  - Botany
  - Sydney

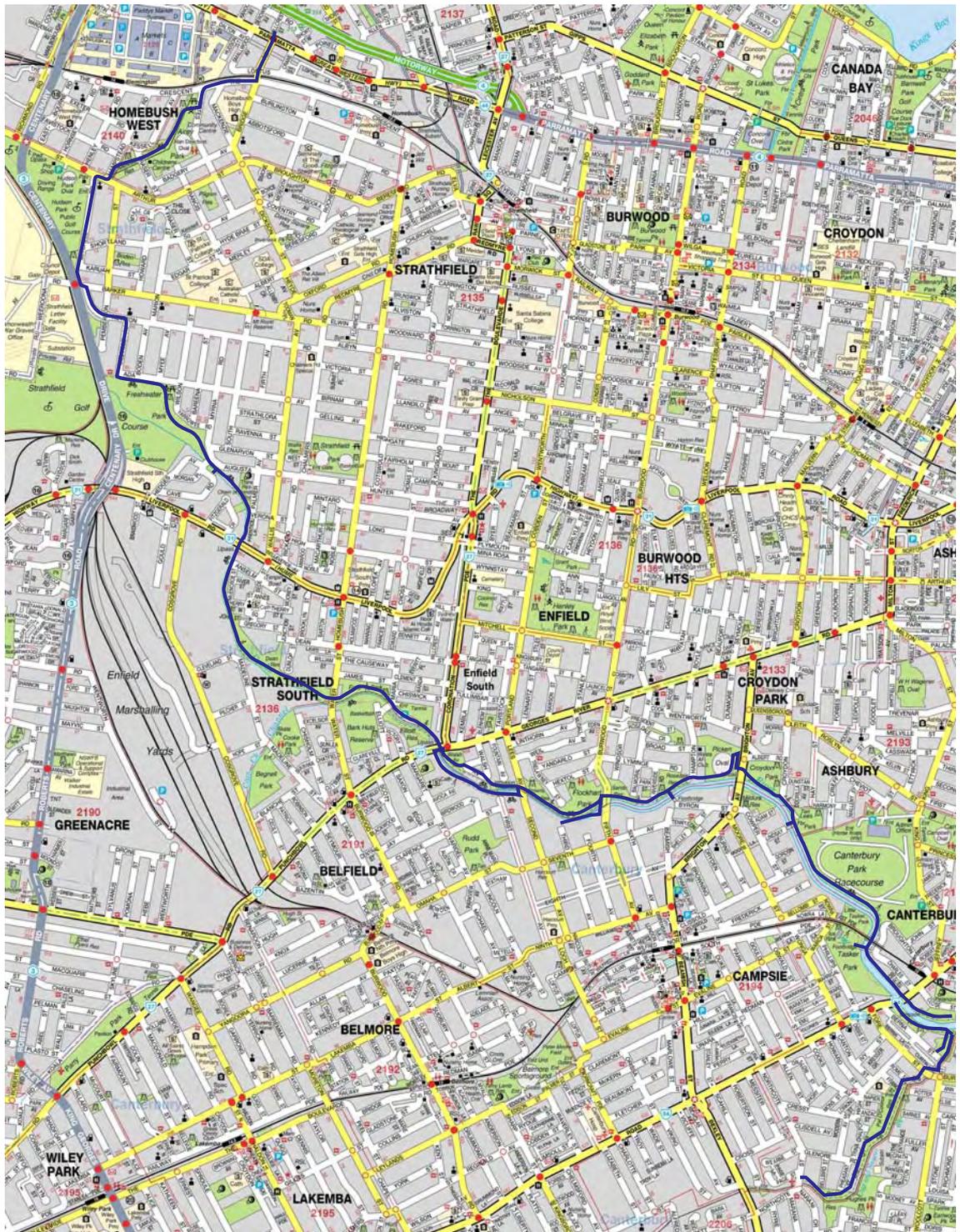
**Table 2.1 - Summary of Pathway Lengths**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Potential Future Expansion	Total
Strathfield	2,490m	5,680m	0m	0m	1,460m	9,630m
Burwood	170m	1,000m	0m	0m	0m	1,170m
Canterbury	210m	8,180m	3,760m	600m	5,790m	18,540m
Marrickville	530m	3,600m	1,850m	0m	5,780m	11,760m
Rockdale	500m	4,800m	1,220m	0m	6,000m	12,520m
Botany	0m	630m	0m	0m	2,180m	2,810m
Sydney	0m	0m	0m	0m	2,860m	2,860m
<b>Total</b>	<b>3,900m</b>	<b>23,890m</b>	<b>6,830m</b>	<b>600m</b>	<b>24,070m</b>	<b>59,290m</b>
<i>* Works included in the 2005/2006 or 2006/2007 Council works programs</i>						

<sup>1</sup> The original study brief was for a length of about 24.9km for the route of the existing Bay-to-Bay cycleway from the south side of the Parramatta Rd crossing in Homebush (not including the crossing itself) to the Cooks River entrance at Botany Bay, Rockdale/Kyeemagh and along Alexandra Canal. During the study process Strathfield and Sydney Councils identified a number of other areas requiring attention, which have been included in the study program.



Figure 2.1 - Study Area - West

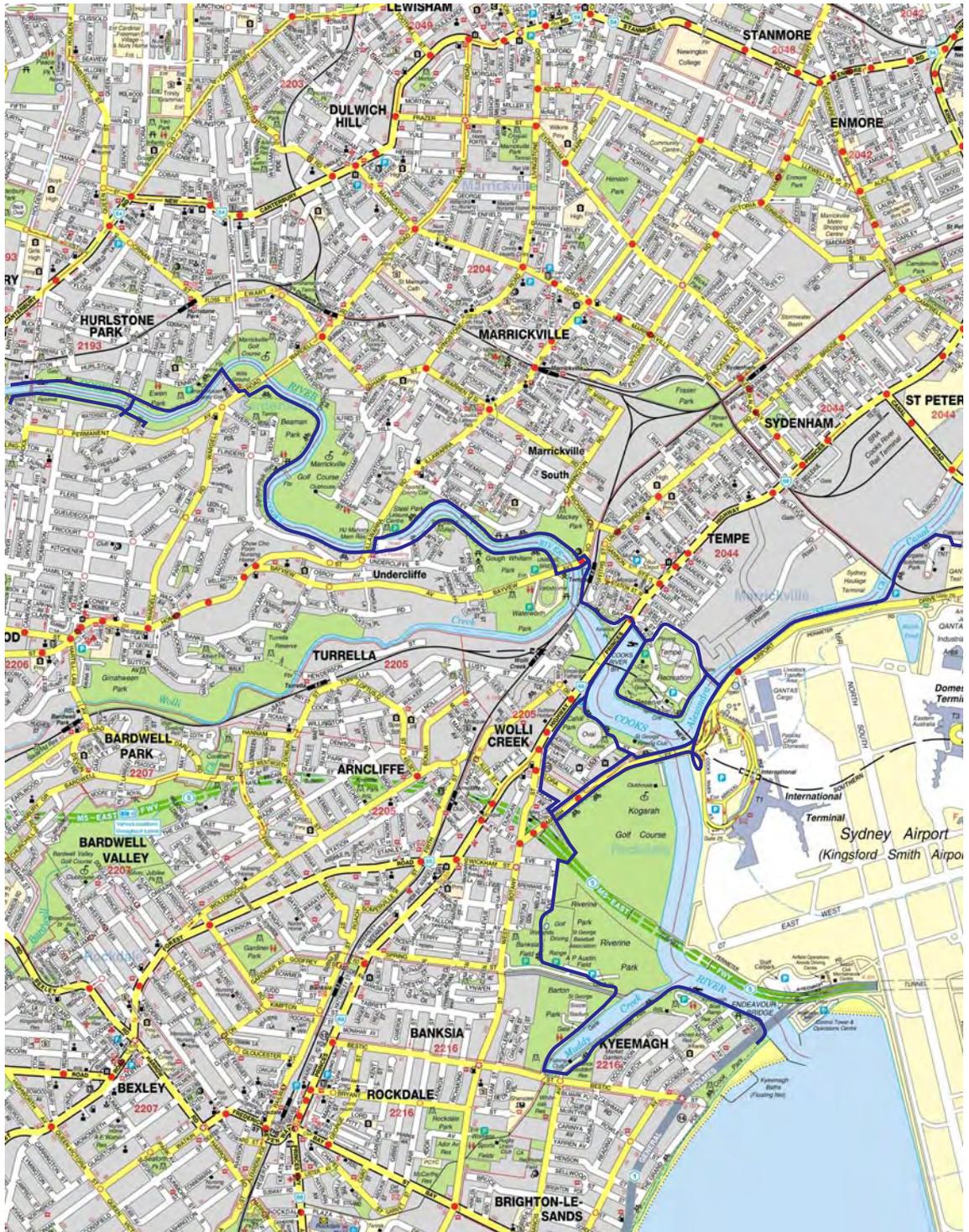


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Figure 2.2 - Study Area - East



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- The location of the pathway within the corridor varies, ie either north or south of the River. Most of the pathway is off-road. Long sections of the Cooks River pathway have been duplicated either side of the Cooks River. A limited number of sections provide on-road facilities, including:
  - The Crescent / Bridge Road, Homebush (590m)
  - Mitchell Road / Hampstead Road, Strathfield (740m)
  - Neville Avenue / Newton Road, Strathfield (700m)
  - Walsh Avenue, Enfield South (160m)
  - Charles Street / Broughton Street, Canterbury (160m)
  - Lang Road, Earlwood (110m)
  - Valda Avenue, Wolli Creek (210m)
  - South Street, Tempe
- The quality of the pathway varies, with some sections consisting of the original bituminous pavement possibly predating the 1976 report<sup>2</sup>, with cross sections deteriorated to sub 2.0m due to edge damage and overgrown edges. Other sections have been constructed much more recently with concrete pavements and cross sections close to 3.0m, with imminent plans for further extensions.
- Landuse along the pathway is mainly recreational, including playing fields, passive recreation areas, heritage areas, environmentally significant areas, a race course, etc. There is also some residential, industrial and commercial landuse along and close to the corridor. However, nearby access to retail and refreshments is very limited.

## 2.4 Evolution of the Cooks River Pathway

### 2.4.1 Previous Pathway Development

Prior to European settlement, the indigenous Eora Aboriginal peoples would have used the Cooks River and foreshores extensively for food gathering, fishing and travel. Following European settlement, there was informal bathing and walking in the late 19th and early 20th Century where the foreshores saw significant changes in built form and use. Many parks were created in the 1930s, with channelisation and “tidying up” of the river banks during the 1940s.

<sup>2</sup> Total Environment Centre (1976). Cooks River: Environment Survey and Landscape Design. Report of the Cooks River Project. Amber Press. ISBN 0 9597464 2 0.





A pathway along the length of the Cooks River was originally developed in the mid 1970s as the *Pelican Walk*. This was a walking route variously constructed utilising existing parkland pathways, sections of constructed (generally asphalt) pathway, and over grass. Limited signage and pelican symbol stencilling was provided to guide users.

Planning work by the RTA in the early 1990s conceived the pathway as the *Ryde to Botany Bay Cycleway*, as it started at the Parramatta River at Ryde, using the Concord Road Bridge, then along the Rhodes Peninsula to Strathfield via Powells Creek corridor. This was later to become the *Bay to Bay Cycleway*.

It was not until the construction of the link under the railway at Tempe in 1993-4, and connections through Barton Park, and the formalisation/bitumen surfacing of pathway open spaces at Strathfield that a completed pathway for both pedestrians and cycling was constructed along the full length from Ryde to Botany Bay. This work was complemented by pathway construction around the shores of Botany Bay, and further south to Kurnell and Cronulla. Later work has included construction around the M5 Motorway development, and links along the eastern side of Alexandra Canal.

Since the late 1990s, efforts have been concentrated on improving the pathway structure and design. However, road crossings remain largely as constructed in the late 1980s and early 1990s

#### 2.4.2 Current Pathway(s) Entities

The Cooks River Cycleway consists of a number of interrelated and overlapping “entities” including:

- *The Bay to Bay Cycleway* (listed as the Bay to Bay Run in the Metro Trails Strategy) - from Homebush Bay to Botany Bay (at Kyeemagh) via Strathfield and the Cooks River
- *Ryde to Botany Bay Cycleway* - from Parramatta River at Meadowbank, via Concord Bridge, and Strathfield
- *Cooks River Cycleway* - primarily from Centenary Drive to Kyeemagh along the Cooks River foreshore





- *Alexandra Canal Cycleway* - along the eastern side of Alexandra Canal to Coward St, connecting with the Cooks River at Marsh Road
- *Botany Bay Cycleway* - around the western foreshore of Botany Bay from Kyeemagh to Kurnell via Sans Souci and Captain Cook Bridge.

This document includes discussion and assessment for all of the above entities except the *Botany Bay Cycleway*.

### 2.4.3 The Future

Development of the pathway along the Cooks River and linkages to other networks will depend to some extent on the actions following from this study and other strategic planning currently being undertaken. At a State government level, any future review of BikePlan 2010 will identify strategic cycling links, and any strategic transport planning will identify the role of the corridor in meeting active transport needs. Other projects that will also impact on the likely future nature of the pathway are discussed in **Section 3.1**. At a local level, individual Council Bike plans, recreation strategies and Management Plans will result in works and management actions impacting on the physical nature, setting and use of the pathway(s).

Some issues and trends which will need to be considered in future pathway planning in the next 20 years include:

- Global climate change and impact on tidal levels and flooding (design level, hydraulic capacity), and extreme weather events such as prolonged dry periods, higher than average temperatures (need for shade, species selection).
- Increased population density, recreational activity and desire for healthy outdoor activities resulting in greater pressure on open space resources and increased local and through vehicle traffic.
- The need to provide foreshore settings for passive open space recreation and “reflection”, largely free from constructed pathways and high levels of wheeled traffic.
- An ageing of the population, with greater percentage of elderly and less mobile pathway users.





- Further development of cycling networks both within the Cooks River catchment and links to other regional networks and back-street/informal networks.
- The trend of continual pathway upgrades to cater for increasing levels of pathway use for commuting. This need must be balanced against the need to provide for passive open space.
- Trend away from private vehicle usage due to greenhouse concerns, rising fuel prices and health impacts of sedentary lifestyle.
- Increase in (legal and illegal) use of alternate low powered vehicles on shared pathways including powered scooters, segways, mopeds, shopping carts etc.
- Allowance in any pathway planning for potential new or expanded bushland/revegetation activity. This may require more contiguous areas of revegetation than has been established in the past - requiring less fragmentation, pathways to the side rather than through the middle of open space, and pathway relocation to allow for revegetation work. Also refer **Appendix C**.



### 3 SETTING THE SCENE

#### 3.1 Planning Context

##### 3.1.1 Regional Environmental and Planning Strategies

Environmental planning and strategic projects and studies relevant to the cooks river catchment and corridor include:

##### ***Metropolitan Strategy for Sydney***

- A broad framework to secure Sydney's place in the global economy by promoting and managing growth. It is a strategic document that outlines a vision for Sydney over the next 25 years (DIPNR, 2006 refer [www.metrostrategy.nsw.gov.au](http://www.metrostrategy.nsw.gov.au)). It consists of seven subject areas (or strategies: Employment and Economy, Centres and Corridors, Housing, Transport, Environment and Resources, Parks and Public Places and Implementation and Governance).
- Of main relevance to this study includes the proposals for growth centre at Canterbury Road, Parramatta Road corridor, and the Wolli Creek/Arncliffe area, and strategies and policies for Parks and Public Places. Sustainability principles for Centres and Corridors include planning an integrated network of accessible and usable open spaces (including rejuvenating waterways).
- For Parks and Public Places there is the vision that Sydney will have “fair access to quality parks and public places for leisure, sport and recreation for the local community and visitors”. The city will have “a range of open spaces that meet the diverse and changing needs of the community and a network of recreation trails will provide walking and cycling opportunities linking centres and parks” (NSW Government, 2006).
- Objectives and initiatives for Parks and Public Places are to “increase access to quality parks and public places (Objective F1) including improving the quality of regional open space and improving access to waterways and links between bushland, parks and centres”. Objective F2 is to “provide a diverse mix of parks and public places through improving the quality of local open space and investigating future options for open space provision and management”.



### **Metropolitan Greenspace Program**

- Allocates grants in the Sydney Metropolitan Region to help plan and improve regionally significant open space. The program enables more effective use of these areas by the community and promotes benefits for recreation, conservation and heritage (NSW Government, 2006). Over 300 projects have been funded at over \$16 million in value since 1990 (including a number of projects related to the Cooks River).
- The Metropolitan Greenspace Program is proposed to continue to provide grants to local government to improve existing regional parks and will focus on implementing projects identified through Metropolitan Strategy subregional planning. The Regional Recreational Trails will be a funding priority (see below).
- Other current State government-funded programs under Metro Greenspace include the Cooks River Foreshore Improvement Program (see below) and the Sharing Sydney Harbour Access Program. Relevant to the Cooks River, is the point that innovative funding mechanisms could be used to improve access to waterways and links between parks and centres and expand the Metropolitan Greenspace Program.

### **Regional Recreational Trails Network**

- A key action of the Metropolitan Strategy in the Parks and Public Places Strategy is to continue to develop a framework for an integrated network of regional recreational trails (**Figure 3.1**). Both the Cooks River pathways and linkages (such as Cooks River to Iron Cove GreenWay, Wollie Creek, Alexandra Canal) are included as part of an indicative regional walking and cycling trails network.
- According to the Metro Strategy, “Regional recreation trails meet the growing community demand for informal healthy activities, for recreation and active transport across Sydney. Trails are corridors or pathways, mainly off-road, used for recreational walking or cycling and pass through or connect landscapes, facilities or sites of regional or metropolitan significance. They should also be complemented by local and district feeder connector trails, with the aim of providing trails a maximum of 1.5 kilometres (about a 15 minute walk) from all residential areas in Sydney.” (NSW Government, 2006).





**Figure 3.1 - Metro Strategy Regional Trails**



Regional Trails Project

South Sydney

Source: Department of Planning





- A further priority of the Metro Strategy is to develop a comprehensive communications package for regional recreation trails, and it is understood that this is underway for the CRFIP. The location of this indicative regional trails network within the study area is shown in **Figure 3.1**, and the trails of relevance to this study and their priority are summarised in **Table 3.1**.

**Table 3.1 - Southern Sydney Regional Trails and Priorities**

Trail Name	Reference	Status	Priority
The Cooks River Foreshore and Tributaries – Bay to Bay Run	4.7	Regional Trail, existing	1
Sydney Olympic Park to Cooks River (via Rookwood Cemetery)	4.19	Regional Trail, proposed	1
Hawthorne Canal to Cooks River (Cooks River to Iron Cove GreenWay)	4.21	Regional Trail, proposed	2
Alexandra Canal to Centennial Park	4.23	Regional Trail, proposed	1
Rockdale to Wetlands Link	4.31	Sub-Regional Trail, proposed	3
Cooks River to Iron Cove (via Burwood)	4.36	Sub-Regional Trail, proposed	2
<p><i>Notes</i>            Priority: 1 = Short term (0-5yrs); 2 = Medium Term (5-15yrs); 3 = Long Term 15+ yrs)</p> <p><i>Source</i>            Sydney Metropolitan - Regional Recreation Trails Framework Final Report, Hassell Pty Ltd, March 2005</p>			

**Catchment Management Areas (CMAs)**

- A Sydney Metro Catchment Management Authority has now been established for the Sydney basin, and has prepared a Catchment Action Plan for Sydney.

**Regional Councils (ROCs)**

- Councils have variously endeavoured to coordinate actions on a sub-regional scale. The Inner Metropolitan ROC (IMROC) is now largely defunct, but the Southern Sydney ROC (SSROC) is still active and involved in sub-regional planning.





### ***Cooks River Foreshores Strategic Plan (CRFSP)***

- This plan was prepared in 1997 for the Cooks River Regional Working Party (predecessor of the CRFWG) by Clouston as a regional planning document for the Cooks River Foreshore parks within the context of the Cooks River catchment. The plan focuses on strategies for the foreshores of the River which will ensure the River foreshores are managed in a co-ordinated manner (CRFSP, 1997). The Plan sets out a vision for the Cooks River corridor and proposes 121 strategies to improve the ecological health of the River and realise the potential of the River / foreshore corridor as a natural, recreational, social and cultural resource for the community.

### ***Cooks River Foreshores Working Group (CRFWG)***

- Formed following the completion of the Cooks River Foreshores Strategic Plan to carry forward implementation of the plan (CRFSP). It is comprised of local councils and state government agencies with management responsibilities for the River and foreshores and is responsible for initiating and coordinating this study, along with other regional collaborative projects.

### ***Alexandra Canal Masterplan***

- Completed in 2000, the Masterplan is to guide development along the Alexandra Canal foreshores. The strategies and actions were largely taken over by South Sydney Development Corporation, and then by the Green Square development / City of Sydney. It is understood that DAs have been prepared for extension of the cycleway on the eastern shore to connect with Maddox Street, Alexandria, but land issues are yet to be resolved.

### ***Cooks River to Iron Cove GreenWay***

- An environmental vision which seeks to “refocus community attention to the local scene - to achieve a more environmentally friendly urban environment” (GreenWay web site, 2006 see [www.greenway.org.au](http://www.greenway.org.au)). Metropolitan Greenspace funding has recently been awarded to the three participating Councils (Ashfield, Leichhardt and Marrickville) for the GreenWay project to prepare a Coordination Strategy.





- Funding has also been provided under the Sharing Sydney Harbour Access Program to complete three major road crossings and linkages along the corridor at Lewisham.
- A potential GreenWay pathway/cycleway would connect with the Cooks River at about Wardell Road, with access improvement likely to be sought including a new pedestrian/cycleway crossing of the Cooks River in the vicinity of Wardell Road, connection with Tennyson Street, Dulwich Hill, using an access way to Marrickville Golf course, and improved access along the foreshores both on the northern and southern banks to link into this connection (refer **Section 5.5.6**).

### 3.1.2 Major Projects Potentially Impacting on the Cooks River Pathway

Specific major projects and initiatives that could impact on the pathway include:

- **F6 Freeway and connections north / Edgeware Road** - It is unclear if proposals for the F6 freeway will proceed. Shelved by a previous roads minister, they were recently resurrected. The project would involve crossing the Cooks River at about Tempe Reserve and over Tempe Lands.
- **Wolli Creek Development** - An urban development project at Wolli Creek of some 6,500 residents and 7,000 workers. The Discovery Point mixed-use development located around the new Wolli Creek Interchange Railway Station, comprises some 1,000 units and 55,000 square metres of non-residential land use. A foreshore pathway/cycleway is included as part of the development and will be constructed soon. In addition, there is Section 94 funding for a bridge across Wolli Creek in the long term.
- **Canterbury Town Centre** - Canterbury Council has recently announced a Town Centre Masterplan for the commercial and light industrial precinct surrounding Canterbury station and leading down to the Cooks River foreshore (refer [www.canterbury.nsw.gov.au](http://www.canterbury.nsw.gov.au)). The proposal considers redevelopment of the retail and industrial buildings along the river frontage to residential, commercial and foreshore plaza/promenade. Although the concept plan includes cycling and walking, the concept sketches appear to indicate a multi-level promenade and café area where currently the pathway parallels the Cooks River.



- **Proposed M5 East Cycleway** - RTA policy is to provide cycling facilities in conjunction with road improvements and upgrades. The M5 East (now completed) prohibits cyclists from using the M5 East tunnel and thus there is a requirement to provide an alternate route. A feasibility study (Sustainable Transport Consultants, 1998) identified a route parallel to the East Hills railway and Wolli Creek, commencing at Bexley North and connecting with the Cooks River Cycleway near the Princes Highway. However, local opposition to such a route on environmental grounds has delayed any largely off-road route in the corridor as proposed.
- **Cooks Cove Development** - A project that aims to establish a trade and technology zone within a 100 hectare site on the southern side of the Cooks River adjacent to Sydney Airport. The area currently encompasses the Kogarah Golf Club, sporting fields, Eve Street wetlands and degraded open space. It is expected to be completed within 10-20 years. As part of the development, a publicly accessible foreshore pathway/cycleway linking Marsh Street to Muddy Creek is proposed.
- **Cooks River County Road Reservation** - A draft local environmental plan to introduce replacement zones over land previously required for the now abandoned Cooks River County Road has been prepared. The road reserve was seen as a “major threat to the future of the southern foreshores of the River, but also discouraged local Councils from spending time and money on the management of reserves” (CRFSP, 1997). The LEP will, among other things, result in an increase in the amount of open space along the banks of the Cooks River and protect existing open space. This LEP was publicly exhibited in June 2005 and has been adopted by Council for referral to the Minister for final approval and gazettal. (Canterbury, SoE report 2005).
- **Sydney Airport Development(s)** - A number of significant developments for Sydney Airport have recently been proposed, including a 5,000 car capacity multi-storey carpark and a bulky goods retail centre. Vehicle traffic to and around the site is likely to increase due to the development, as well as it being a more prominent destination for a workforce. To date there has been no major pathway access planning. There is an existing need for better links between the airport and the surrounding pathway system.





- **Desalination Plant** - A proposed desalination plant at Kurnell has been shelved (at least for the time being). Options for links to the water mains in Marrickville would have necessitated cut and cover piping along the southern bank of the Cooks River from Kyeemagh to the Princes Highway or Wolli Creek and tunnelling under the River with works at Mackey Park.
- **Tempe Lands and Tempe Reserve** - Rehabilitation of the former Tempe Tip and Tempe Reserve has been undertaken by Marrickville Council over the last few years. Tempe Reserve is now largely complete, but landuse for areas to the north of the reserve and along the west side of Alexandra Canal is yet to be finalised, and depends on the outcome of F6 proposals and funding availability for pathway connections through to Euston Road, Alexandria.
- **Steel Sheet Piling Removal and Replacement Program** - The NSW Department of Natural Resources is currently undertaking preliminary investigations and design for the removal of deteriorating steel sheet piling embankments in Marrickville and Canterbury LGAs, and their replacement with more ecologically sound bank treatments. Improvements to foreshore paths in the affected areas will be done in conjunction with or following completion of bank works.

### 3.1.3 Local Government Planning and Works

#### ***Council Agenda 21 and Environmental Management Plans***

At a local level, most Councils have in place Climate Change Agenda 21 strategies guiding actions related to air/land/water such as sustainable transport, and biodiversity - bushcare and environmental sites. Reporting of this is in the State of the Environment (SoE) reports.

SoE reports have been prepared for each of the council areas and are generally available on the Council Web sites and provide a starting point for identifying key issues and actions for recreation/sustainable transport and biodiversity in each LGA. Key issues arising from a review of each of the SoE reports in relation to the pathway have been incorporated into the relevant sections of this report and attributed where this is possible.





Each Council along the corridor will be preparing or have in place an Environmental Management Plan (EMP) which outlines Council's environmental goals and strategies and lists actions that will support them. The Plan is prepared annually on a Financial Year basis during December-February and is a key document supporting each council's Operational Plan. The EMP provides a framework to meet legislative, policy and community requirements and expectations. They are usually prepared by officers at a managerial level with responsibility for that task. An early draft of the EMP is often completed in December, leading to drafts plans for public comment early in the calendar year. The Plans are agreed to by Council in July.

Works are also planned by Councils for upgrade / improvement of the pathway and associated parks. The consultants have been in discussion with the various Council officers responsible for works in the study area.

### 3.1.4 Cycling, Walking and Active Transport strategies

#### ***State Level Strategic Initiatives***

At a State Level, initiatives related to cycling, walking and active transport include:

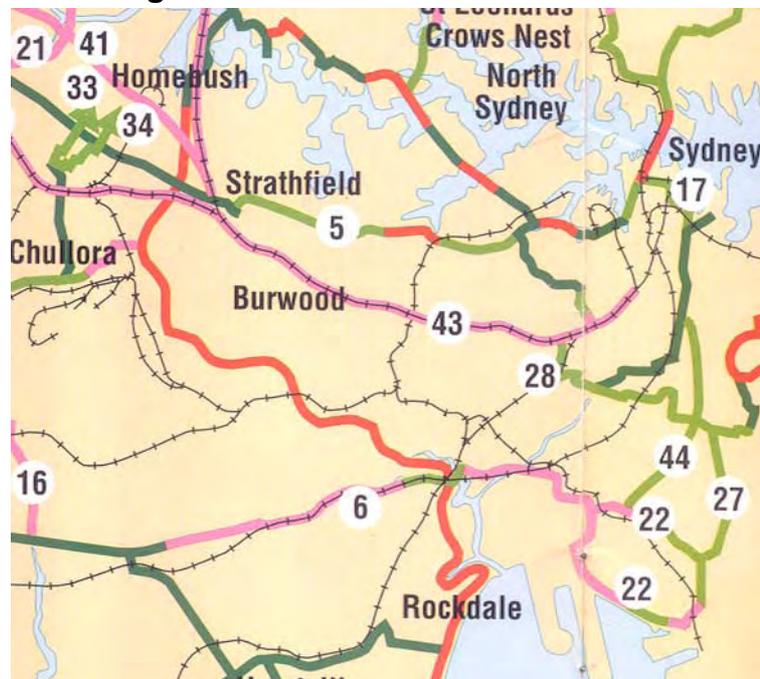
- **Integrated Transport Plan 2010** - largely defunct/inoperative as relates to Cooks River and trails planning. Greatest influence would be impact of transport initiative on local traffic volumes and car ownership and use - particularly impact of major road infrastructure on rat-running.
- **Integrated Land Use and Transport (ILUT)** - sets out planning guidelines for the integration of active transport into new developments.
- **TravelSmart** - provides information and encouragement for public transport and active transport usage. Funding is provided to a range of initiatives at the local level. Refer [www.travelsmart.gov.au](http://www.travelsmart.gov.au).





- **BikePlan 2010** - Action for Bikes BikePlan 2010 prepared in 1999 set out a costed 10 year plan for the creation of a series of arterial bicycle networks across NSW. The plan is somewhat opportunistic and does not adequately reflect the destinations and opportunities which should provide a regional network. For instance there is no north to south regional cycleway in the plan for inner metropolitan Sydney. There are no firm plans for review or update of BikePlan 2010, nor any real prospects of significant funding increases for new regional routes under the current government funding allocations. Under BikePlan 2010 the Cooks River cycleway (from Ryde to Botany Bay) is shown as a completed part of the regional cycleway network. Other regional cycleways related to the study area (date to be completed in brackets) include: Beverly Hills to Mascot (2002) as part of the M5 east, Rail Trail Penrith to CBD (2010), Bay to Mountains Cycleway via Bankstown (2001). An extract of BikePlan 2010 is included in **Figure 3.2**.

**Figure 3.2 - Extract of BikePlan 2010**





- **Walking and Cycling Guidelines** - The NSW Government has released *Planning Guidelines for Walking and Cycling (2004)* to support councils, communities and the development industry to improve planning for walking and cycling and create healthier and more sustainable cities and centres.
- **NSW Bicycle Guidelines** - a planning and engineering manual for the design and construction of bicycle transport facilities, prepared for the RTA (Refer [www.rta.nsw.gov.au](http://www.rta.nsw.gov.au)).

### ***Local Bicycle, Pedestrian and Trails Planning***

All of the Councils in the study area have an updated bike plan or are currently in the process of reviewing or updating their bike plans.

### ***Bicycle and Walking Information***

- **Council Bike plans and cycleway brochures** - most of the Councils have produced cycling maps or bike plan maps and/or brochures for their LGA. They show completed or planned facilities and often contain information about the use of pathways and appropriate pathway etiquette and road rules
- **Walking Maps** - have been prepared for Sydney Harbour, and new maps are currently being prepared for the Inner West and the Cooks River (refer <http://www.planning.nsw.gov.au/harbour/walking.asp>).
- **Cycling Guide Books and Mapping** - The Bike-it! Sydney guide book for cyclists (Bruce Ashley, Chain Gang Press, 2005) has been expanded to include the Cooks River region east of Campsie. The mapping shows a suggested “back-street” route network and does not necessarily use the Cooks River pathway or marked cycling facilities.





- **Cooks River Path Signage** - The CRFWG is currently coordinating a collaborative regional project of five foreshore councils (Strathfield, Burwood, Canterbury, Marrickville and Rockdale) to improve and better coordinate signage along the Cooks River Path in order to improve access, way-finding, safety, useability and enjoyment of the path and the foreshores. A new family of Cooks River Path signs is being planned which will provide route and local area maps, street and suburb identification, river identification and directional indicators to important destinations such as amenities and railway stations.

### 3.1.5 Environmental Programs along the Corridor

As well as a number of specific environmental sites of significance as detailed in **Section 4.2.2**, there are environmental programs currently underway which may impact/interact with the pathway. These include:

- **RiverLife Interpretive Tour Program** - Provides members of the community with the opportunity to enjoy and learn about the River and its relationship with the urban environment, through volunteer-led kayaking, walking and cycling tours, and art workshops held along the Cooks River. Jointly run by Marrickville, Canterbury and Strathfield Councils, this program arose from a previous CRFWG stormwater education initiative. The project involves recruiting, training and supporting members of the community to develop and provide free guided tours along the Cooks River, incorporating sustainability and stormwater messages, along with information about local history, natural heritage and environmental management. There is potential for the RiverLife Tours program to convey information regarding the extent and layout of the pathway network (and local linkages) and appropriate pathway behaviour, to promote use of the pathway for active transport and to provide feedback to the councils on pathway condition and maintenance needs (Refer <http://www.canterbury.nsw.gov.au/cooks/riverlife.htm>).



- **Planting the Seed (PTS)** - Funded by participating councils and the NSW Department of Planning through the CRFIP, PTS aims to develop a comprehensive database and maps of remnant and revegetated sites for the lower Cooks River foreshore area. This will be used to identify potential habitat corridors and sites where seed can be collected and as a guide for Councils' planning controls. Past management of the sites will be reviewed and recommendations will be made for future management. This project is expected to be completed by the end 2006. Information from the project is expected to be placed on a common GIS framework, and may be a useful tool to assist with pathway location, interpretation and identifying future areas for revegetation.
- **RiverScience** - Aims to establish an ecological monitoring program for the estuarine sections of the River. The monitoring program is being designed and initial benchmarking studies are being undertaken by the Australian Catholic University for Canterbury, Kogarah, Marrickville and Rockdale Councils, in partnership with the University New South Wales, Sydney Water and NSW Department of Primary Industries - Fisheries. Findings will guide councils in managing factors impacting on the ecological health of the river and will provide scientific information needed to assist in the future development of a foreshore vegetation and habitat (mangrove / salt marsh) management plan.
- **GreenWeb Sydney** - Initiative of the combined Sydney Regional Organisations of Councils (ROCs) that promotes the establishment of a "green web" of native vegetation to protect, conserve and enhance remnant bushland in the Sydney region. The GreenWeb Sydney Action Plan is a regional vegetation management plan that highlights the role of local government in biodiversity management. It suggests strategies and actions that can be adopted to protect and enhance habitat corridors. The Action Plan has guided many revegetation projects, including several run by CRFWG member councils along the Cooks River. Actions in the plan calling for the integration of biodiversity conservation into planning controls are yet to be implemented. More information can be found at [www.sydneygreenweb.net.au](http://www.sydneygreenweb.net.au).





- **Cooks River Environmental Workers (CREW)** - The appearance and, to a limited degree, health of the River is being improved through a coordinated and collaborative river-wide cleanup program, which is run by the CRFWG with the support of six foreshore councils, the Periodic Detention Program of the NSW Department of Corrective Services and the Georges Riverkeeper Program of the Georges River Combined Councils Committee. CREW brings a team of supervised volunteers from the Periodic Detention Program at Parramatta Gaol to the River every weekend to remove litter and dumped materials from the waterway, banks and foreshore parks. Councils dispose of the rubbish collected. .

### 3.1.6 Recreation and Open Space Planning

#### ***Changing Demographics and Recreation Needs***

Demographics in the study area indicate that there is expected to be a 45% increase in the population over the next 20 years, with an ageing of the population, a higher proportion of people from non English speaking background, and an increase in couples and those living alone (Strathfield Council SoE, 2005). Recreation demands and opportunities across Sydney were recently assessed by the Department of Planning in consultation with local government. The highest growth in public demand was for informal recreation areas, such as walking and cycling trails through parks and along waterways. There was also a strong demand for family oriented parks that cater for a variety of experiences. These factors will place increasing pressure on open space, access corridors, and recreational trails.

#### ***Recreation Strategies and Plans***

Most Councils have prepared recreation strategies to address key issues and trends, such as the following:

- Inner Western Sydney suffers from a low rate of open space provision (eg 1.61 ha per 1,000 population in the Marrickville LGA).
- Sports fields are at capacity and there is a high use of existing facilities.
- New residents are key users of open space.



- Open space and pathway usage is quite variable, with peak use occurring during early mornings, evenings, in summer and on Sundays.
- Improvements in facilities will be needed to cope with increased demand.
- The open space system could be extended into the local street system.

### ***Cooks River Open Space Plan***

The NSW Department of Planning is currently preparing a regional open space plan, which will develop and recommend a hierarchy of open space uses for the entire open space network associated with the Cooks River. This is being funded through the Sydney Regional Development Fund, and is intended to guide future planning and park / recreational improvements within the Cooks River area.

### ***The Recreation Experience***

People vary greatly in the kinds of recreational and leisure experiences they desire. In the past, the range of desired experiences has been referred to as a Recreation Opportunity Spectrum (or ROS), and pathway users have been unhelpfully “pigeonholed” into the categories of “recreational user”, “rider” etc. Experience and desires can vary with time (temporal change, ageing and experience), and can be greatly influenced by others in one’s group or using the pathway, including family, friends, colleagues and passers-by. Quite often the recreational experience for walkers, joggers, roller bladers or bike riders, has an overall motive such as gaining fitness, but with underlying rewards such as relaxation, quiet, appreciating nature and social interaction. Bicycle use of the pathway is determined by a diverse mix of motivations and needs; it is not sufficient to merely categorise riders as “recreational riders” or “commuters”, but better to understand the expectations, desires and likely behaviours to be expressed by pathway users.





## 3.2 Corridor Analysis in Respect of Pathway Improvement

### 3.2.1 Strengths of the Corridor

- **CRFWG, Councils and agencies** - Commitment to improving the corridor, cycling facilities and following ESD principles.
- **Location** - Centrally located in the Sydney metro region, with a large population base close by, and covers the full length of a catchment.
- **Heart** - There is the central “heart” being the river corridor with which to provide strong recognition and focus, and where various parklands activities can be undertaken and linkages to the periphery made.
- **Public transport** - Access is relatively good by a range of transport modes along the corridor. There are good rail stations along the corridor and potential for building connections with existing interchanges, bus routes and public transport access generally.
- **Diversity and scale** - A large and diverse corridor with plenty of variety of landscapes and land uses and opportunity for a number of means of experiencing the river and cycling loop or circuit rides. Topography not hilly or too challenging.
- **Environmental policies** - Strong policy support for ESD principles and sustainable transport and much work being done on environmental and heritage values along the corridor.
- **Waterways** - Alongside the waterway for most of its length - much of the parklands is close by river, stream, ponds and lakes.
- **Cycling** - Existing cycling use and recognition of the facility by wide section of public, who have been using the pathway for over 30 years as a specific facility and for many years informally before that time.



### 3.2.2 Weaknesses of the Corridor

Weaknesses of the pathway system and corridor in regards potential for being a *big improver* and Sydney / National feature:

- **Design** - The pathway has not been designed and built as one cycling and walking facility, but piecemeal over time. Facilities have to be retrofitted. Events and activities have to be slotted into an existing parklands setting which has heritage and environmental constraints.
- **Built Form** - There are few buildings or locations of high quality infrastructure and architecture, although there are some heritage buildings (such as the former Sugar Mill). Many buildings “turn their back” on the river and corridor. A strange mix of urban and built form, with much of the pathway and furniture of poor to average quality.
- **Landuse and Demographics** - Increasing residential densities and unit development within the catchment and periphery will lead to increased car usage and traffic levels. Will these residents take up cycling and walking and get involved in improving the environment of the catchment and river?
- **Pathways** - The shared pathway network mostly too narrow to permit safe and stress free use by large numbers of cyclists and walkers, bladers, joggers etc. Number of stressful at-grade road crossings which need to be grade-separated.
- **Pathway Conflict** - Differing expectations between pathway and open space users can result in conflict. To date this has been relatively minor along the Cooks River compared with other popular pathways (such as the Iron Cove Bay Run), but could increase with increasing path usage and congestion.
- **Car Dominance** - The corridor is crossed by many roadways and those travelling along the corridor by bike or foot perceive it as being car-dominated, both in the way motorised vehicles are catered for through road design and car parking.
- **Circuits** - Most of the cycling pathways or routes are linear “out and back” along the River, rather than loop or circuit routes which extend outward into the wider catchment and return to the original destination.



- **Vegetation and Pathways** - Significant levels of reconstruction works and revegetation activity will be required to overcome the engineering works and poor land use planning decisions of yesteryear. There is an issue of current and future impacts on the pathways and roadways from tree root damage, and overhanging vegetation obstructing the pathway and obscuring visibility. This has resulted in some cases from inappropriate species selection and location, and pathway design and construction.
- **Activities and Interest** - Lack of things to do, very few cultural interest, artworks and sculpture to excite the visitor. Facilities such as cafes, service areas etc are almost non-existent. The constructed landscapes of the site are quite mediocre visually and in terms of levels of exciting things to do.
- **Resources** - Indications are that there are only limited financial resources with which CRFWG has to work with to develop the corridor and limited opportunities for future funding or revenue generation.
- **Landscaping** - Although open spaces along the corridor are generally well established, there are few mature tree canopies providing shade and aesthetics which would attract all users, including cyclists.
- **Support Services** - For bike riders and others using wheels such as end of trip facilities, mechanical servicing and repair, bike hire etc are largely non-existent.
- **Environmental Protection** - For “sensitive” areas will preclude rational debate on how best to enhance and build on the parklands setting and provide activities which although of minimal practical impact, would be perceived as being incompatible with areas existing environmental designation and legislation.

### 3.2.3 Opportunities and Threats

#### *Opportunities*

- Extensive pathway system - better signage and development of loop circuits.
- Clearer relationship between connecting pathway within the catchment and the river itself: cycleways and pathways as a “drainage system”.





- Use of recreational activity to educate, inform and change behaviour in relation to stormwater quality and litter.
- Make better use of tidal influence and river dynamics.
- Better integrate the natural environmental features and revegetation activities and the pathway.
- Fully explore the length of catchment and changes or ecotones from headwaters to harbour to enhance the recreational experience and improve knowledge regarding stormwater and litter.
- Diversity and mix of pathway system on one or both sides of the corridor.
- Do much more with the waterfront: boating/kayaking, linking facilities such as boatsheds and cycling lockers.
- Better linkage of neighbourhoods on the periphery - especially those higher in the catchment.
- Enhancement of the existing landscape to provide greater interest and excitement.
- Transportation and accessibility - better utilise existing CityRail stations and other public transport facilities linked to bike storage and bike hire facilities.

### ***Threats***

Real and potential threats to realising the potential for the corridor as being a significant feature of the Metropolitan Trails Strategy include:

- Increased urban densities and resultant increase in traffic along and across the corridor and higher use of pathways.
- Monotonous and all consuming 3m wide concrete pathway dominating the corridor.
- Poor water quality and debris and pollution after storms detracting from the quality of experience.
- Vegetation impacts - tree root damage to asphalt pathways and road surfaces (mainly from Casuarinas), closeness of trees to the pathways obscuring sight lines, and overhanging vegetation obstructing pathways.
- Private “control” of, or influence on waterfront land and access (either directly or indirectly).





- Construction of roads and or roadwork's which impact on the corridor and existing or future potential pathways.
- Environmental and heritage controls limiting the scope for further pathway development.
- The pathway system becoming so popular that it is overused and conflict increases.

### 3.2.4 General Concepts and Ideas

#### ***Creating a Feature of Sydney and the East Coast***

- Recognised as a premier destination.
- Contains elements, design and environmental features which are unique and high quality.
- Caters for a diverse range of cultural events.
- Has a high visitation and use by both locals and visitors.

#### ***Characteristics of Places Which Are Highly Regarded***

- Well established and scenic parkland settings, often with water or mountain views.
- Essentially car-free. There is not a feeling of being threatened by, or having to compete with motor vehicles or trucks, and restricted or no car spaces for parking on-site.
- Close (within walking distance) to high population densities in the inner/established areas of major capital cities.
- Provide a range of facilities, events, items of cultural interest.
- Have a system of loop or looped pathways, and/or promenades.
- Celebrates the bicycle, the river and active transport in all its forms.



### **Criteria for Success**

For the improvement program to be successful, criteria for success have been assumed to be:

- There is an increase in the number of riders and walkers using the corridor.
- There is reduced conflict between pathway users, and between pathway users and other users of open space.
- The experiences gained rate amongst visitors as comparable or better to experiences available in the Sydney region.
- Strategies in place to cope with high levels of use.
- Cycling in the corridor is as safe as best practice can provide.
- Active transport at all times has priority over motorised transport in both moving along the corridor and the wider catchment area.
- There is an improved diversity of experiences on offer - covering the full spectrum of bike riding and velo culture, as well as walking for pleasure, fitness, and passive contemplation.
- The corridor is host to a number of major pathway and waterway events throughout the year.
- The corridor is enjoyed by locals and visitors alike.
- The amount of regulatory signage can be reduced due to the general high level of appropriate shared use behaviour.

### **Key Features for Improving the Corridor and Pathway**

- **Access** - The corridor is easy to access and move along, by cycling from nearby and periphery areas, and using public transport to travel from areas further away.
- **Location** - Well promoted and identifiable location for all sectors of the community.
- **Recreation setting** - The parklands provide attractive and exciting settings, which provide landscape, cultural, sculptural interest as well as areas for tranquillity and contemplation. Both the natural and cultural features of the corridor are built upon, including the tide and dynamics, the “headwaters to the sea”, the river ecologically, the indigenous history.



### ***Ideas to Attract and Entertain the Experience for Corridor and Pathway Users***

Although the development of social infrastructure falls outside the scope of the current brief, the study team has developed some ideas based on stakeholder feedback and general observations which could be used as input into the development of a social infrastructure program, including:

- The Cooks River serpent - from tail (Enfield) to head (Kyeemagh) and possible Aboriginal story/theme.
- Interactive sculptures - get a buzz out of cycling and get a benefit or reward for being active. Reflective interactive sculptures for night cycling, sound sculptures that come to life as you pass by bike or on foot.
- Use of natural timber sculptures etc where waiting for trees to grow.
- Using both sides of the river in a complementary way - for instance one side being the through-cycleway, the other the contemplative side.
- Have large Australian plant grass meadows (such as with Plume Grass *Dichelachne sp.* or Wallaby Grass *Austrodanthonia sp.*) alongside and encompassing the pathway at specific locations.
- “Ride the Tide” barge trips which take people up and down the river with the tide - could even be at night to watch the stars. Collect people at staging points along the river. More interpretation and sculptures which catch the tidal movements.
- Hold events which link to other major destinations such as Centennial Park, or Sydney Olympic Park and Sydney Harbour catchments (catchment to catchment) - via Powells Creek or the GreenWay corridors.
- Can build on interactive display and download to web site then act out in the flesh. See interactive displays or have information shown on your mobile. Using technology to know where you are in the corridor in time and place.
- Free bike lockers at train stations, free bikes provided to commuters - distinctive bike which can't be removed but provided free. Could provide bike hire at Tempe – which is one of many hubs – e.g. at Centennial Park, SOP, Botany Bay.



- Recognition of weather patterns and where to go to escape winds or wind towers on markers to power the events and sites of interactive displays. Welcome points as you enter the catchment could have interactive displays which show the most protected and warmest locations, or the coolest locations with a breeze in summer, or where particular plants are flowering or looking their best.





## 4 STRATEGIC ISSUES

### 4.1 Road and Rail Crossings

The Cooks River is crossed by a number of roads and railways. The study process has identified that a large proportion of these crossing facilities are now considered to be sub-standard, even though when they were first constructed they may have been appropriate for the conditions. In particular, the road safety audit has found a number of the crossing facilities unsuitable for the current usage patterns.

**Table 4.1** provides detailed road, traffic and hydraulic information on each of the crossing facilities. **Table 4.2** provides a crossing evaluation matrix, including both the current situation and a range of potential solutions and their anticipated impacts.

In essence, there are five issues:

- Road safety
- Traffic delay
- Impacts on road traffic volumes
- Impacts on waterway efficiency
- Risk of exposure to rising flood waters, either tidal flows or storm water
- Construction costs.

Due to the existing road safety problems at many locations, there is a need to provide alternate crossing facilities. Given the status of the Cooks River Pathway as a major regional walking and cycling facility, the crossings should be of a high standard. Ideally fully grade-separated crossings should be available.

However, currently, none of the Councils have allocated sufficient funding to support such facilities. Moreover, upstream from Tempe, none of the road and rail bridges across the River provide adequate hydraulic flow capacity to accommodate the desired 100 year ARI flood levels. Canterbury Road is one of the most flood prone locations, with an estimated rating of 2-3 years.



**Table 4.1 - Road and Rail Crossings**

Location	%Flow in Main Channel 1% Flood (5% Flood) <sup>(1)</sup>	1% Flood Level (mAHD) <sup>(2)</sup>	Sydney Water Ref <sup>(3)</sup>	***Upstream Hydraulic Capacity (ARI Storm Event Capacity in years) <sup>(3)</sup>	Route Number	Traffic Volume (vehicles/day) <sup>(4)</sup>	Existing Facility	Road Safety Audit Risk Rating	Proposed Facility - Short Term	Proposed Facility - Medium to Long Term
Underwood Rd	--	--	--	--	SR7324	14851	Signals (missing ped / bike phase)	--	Provide missing pedestrian crossing and improve phasing	--
Western Motorway	--	--	--	--	M4	81266	Overpass (u-rails block access)	--	Remove bollards	--
Parramatta Rd	--	--	--	--	SH5	27695	Signals	Medium	Improve traffic facilities and phasing	Investigate opportunities for grade separation
Arthur St	--	--	--	--	SR2057	10585	None	Intolerable	Kerb extensions and bicycle shoulder lanes	--
Centenary Dr	--	--	-- (X-ZA at golf course)	-- (>100)	MR200	85509	Traffic signals at Weeroona Rd	--	Negotiate access to existing underpass at golf course with suitable path links	--
Morgan Pl	--	--	W	50-100	local	--	None	High	Priority at-grade crossing	--
Hume Hwy	--	--	S	15-20	SH2	46972	Underpass	Medium	Improve lighting	--
Water St	--	7.8	HB	12-15	SR7047	11028	Underpass (narrow)	Medium	Improve sightlines, signs and markings	Widen





Location	%Flow in Main Channel 1% Flood (5% Flood) <sup>1)</sup>	1% Flood Level (mAHD) <sup>2)</sup>	Sydney Water Ref <sup>3)</sup>	***Upstream Hydraulic Capacity (ARI Storm Event Capacity in years) <sup>3)</sup>	Route Number	Traffic Volume (vehicles/day) <sup>4)</sup>	Existing Facility	Road Safety Audit Risk Rating	Proposed Facility - Short Term	Proposed Facility - Medium to Long Term
Maria St	--	7.3	H-HA	4-5	local	--	Refuge (narrow)	High	Kerb extensions with speed humps on both approaches	
Georges River Rd	--	6.8	GA	3-4	MR459	31950	Underpass	Medium	Improve drainage and lighting	--
Second Ave / Lees Ave	--	5.5	FA	3-4	local	--	Staggered island (narrow, sharp turns)	Intolerable	Wide refuge with kerb extensions and speed humps on both approaches	High clearance underpass (closed or behind headwall)*
Fifth Ave / Burwood Rd	--	4.4	C	5-6	SR7067	15492	Staggered island (narrow, sharp turns)	Intolerable	Wide refuge with kerb extensions and speed humps on both approaches	High clearance underpass (closed or behind headwall)*
Brighton Ave	93% (97%)	4.0	AZ	6-7	SR2014	15418	Staggered island (narrow, sharp turns, detour)	Intolerable	Wide refuge with kerb extensions and speed humps on both approaches	High clearance underpass (closed or behind headwall)*
Bankstown Riwy	90% (95%)	3.7	CZ	20-25	--	--	On-road (mixed traffic)	Medium	Provide footpath under railway bridge	





Location	%Flow in Main Channel 1% Flood (5% Flood) <sup>1)</sup>	1% Flood Level (mAHD) <sup>2)</sup>	Sydney Water Ref <sup>3)</sup>	***Upstream Hydraulic Capacity (ARI Storm Event Capacity in years) <sup>3)</sup>	Route Number	Traffic Volume (vehicles/day) <sup>4)</sup>	Existing Facility	Road Safety Audit Risk Rating	Proposed Facility - Short Term	Proposed Facility - Medium to Long Term
Canterbury Rd	71% (80%)	3.7	FZ	2-3 (1-2 at Tasker Park)	MR652	42738	Underpass (very narrow, very low headroom, stormwater outlet discharges at head level)	Intolerable	Low clearance underpass	
Wardell Rd	69% (79%)	3.6	--	--	SR7053	17823	Staggered island (narrow, sharp turns)	Intolerable	Wide refuge with kerb extensions	High clearance underpass (closed or behind headwall)*
Illawarra Rd	97% (98%)	3.1	--	--	SR2021	13708	Staggered island (narrow, sharp turns)	Intolerable	Wide refuge with kerb extensions; reallocate road space to bike lane	High clearance underpass (closed or behind headwall)*
Bayview Ave	69% (87%)	2.6	--	--	SR2099	13731	Refuge island (narrow)	High	Wide refuge with kerb extensions and speed humps on both approaches	--
Richardson Cr	69% (87%)	2.6	--	--	SR2099	13731	Traffic signals	--	--	Low clearance underpass*
Main Southern Rlwy	100% (100%)	2.3	--	--	--	--	Underpass (low head room, narrow)	High	Widen, adjust sightlines	--





Location	%Flow in Main Channel 1% Flood (5% Flood) <sup>1)</sup>	1% Flood Level (mAHD) <sup>2)</sup>	Sydney Water Ref <sup>3)</sup>	***Upstream Hydraulic Capacity (ARI Storm Event Capacity in years) <sup>3)</sup>	Route Number	Traffic Volume (vehicles/day) <sup>4)</sup>	Existing Facility	Road Safety Audit Risk Rating	Proposed Facility - Short Term	Proposed Facility - Medium to Long Term
Princes Hwy	100% (100%)	2.3	--	--	SH1	61116	Traffic signals (short phase, long cycle)	Intolerable	Extend ped phase and shorten cycle	Underpass at foreshore*
Marsh St	100% (100%)	--	--	--	MR168	47587	Underpass (low head room, dark)	Medium	Lighting, signs and markings	--
Gen Holmes Dr	--	--	--	--	MR194	66333	Underpass	Medium	Adjust sightlines east side	--

**Notes**

\* Negotiation required with Sydney Water early in the design process; refer **Appendix D**.

**Sources**

- 1) Public Works (1985). Cooks River Flood Study. Ref PWD 84019. (The report notes that downstream of Tempe, flood levels are defined by extreme ocean levels at Botany Bay at +2.0mAHD)
- 2) Webb McKeown & Associates Pty Ltd (1997). Cooks River Floodplain Management Plan. For Marrickville Council and Canterbury City Council.
- 3) Sydney Water (1999). Cooks River SWC38 and Cup and Saucer Creek SWC77 Capacity Assessment. (The report notes that overbank capacity is included)
- 4) RTA (2003). Traffic Volume Data 2002. Sydney Region





**Table 4.2 - Crossing Evaluation Matrix**

Crossing Type	Cost Range Est	Road Safety and Accessibility	Traffic Delay	Tidal Hydrology	Stormwater Hydrology	Headroom	Comment
At-grade staggered island	\$10-\$20k	Dangerous, especially if narrow, if poor orientation, for inexperienced users and for disabled users	None	--	--	--	Outdated facility needing replacement
Refuge island (with or without kerb extensions)	\$10-\$20k	OK if wide enough	None	--	--	--	Probably acceptable to most, but delays to pathway users
Raised at-grade priority crossing with refuge	\$30-\$40k	Good	Only suitable for low volume local streets	--	--	--	Recommended for use at selected locations
Wide refuge with kerb extensions and speed humps on both approaches	\$40-\$50k	Good	None	--	--	--	Preferred crossing facility, recommended for general use
Low clearance underpass	\$40-\$50k	--	None	OK	OK	Min 2.0-2.5m	Only achievable at selected locations; negotiations required with Sydney Water, refer <b>Appendix D</b>
High clearance underpass - open mesh cage	\$70-\$80k	--	None	OK, but not accessible twice daily	OK, but not accessible during events	OK	Daily inundation makes this unacceptable
High clearance underpass - closed and pumped	\$500-\$750k	--	None	Not acceptable	Not acceptable	OK	All bridges along the Cooks River have existing hydrological capacity short falls (Refer <b>Table 4.1</b> )
High clearance underpass behind headwall	\$750k-\$1M	--	None	OK	OK	OK	Only achievable at selected locations





The impacts on hydraulic capacity effectively prevent access underneath any of the existing bridges over the River.

Accordingly, it is necessary to seek at-grade solutions, such as raised wide refuges with kerb extensions and speed humps to slow down approaching traffic. The facilities include the following design elements:

- Removal of staggered medians currently present at several key locations
- Standard speed hump (raised or watts profile) for motor traffic on both approaches to the crossing, designed in accordance with Council or RTA specifications
- Where feasible, kerb extensions and / or median (at least 2.5m wide) to reduce the width of the crossing for pedestrians and bicycles, so as to minimise the crossing width and delays
- Standard signs and markings to advise all users of the crossing facility
- New kerb ramps, flush and lip-less.
- “Look Right (Left)” pavement stencils for enhanced road safety.

With regard to public exposure to risk of rising flood waters, Sydney Water is currently developing new guidelines. **Appendix D** provides an extract of the Melbourne Water guidelines, which are expected to be adopted by Sydney Water. Sydney Water approval is required for any structures or pathways within the River corridor and early involvement in the design process is strongly recommended.



## 4.2 Cultural and Environmental Heritage

### 4.2.1 Items of Cultural Significance

**Table 4.3** provides details of listed heritage items along the Cooks River pathway study corridor. There may also be archaeological or not yet recognised heritage sites, and any works should recognise this possibility, and either studies conducted prior to works being carried out, or approval obtained from NPWS for any items to be destroyed or disturbed by the activity. Advice from the Heritage Office will be required if there is any potential impact on items of State Heritage listing.

**Table 4.3 - Listed Heritage Items**

Council LGA	Item and Location	Significance in Study Context
Botany	Alexandra Canal, including dry sandstone walling - listed as State Heritage Item on Part 1, Schedule 5 Botany LEP 2001 (as amended) and for City of Sydney Council. and listed under the Sydney Water Section 170 register	Approval required for any work within the bounds of the listing. Sydney Water Register requires that "it be maintained with due diligence in accordance with State Owned Heritage Management principles". Refer also study conducted by Godden Mackay Logan on heritage impacts for cycleway construction
Burwood	No items	
Canterbury	Former Sugar Mill, Canterbury, listed as Scheduled Heritage item 4 Under Local Environmental Plan 138, development controlled by DCP No.22, October 1996	Pathway bypasses to the south of site. No impact on heritage-listed building or impacts on DCP objectives. Refer <b>Appendix E, Detailed Diagram D13</b>
Marrickville	Aboriginal Midden - Riverside Park, listed as Heritage Item on Part 1, Schedule 5 Marrickville LEP 2001 (as amended)	To be protected and any disturbance would require approval from NPWS and heritage impact assessment undertaken. Approval for any pathway through this site highly unlikely to be given. Refer <b>Appendix E, Map 8.</b>
	Aboriginal midden and views across to Tempe House - Kendrick Park, Marrickville. Both are locally listed as Heritage Item on Part 1, Schedule 5 Marrickville LEP 2001 (as amended), map reference 3.25	No impact provided pathway location is not altered. Views across to Tempe House made more accessible if profile of foreshore pathway is increased. Refer <b>Appendix E, Map 9</b>
	Alexandra Canal - listed as State Heritage Item on Part 1, Schedule 5 Marrickville LEP 2001 (as amended)	Refer Botany Council





Council LGA	Item and Location	Significance in Study Context
	Warren Park, Marrickville, lookout and possible burial vaults. Both are locally listed as Heritage Item on Part 1, Schedule 5 Marrickville LEP 2001 (as amended), map reference 3.25	No impact provided pathway location is not altered. Refer <b>Appendix E, Map 8</b>
	Aqueduct bridge adjacent to Thornley St, Marrickville. Listed on the State Heritage Register as industrial architecture site	Sydney Water would be involved in any approvals or proposals related to this, or if any impacts on curtilage or views. Refer <b>Appendix E, Map 8</b>
	Headwalls of Princes Hwy Bridge	Not heritage-listed but part of same works as Alexandra Canal. This would need to be taken into account for any potential future route at this location. Refer <b>Appendix E, Detail Diagram D18.</b>
Rockdale	No items	
Strathfield	No items	
Sydney	Alexandra Canal	Refer Botany Council



#### 4.2.2 Items of Environmental Significance

**Table 4.4** provides details on items of environmental sensitivity along the Cooks River pathway study corridor. Other environmentally significant locations include:

- Areas of saltmarsh and mangrove colonization with locally endemic species, area of current or future mangrove rehabilitation / restoration, saltmarsh remnants.
- Bushcare and Restoration Sites Marrickville Land care sites at: Golf course, Tempe reserve (Cooks river valley garden).

There is a need for the development of a continuous band of native vegetation on both sides of the river for its full length. This is essential to protect native fauna and to enhance their habitat. It also provides shade for pathway users.

**Table 4.4 - Items of Environmental Sensitivity**

Council LGA	Item and Location	Significance in Study Context
Botany	No items	
Burwood	No items	
Canterbury	Third Ave Reserve, Campsie. Between Third Ave and Second Ave Campsie, adjacent to and north of channel entering Cooks River	Remnant of Cooks River Castlereagh Ironbark Forest. Listed as an Endangered Ecological Community under the NSW Threatened Species Conservation Act. Due to the small size of the remnant it needs careful protection and it is recommended that access not be improved*. Thus it would be unlikely (and indeed undesirable) for any consent to be given that could cause disturbance or adverse impact, such as a pathway through the site. Avoid river foreshore and remnant at this location. Future potential route subject to assessment as to impacts on expansion of remnant to southern side of drainage canal. Refer <b>Appendix E, Map 4.</b>
Marrickville	The Warren – remnant vegetation species along sandstone cliff face	Existing pathway away from site and no impact if existing alignment maintained. Refer <b>Appendix E, Maps 7 &amp; 8</b>
	Remnant vegetation at Marrickville Golf Course	Some distance from any potential future foreshore pathway. Refer <b>Appendix E, Map 8</b>





Council LGA	Item and Location	Significance in Study Context
	Cooks River Valley Garden, Tempe Reserve	Landscaping and pathways already constructed and plantings already take this into account. Refer <b>Appendix E, Map 9</b>
	Tempe Lands, revegetation	Future pathway along western side of Alexandra Canal is well away from Tempe Lands revegetation. Works have allowed for pathway location. Refer <b>Appendix E, Map 9</b>
Rockdale	Eve Street Wetlands	Existing pathway avoids wetlands. Refer <b>Appendix E, Maps 11 &amp; 12</b>
Strathfield	Enfield rail yards; Coxs Creek Reserve, off Moondo St, Greenacre	Enfield rail yards and Coxs Creek Reserve not located near existing or future pathway. Refer <b>Appendix E, Map 4</b>
	Freshwater Park – adjacent to Strathfield Golf Club	One of last remaining non-channelised sections of Cooks River in Strathfield. Pathway passes near but no impact along existing alignment. Refer <b>Appendix E, Map 2</b>
Sydney	No items	

\* Benson, Doug (1999). Report to Canterbury Council. Canterbury Council Internet site. Jan 2006.

### 4.2.3 Environmental Hazards and Threats

#### **Acid Sulphate Soils**

A key issue for many of Australia coastal estuarine environments is the potential presence of Acid Sulphate Soils (ASS). These are natural soils that form in sea water or brackish water environments. They are common in every estuary and estuarine floodplain in NSW. These soils contain iron sulphides that are stable and do not cause a problem when waterlogged. However when exposed to air, after drainage or excavation, the soils rapidly form sulphuric acid. This acid can leach into the surrounding area acidifying neighbouring drains, wetlands, creeks, estuaries and bays, causing severe environmental damage. It can affect industries such as fishing and tourism, and can impact on public and private infrastructure by causing serious damage to steel and concrete structures such as the foundations (footings) of a building (Canterbury Council, 2004).





The Cooks River valley has been mapped for acid sulphate soils. Most occurrences are Class 1 (highest category/most sensitive) along the immediate Cooks River banks (within tidal reach), with Class 2 soils on the adjoining level banks, floodplains and open space. The cycleway is mostly in Class 1 areas (where alongside the river) or over Class 2 soils (for instance, where it crosses Beaman Park). Given this rating, any works proposed would require the preparation of an ASS Management Plan as set out in the NSW ASS manual and submitted with any Development Application. Alternatively, a proponent can undertake a preliminary assessment to determine whether ASS are present and whether the proposed works are likely to disturb or oxidise these soils or lower the watertable.

## **4.3 Social Issues**

### **4.3.1 The Quality of Open Space and Social Interaction**

#### ***Multiple Use of Open Space***

The Sydney Metro Strategy calls for improved access to and quality of open space. This is also echoed in local recreation plans and management plans for open space. However, given increased population pressure in the catchment, recreational activity and a restricted linear park system, there will be instances where different sectors of the community, at different times, will have differing expectations and desires for the use of this space. Largely these differences go unnoticed, but there are times when conflict arises, such as where activities require differing levels of space, solitude or interaction, such as:

- Throwing a boomerang or flying a kite.
- Quiet reading versus amplified music.
- Free ranging activity (eg dog exercise, ball games) versus defined activity (such as riding along a bike path).

Mostly these conflicts can be minimised during the planning stages, including during development of lanes of management.





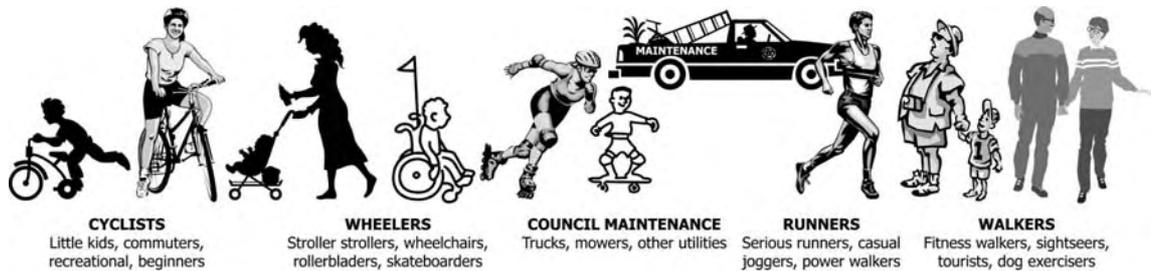
In planning for the cycleway path, it must be recognised that there are other uses of the open space areas, and that the location and scale of the pathway needs to be appropriate to be compatible with these other uses.

Correspondence was received during the course of this study alerting the project team to the need for a balance in any new pathway developments, and not to alienate passive recreation users from the river.

Features that should be included to minimise conflict and have been considered in the pathway upgrade and new provision proposals include:

- Locating cycle paths and play areas so that the cycleway does not separate carparking from high-use play and picnic areas. This will reduce instances of children running across the pathway straight from vehicles.
- Site the pathway along the edge of a recreation area rather than bisecting a high use area.
- Use of landscaping and / or fencing to shield the pathway from off-leash dog areas, and generally using landscaping as a buffer between pathways and open space areas.
- Maintaining good sight lines in areas where unstructured activity / ball games could be held.

**Figure 4.1 - Multiple Pathway Users**



Which path are they likely to want to use?





- Use of signage to inform open space users as to the most appropriate location for their activity. Place management signage (**Figure 4.2 - 1B**) may help to show path and open space users the most appropriate locations for their preferred activity. Such signs also help to locate facilities such as toilets, water bubblers, playgrounds and cafés. These signs have been developed specifically for the Cooks River and adjacent parklands as part of a separate project.
- Good planning and design to allow sufficient room for a particular activity to be the focus in a certain zone, rather than all activities sharing the same (inadequate) space repeatedly along the corridor.
- Where possible locating the cycleway/pathway uphill from areas where ball sports are played, so as to reduce instances of balls crossing the pathway.
- Signposting alternate on-road back street routes for faster riders out training or those looking for a more direct commuting route.

**Figure 4.2 - Place Management Signs for the Cooks River**



**AGD.**

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Cooks River Foreshores - Signage Concepts

26th October, 2005





### Social Interaction between Pathway Users

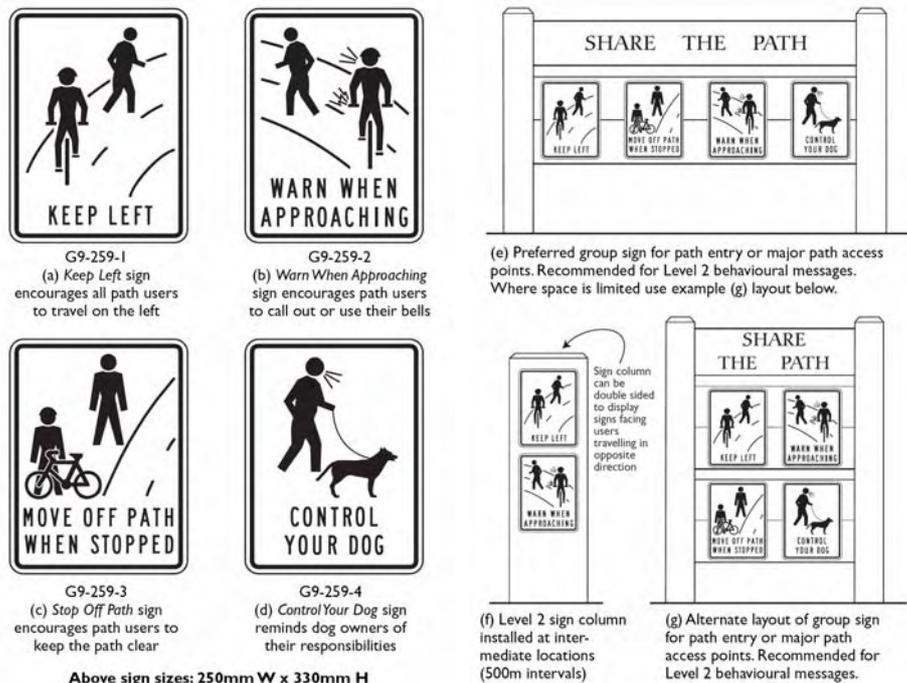
Mostly the interaction between pathway users is positive, and can include:

- Unplanned and spontaneous meetings of friends and acquaintances, providing opportunities to stop and chat.
- Watching other pathway users passing by and observing the diversity of community and behaviours.

However, there can also be conflicts between pathway users, and between pathway users and other users of open space. Considerable press is devoted to reporting on conflict between pathway users, particularly between dog walkers and bike riders. There have even been reports of “path rage”. Specific issues include:

- Lack of understanding of each others needs - for instance walkers or joggers often stand their ground and refuse to let riders continue on the paths, not understanding that cyclists are wary of moving off the path, due to the potential for their front wheel to catch on the edge of the pathway and drop down into long grass. On the other hand, cyclists may not consider that a pedestrian might have a hearing disability and cannot hear a warning bell or shouted warning, so that they end up passing close-by at speed. Behavioural signage may help address such issues, as recommended in the NSW Bicycle Guidelines (Figure 4.3).

**Figure 4.3 - Shared Path Behavioural Signage**





- Differing expectations - road bike riders out for a fast training ride where they want to keep their heart rate at a particular (high) level, versus an elderly couple out for a quiet stroll. Both users feel they have priority.
- Poor pathway design - including too narrow width, interrupting high pedestrian traffic movements, steep or tight curves, poor sight lines and “blind spots”, inappropriate landscaping / tree species adjacent to the path, and the route being less direct and not along the desire line of travel.
- Poor user behaviour and lack of courtesy - some people just don't want to get on and behave courteously towards others, especially if they are stressed, running late, or insensitive to the needs of others. Also, there are people who are not that experienced or capable at controlling their bike, dog, roller blades, etc.
- Too many pathway users - a point will be reached where pathway congestion can be a factor in increased conflict. This will occur when the various pathway users are unable to safely negotiate around each other, even with the best intentions and courteous behaviour. This can be expected where there is a level of use (say over 400-500 users per hour two-way on a 2.5m wide pathway). The coastal walk at Bondi on a Sunday would get close to this situation, whereas it would be some time before this was a real issue for the Cooks River cycleway, which currently carries about 300 bicycle per day (not per hour) and may be more than double that in pedestrian numbers.

As far as possible, the issues above have been taken into account in the review and planning process for this study, largely through adopting recommendations in the NSW Bicycle Guidelines, using varying levels of signs and markings as discussed in **Section 5.1**. However, these guidelines must be interpreted on a case-by-case basis to ensure that they are applied in the appropriate context, and also considering other supplementary or alternate measures including:

- Appropriate design for the range and volume of expected use and travel modes. Use design features to create “special” areas which emphasise the potential for conflict and increase awareness of all users. Pathway widths should be such that users can pass reasonably easily with at least 0.5m clearance.





- Reducing the amount of signage and engineering treatment at specific, high use locations. This is a counter-intuitive response to reducing conflict (and severity of crashes). It is based on the “naked street” approach, whereby a degree of ambiguity and uncertainty results in all pathway users being more conservative and being prepared for the unexpected. This approach seems to be effective on the Pyrmont Bridge. It has also been used overseas in specific locations with high usage patterns by multiple user groups, eg town squares. There is no information about its effectiveness as a general pathway management measure. Care and monitoring is required with all applications of new “technology” or concepts.
- Education and information - inform pathway users as to likely expectations, appropriate behaviour and etiquette. Signage should establish unambiguously what is expected of them (ie what is desired) rather than imposing a long list of rules / restrictions and penalties (ie what is NOT desired). Signage should provide a consistent message and be appropriately located. Speed limits for cyclists have not worked in the past, are almost impossible to enforce and are largely ignored. Riders should be encouraged / advised to travel no faster than a speed that allows them to avoid any collision or to slow / stop when needed. Examples of behavioural signs are included in the NSW Bicycle Guidelines.
- Providing choice - a range of pathways and facilities could be provided to meet different needs and expectations, possibly with a range of pathway types for differing modes of travel. The aim is to reduce conflict between users at either extreme. For instance a narrower non-linemarked asphalt or gravel pathway with rougher surface could be retained on one side of the river, with a smoother, wide, centre-lined concrete pathway on the other. There are currently some issues along the Bay Run at Iron Cove, which has segregated pathways running adjacent to each other. Walkers and joggers seem disinclined to use the gravelled pathway when an asphalt pathway is alongside. On the other hand, this pathway has very high usage levels and there are inconsistencies in behavioural signs and markings.



- Pathway maintenance - a common cause of pathway conflict results from cyclists moving to one side of the path to avoid a hazard or obstacle, such as an overhanging branch, untrimmed shrubbery intruding onto the pathway, gravel, debris or water collecting/ponding. Such hazardous behaviour can be reduced through regular inspections of the pathway and development of a maintenance schedule.
- Reducing user numbers - reducing the people pressure on any particular section of pathway at one time can be assisted by:
  - encouraging use throughout the day (and into the night) rather than congesting use into a few hours
  - providing additional / alternate tours or routes that loop out from the central corridor into the catchment (and beyond) rather than relying entirely upon the linear route following the River
  - pathway duplication
  - promoting other destinations and pathways within the region and local area
  - use of signage and linkages to encourage riders to use parallel quiet local streets. For instance, as shown on the *Bike-it! Sydney* maps, Riverview Road and Undercliffe Road at Earlwood provide a local street short-cut that would be very suitable for high speed cyclists out for training rides.
- Encourage good behaviour - through bike patrols, group rides, bicycle proficiency training. “Soft” options include: behaviour, education, information, attitude. “Hard” options include: engineering treatment, rules and regulations, enforcement and penalties.

Some Councils may be interested in pilot testing alternate signs and markings methods to manage conflicts between pathway user groups, eg as was used along sections of the Bay Run. A suitable research program is required to monitor the effectiveness of such approaches.

### ***(Mini) Motorcycles***

The use of (mini) motorcycles is of increasing concern, particularly in the Canterbury Council area but also elsewhere along the pathway.



(Mini) motorcycles are **NOT** a permitted use of the pathway or of the adjacent parklands and reserves. This could be further emphasised through Council declarations on park management signage (**Figure 4.2**).

The illegal use is exacerbated by reports of under age riders and riders without helmets and other safety equipment. Noise from motorcycles along the River can be heard for long distances as the sounds reflect over the water.

Research by the British Commission for Architecture and the Built Environment (CABE and CABE Space) provides some valuable insights into the management of the public domain with a particular focus on addressing misuse such as (mini) motorcycles. Their website provides a wealth of information through a range of electronic documents:

- [www.cabespace.org.uk](http://www.cabespace.org.uk)

**Figure 4.4** provides a “checklist of key elements” as well as some examples of effective actions. Of particular interest is the engagement of park wardens who are present within the parks at all times.

**Figure 4.4 - Decent Parks? Decent Behaviour?**

These elements were considered key to the success of the case studies. Use them together rather than singly.

- |   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Restore original designs where possible at sites of heritage importance.</li> <li>2. Ensure all designs are of a high standard, involving relevant professionals (landscape architects and designers) and valuing the contribution of users.</li> <li>3. Manage risk sensibly and retain positive features that attract people to parks: the paddling pool, play area and shrub beds.</li> <li>4. Take advantage of the potential for buildings within parks for natural surveillance, e.g. from cafés, flats and offices.</li> <li>5. Involve the community early in the process and continually.</li> <li>6. Involve 'problem' groups as part of the solution where possible and work hard to avoid single-group dominance in the park.</li> <li>7. Build a relationship with community groups that can lead to their achieving external funding and exerting a legitimate authority.</li> <li>8. Provide activities and facilities to ensure young people feel a sense of ownership. Address young people's fear of crime as well as that of adults.</li> <li>9. Use publicity to let people know that management believes in the place. Send a clear message to vandals and criminals: 'your time is up, you are no longer welcome, things are about to change'.</li> </ol> | <ol style="list-style-type: none"> <li>10. Ensure that people know how to report damage and incidents.</li> <li>11. Make sure that maintenance budgets are adequate to support after-care.</li> <li>12. Employ 'target hardening' measures sensitively as part of overall improvements.</li> <li>13. Respond rapidly to vandalism and anti-social behaviour, but bear in mind it is highly localised and caused by a minority.</li> <li>14. Work in partnership. Others may be trying to manage similar problems</li> <li>15. and be willing to get involved and share resources.</li> <li>16. Research the range of tools and powers available and use appropriate enforcement where necessary to tackle problems.</li> <li>17. Reintroduce staff and gardeners, who provide a level of authority and a point of community interaction. Ensure they are provided with back up.</li> <li>18. Ensure that initiatives are part of a coordinated approach.</li> </ol> |
|---|---|



**Park wardens patrol six major parks, with an astounding effect on anti-social behaviour**

<p><b>SUNDERLAND PARKS</b> Gangs of motorbike riders were constantly revving up their engines and driving roughshod over the city's green spaces. Frequent acts of vandalism were other problems the public had to suffer when visiting any of the six largest and most central parks in Sunderland, in north-east England. As early as.....</p>	<p>The real turnaround came with the development of the park warden service. Initially, it was run as a pilot scheme and funded through the Single Regeneration Budget and the City Council's Strategic Initiatives Budget. Among other tasks wardens open and lock gates and carry out inspection services. They have also been trained in first aid. When this proved to be a resounding success, the local .....</p>
--	---

Source: CABE Space (ca 2005)





### 4.3.2 Accessibility and Equity

Obstacles for people with mobility difficulties are found along the Cooks River pathway, including: steps and stairways, abrupt changes in pavement levels and pavement subsidence, absent kerb ramps, bollards placed too close together or used inappropriately, and width restrictions preventing the use of wheelchairs and / or hand-cranked cycles. These obstacles make it difficult or impossible for people with mobility difficulties to access the route and many are discouraged from using the facility.

According to the *Marrickville Council Access Policy & Disability Discrimination Access Action Plan* (1999, revised 2004), people with a disability “must be able to move freely and express themselves independently without barriers in order to achieve meaningful and safe participation”.

Key features of accessible facilities include:

- Compliance with Disability Discrimination Act, 1992, which sets out design requirements, particularly in regard to grades (generally maximum grade of 1:14 for ramps and 1:20 for pathways) and pathway widths/curves to allow for hand-cranked cycles.
- Ensuring that open space facilities are accessible to all in the community and that neither physical nor policy barriers prevent choice in the use of open space and the pathway network.
- Compliance with the local Council policies and actions on disability access and Disability Discrimination Access Action Plans.
- Involving representatives of stakeholder groups and Council disability officers directly in the design process.
- High maintenance standards.
- Take into account elderly or vulnerable pathway users, who may not have the same reaction times and ability to share the pathway with faster bike riders or to cross roads as safely and easily as less mobile path users.

In this context, it is recommended that a group of Council Works Engineers (responsible for physical works in the River corridor) and Council disability/access officers join invited disabled groups for a bicycle ride along the River to experience first hand existing operating constraints.





## 5 PROPOSED PATHWAY IMPROVEMENTS

This section provides details on the proposed pathway improvement strategy for the Cooks River, Alexandra Canal and a number of Strategic Links. The strategy includes the following elements:

- High priority works to address urgent road safety audit findings.
- Improvements to the existing route - these are works required to address the issues identified in the road safety audit and through the stakeholder consultation process.
- Stage 1 Proposed Routes and Improvements - these are medium term opportunities for general pathway enhancements, most of which have already been identified in Council planning.
- Future Potential Routes and Improvements - longer term opportunities, largely focussed on major items such as underpasses, new links, path widening and lighting. Any new links should be included now in strategic and planning studies, such as REPs, LEPs and Masterplans.

In addition to the site specific pathway improvements, there are a number of general requirements that apply throughout the pathway network in the study corridor, such as maintenance / minor repairs, adjustments to planning controls, the use of bollards, signage, etc. These are discussed first.

**Figure 5.1** provides a summary of the proposed action plan. **Table 5.1** summarises the pathway lengths by LGA. **Appendix E** provides detailed information on the location of the route and the proposed route development stages.

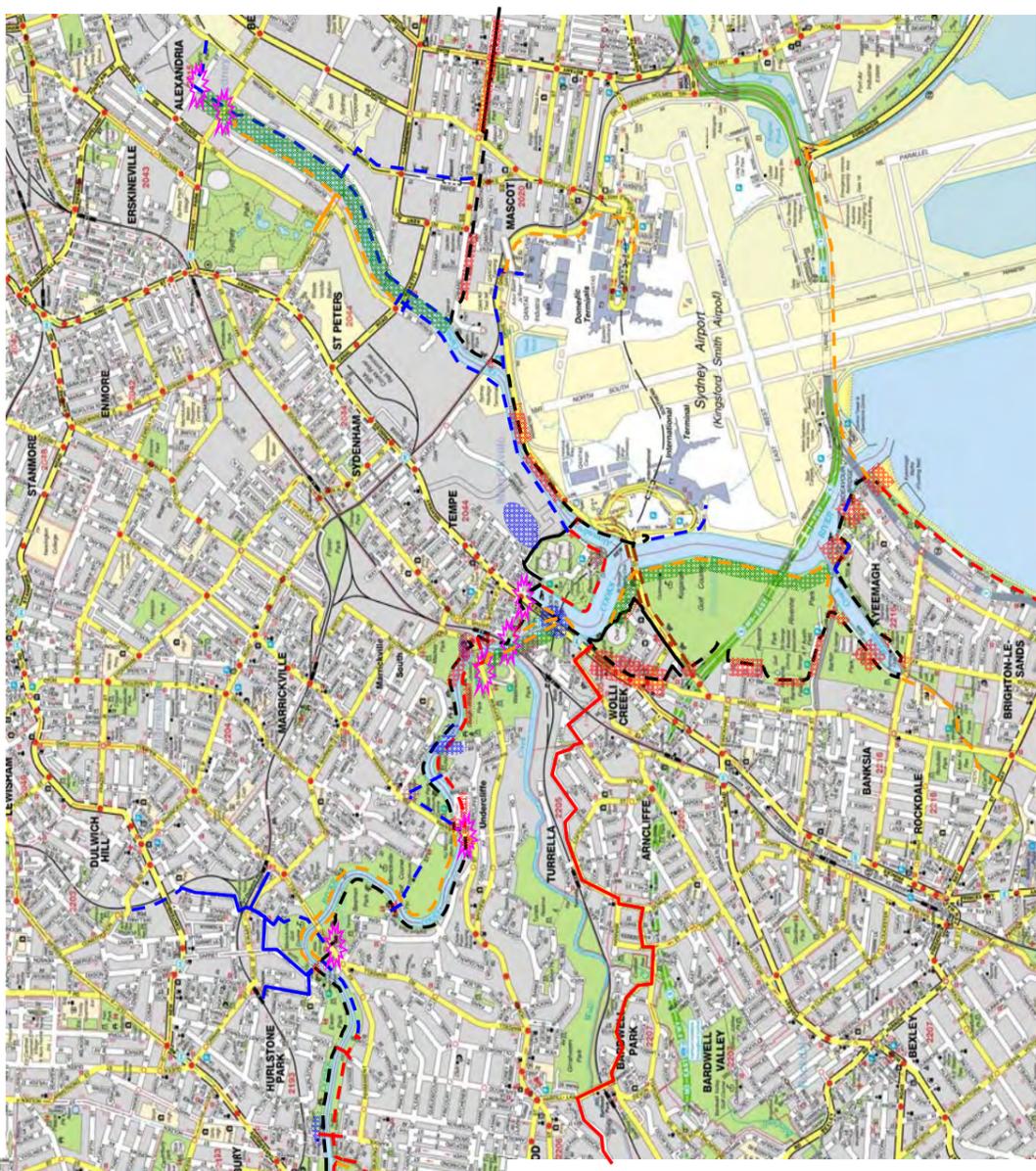
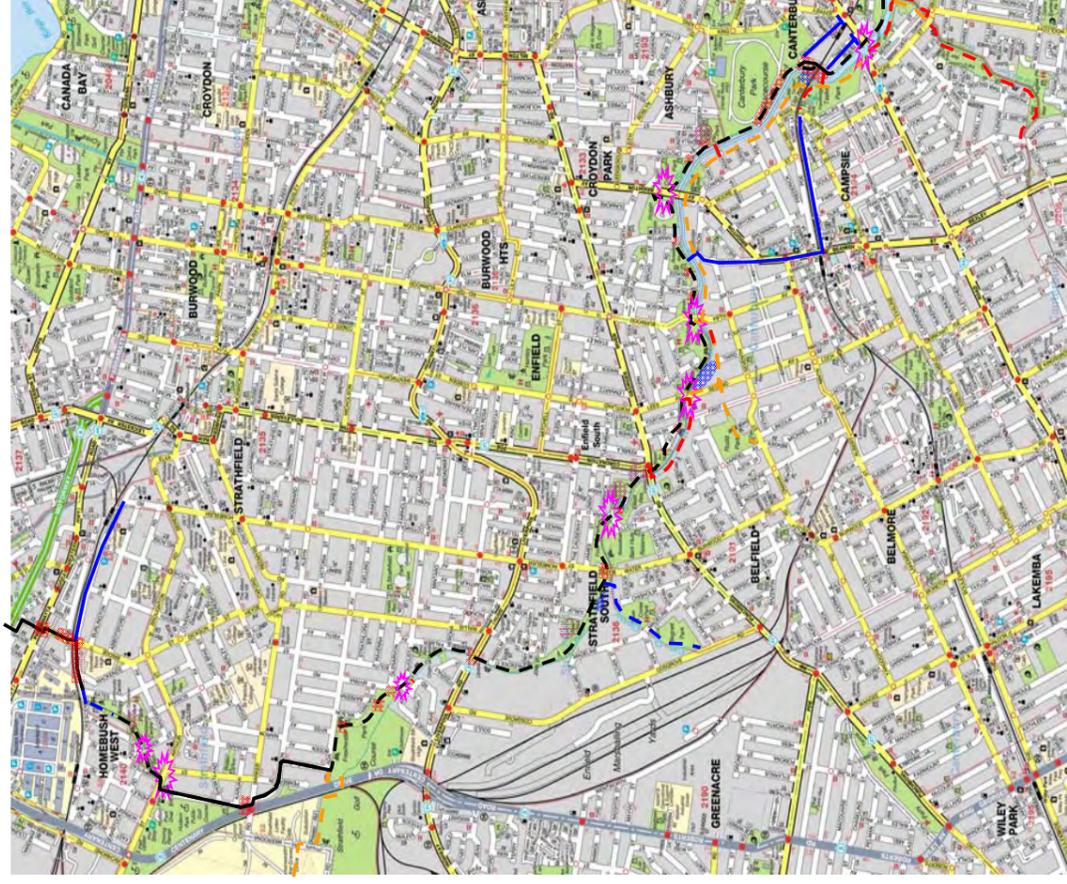


**Table 5.1 - Pathway Lengths, Summary**

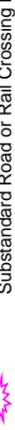
LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield	2,490m	5,680m			1,360m	100m	9,630m
Burwood	170m	1,000m					1,170m
Canterbury	210m	8,180m	3,760m	600m	2,030m	3,760m	18,540m
Marrickville	530m	3,600m	1,850m		3,380m	2,400m	11,760m
Rockdale	500m	4,800m	1,220m		1,700m	4,300m	12,520m
Botany		630m			1,840m	340m	2,810m
Sydney					2,860m		2,860m
<b>Total</b>	<b>3,900m</b>	<b>23,890m</b>	<b>6,830m</b>	<b>600m</b>	<b>13,170m</b>	<b>10,900m</b>	<b>59,290m</b>

*\* Works included in the 2005/2006 or 2006/2007 Council works programs*





**LEGEND**

-  Urgent Road Safety Audit Deficiency
-  Existing Route (on-road, off-road)
-  Stage 1 Proposed Route (on-road, off-road)
-  Future Potential Route (on-road, off-road)
-  Connections to other pathways (on-road, off-road)
-  Substandard Road or Rail Crossing Facility
-  Adjust or verify planning instruments
-  Maintenance, repairs and short term works required
-  Potential Service Centre Site
-  Cultural or Environmental Heritage Site

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**Cooks River Foreshore Pathway**

Job No **5071**

26-Jun-06

Proposed Route Development Strategy

Figure **5.1**



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## **5.1 General Requirements**

### **5.1.1 Planning and Management Controls**

To implement and manage the proposed works, it is essential that the appropriate management and planning instruments are in place. Accordingly, there is a need to integrate the recommendations in this report with the five year rolling Management Plans for each Council.

In addition, a number of planning controls must be updated or adjusted, eg Masterplans, LEPs, DCPs and Plans of Management (PoMs) for parks and reserves.

It may also be necessary for plans to reflect current trends along the pathways, eg where private gardens / backyards have started to open up to the route, including gates in fences, open fencing and enhanced private landscaping. This is an important sign of community acceptance and appreciation of the pathway.

### **5.1.2 Maintenance**

A consistent and ongoing maintenance program is required for the whole of the Cooks River and Alexandra Canal pathways, including the removal debris etc, clear verges and repairs to pavements and edges.

Special care is required after heavy weather. Consideration should be given to group-purchase a narrow gauge sweeping machine, shared by all or several of the participating Councils (cf Figure 10.2 of the NSW Bicycle Guidelines).

### **5.1.3 Bollards**

Review the use of bollards, U-rails and holding rails. They are potential hazards for both cyclists and pedestrians. The NSW Bicycle Guidelines recommend against their use unless as a last resort to prevent illegal vehicle entry. If used, they must be marked in accordance with the Guidelines (p37-38).



Bollards along the Cooks River and Alexandra Canal pathways are non-standard in the majority of incidences and often they are unnecessary. In some cases, bollards are positioned poorly, leaving a narrow slot at a critical location, eg at the top of a crest. This reduces accessibility.

#### 5.1.4 Signs and Markings

Regulatory signs and markings are an important means of providing clarity to pathway users. S4 and S5 lane lines<sup>3</sup> are an effective way to minimise conflict between pedestrians and cyclists. PS3 and PS4 pavement logos must be provided at regular intervals. Regulatory signs (eg R8-2 Shared Path) must be placed at least adjacent to all road crossings and at other places where the path can be accessed. Repeater signs may be appropriate along longer sections of the path. Warning signs should be used as appropriate, eg W6-1 pedestrian ahead near playgrounds.

There may be a need for shared path behavioural signs (including leash-free areas for dogs) at selected locations, eg integrated with the place management signs at the various parks.

Details of directional signage requirements are being documented separately.

#### 5.1.5 Dog-off-Leash Areas

There is a need to review the location and frequency of leash-free areas along the River and the Canal. Dogs are known to cause problems for various other pathway user groups such as cyclists and young children.

A number of leash-free areas are located close to the pathways, which is inappropriate. Some leash-free areas are difficult to access and therefore under-utilised. Off-leash dogs have been observed throughout the pathways.

Some behavioural signage may be appropriate.

<sup>3</sup> For details, refer Figures 8.3, 9.1, 9.2 and 6.6 of the NSW Bicycle Guidelines (p66, p70, p71, p39).





### 5.1.6 Pathway Intersections

Pathway intersections, bus stops, playgrounds, etc, all form potential conflict points between users, particularly cyclists travelling along the path and pedestrians crossing it.

Use coloured pavement to draw attention to these locations. Ensure sightlines are adequate for speeds of at least 30km/h.

### 5.1.7 Bicycle Parking and Seating at Key Locations

Bicycle parking and seating are important “trip-end” facilities and should be provided at strategic locations, eg seating at good vantage points, playgrounds and BBQs; parking near shops, toilets, railway stations, etc.

Extensive allowance has been provided in the costing schedules to accommodate seating.

### 5.1.8 Pavement Standards

Many older sections of the Cooks River and Alexandra Canal pathways are relatively narrow. It is recommended that the whole of the pathway be widened to 3.0m with 0.5m clearances to vegetation, safety barriers and road side obstacles. Typically, a widening of about 1.0m is required.

A number of specific sections have been identified later in this section and for costing purposes. Suitable construction methods and pavement materials are discussed in the NSW Bicycle Design Guidelines.

It is important for all surfaces to be smooth and flush, eg saw-cuts in concrete pavements rather than joints; steel edging on asphalt pavements. Ensure there is no edge drop-off, as this can snare and destabilise a bicycle.



### 5.1.9 Lighting

Although the lighting of paths does not have the full support of the then DIPNR Interagency Cycleways Group<sup>4</sup>, it is recommended that strong consideration be given to lighting the Cooks River pathway for its full length. This allows greater community access to the facility to be used, especially during winter.

A suitable implementation strategy is required, both to manage the high costs and to minimise environmental impacts. Consideration could be given to use lighting only during certain periods, eg not between 9PM and 5AM.

### 5.1.10 Distance Marker Posts

Distance markers are an essential tool for runners and joggers using the Cooks River pathways, to assist in their training and fitness program. Unlike serious cyclists with sophisticated “on-board” trip computers, serious joggers cannot carry accurate distance measuring equipment.

Distance markers are required at 500m intervals and should provide continuous distance indications in BOTH directions.

The distance markers should not re-start at every park and preferably not at every council boundary. Ideally, there should be a single start and finish point, eg Freshwater Park at Melville Avenue, Strathfield and Cooks River at Botany Bay, following the main trail along the Cooks River, which switches sides at Lang Road, Illawarra Road and the Princes Highway. The pathway along this alignment is largely completed and no significant changes are recommended in this report, except for possibly a new section of path along the foreshore at Kogarah Golf Course.

It may be appropriate to delay implementation of the distance markers until there is greater clarity about the timing of this section of the pathway.

---

<sup>4</sup> In May 2004, the then DIPNR held a series of meetings with an informal Interagency Cycleways Group to discuss walking/cycling path design criteria for optimising environmental outcomes along urban waterways. The draft recommendations indicated that paths should be lit only if absolutely necessary, and any path lighting should minimise light intrusion into creekline habitat areas. There is a need to define the ‘trigger’ for lighting, ie a list conditions when lighting may be appropriate or not appropriate. Also, paths should run close to any parallel roads to take advantage of roadside lighting and roadside surveillance.





Alternatively, distance markers could re-start at Council boundaries, so that there is greater flexibility in the management of the distance markers as well independence between councils.

In this case, short sections of path in Burwood and Marrickville should continue on from adjacent Councils. The “other side” of the path should be marked in continuous sections, ie Georges River Road to Second Avenue, Canterbury Road to Lang Road (when completed), and Illawarra Road to Bayview Avenue.

These sections should be marked separately from the main trail, eg “alt”. It is not recommended to mark the pathway along the Alexandra Canal until it is more fully completed.

#### **5.1.11 Public Private Partnerships (PPPs)**

On-route facilities and services could be developed through PPPs between Councils and commercial operators.

There currently is just one café along the route (Adora Chocolate Factory), with a second one almost in reach (Steel Park Sports Centre). More are required and could be developed as formal bicycle and pedestrian “service centres”. A number of locations are nominated.



## 5.2 Urgent Works

The road safety audit identified serious deficiencies on the Giovanni Brunetti Bridge. The bridge is part of the M5-East Regional Cycleway. The pathways on either side of the bridge are about 1.0m wide, close to fast moving traffic with a high proportion of heavy vehicles.

The substandard facilities continue along the shoulder of Marsh Street in the westbound direction. During the audit, the width of the shoulder was further compromised by vegetation overgrowth, which forced the auditors into the fast moving traffic lanes with no warning of the impending danger.

The offending vegetation was removed shortly after the audit.

The recommended works include widening of both footpaths along the bridge, which should be carried out as a matter of urgency. It is recognised that the costs of these works are substantial.

There may be opportunities to combine any works here with the imminent redevelopment of the Cooks River foreshore at this location. In the interim, alternate improvements should be considered.



### 5.3 Cooks River

**Table 5.2** provides an overview of the existing and proposed route lengths for the Cooks River Pathway for each Local Government Area. The following sections provide a detailed description of the recommended route improvements. In summary these include:

- Safety improvements based on the road safety audit
- Other improvements identified by Councils, user groups and other stakeholders
- Access to the various railway stations near the pathway
- Medium to long term development strategy for pathways along both sides of the River for its full length

**Table 5.2 - Pathway Lengths, Cooks River\***

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works**	Proposed Stage 1	Potential Future	Total
Strathfield	2,490m	5,390m			100m	100m	8,080m
Burwood	170m	1,000m					1,170m
Canterbury	210m	6,260m	3,760m	600m	220m	2,840m	13,890m
Marrickville	530m	2,430m	1,850m			2,400m	7,210m
Rockdale	500m	4,800m	1,220m		700m	1,600m	8,820m
Botany							
Sydney							
<b>Total</b>	<b>3,900m</b>	<b>19,880m</b>	<b>6,830m</b>	<b>600m</b>	<b>1,020m</b>	<b>6,940m</b>	<b>39,170m</b>

\* Mason Park at Homebush Bay Drive to General Holmes Drive at Botany Bay

\*\* Works included in the 2005/2006 or 2006/2007 Council works programs





### 5.3.1 Bicentennial Park to Parramatta Road

**Table 5.3** provides an overview of the existing and proposed route lengths along Cooks River Pathway from Bicentennial Park to Parramatta Road. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.3 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield	1,120m	1,260m					2,380m
Burwood							
Canterbury							
Marrickville							
Rockdale							
Botany							
Sydney							
<b>Total</b>	<b>1,120m</b>	<b>1,260m</b>					<b>2,380m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Strathfield**

- Repair pavement adjacent to Homebush Bay Substation (included in current works program)
- Sign and mark western footpath along Pomeroy Street for shared use from Powells Creek Bridge to M4 Overbridge
- Underwood Road / Pomeroy Street
  - additional bike+ped phase on northwestern approach
  - bike lamps on all four approaches
  - review signal phasing
- M4 Overbridge
  - refuges with kerb extensions on Wentworth Road South and Park Road
  - remove bollards / U-rails
- North Strathfield Station
  - Sign and mark both footpaths along Pomeroy Street for shared use by pedestrians and bicycles
  - Provide bike lamps on all approaches at the George Street intersection
  - On-road in Queen Street, in accordance with the Canada Bay Bike Plan





### 5.3.2 Parramatta Road to Ada Avenue

**Table 5.4** provides an overview of the existing and proposed route lengths along Cooks River Pathway from Parramatta Road to Ada Avenue. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.4 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield	1,370m	770m			100m	100m	2,340m
Burwood							
Canterbury							
Marrickville							
Rockdale							
Botany							
Sydney							
<b>Total</b>	<b>1,370m</b>	<b>770m</b>			<b>100m</b>	<b>100m</b>	<b>2,340m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Strathfield**

- Parramatta Road / Bridge Road
  - additional bike+ped phase on eastern approach
  - bike lamps on all three approaches
  - review signal phasing
- Bridge Road - bicycle shoulder lanes, shared footpath (dual facility to cater for multiple user groups)
- The Crescent
  - bicycle shoulder lanes from Airey Park to Bridge Road (part of Cooks River route)
  - bicycle shoulder lanes from Bridge Road to Homebush Road (link to Homebush Station)
  - green bicycle lanes at Bates Road
  - wide kerb extension with dual kerb ramps at Airey Park
- Airey Park - short section of new path on east side of the channel to link with The Crescent
- Airey Park - widen existing bridge over channel
- Fraser Street - widen existing refuge
- Hampstead Road at Melville Reserve - wide kerb extension east side





- Hampstead Road and Arthur Street - dual facility
  - bicycle shoulder lanes<sup>5</sup>
  - shared footpath east/south side
- Arthur Street / Hampstead Road - kerb extensions
- Arthur Street / Mitchell Road - kerb extensions
- Centenary Drive / Weeroona Road - gap in noise wall difficult to negotiate, widen gap and path on both approaches

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<sup>5</sup> The consultant team is not in full agreement regarding the use of bicycle shoulder lanes. Consideration should be given to removing one of the parking lanes in Arthur Street and allocation of this space for full bicycle lanes (with adequate door-opening clearances) or a one-sided off-road path.





### 5.3.3 Ada Avenue to Georges River Road

**Table 5.5** provides an overview of the existing and proposed route lengths along Cooks River Pathway from Ada Avenue to Georges River Road. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.5 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield		3,350m					3,350m
Burwood							
Canterbury							
Marrickville							
Rockdale							
Botany							
Sydney							
<b>Total</b>		<b>3,350m</b>					<b>3,350m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Strathfield - North side**

- Improve sightlines along Freshwater Park (3 locations through curves)
- Morgan Place at Augusta Street - raised platform crossing
- Hume Highway - improve lighting in underpass
- Water Street
  - improve sightlines at underpass, including vegetation trimming and realignment of the eastern approach
  - improve lighting in underpass
- Maria Street - at grade crossing with speed humps on both approaches
- Maria Street carpark - realign path clear off carpark, including a retaining wall and a section of new pathway



### **Strathfield - South side**

- Coxs Creek to Georges River Road (in conjunction with a pathway along Coxs Creek (**Section 5.4.2**)
  - planning controls for a low key pathway
  - low key pathway
- Maria Street and Water Street - kerb extensions and zebras at both roads





### 5.3.4 Georges River Road to Lang Road

**Table 5.6** provides an overview of the existing and proposed route lengths along Cooks River Pathway from Georges River Road to Lang Road. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.6 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield		10m					10m
Burwood	170m	1,000m					1,170m
Canterbury	210m	4,440m	2,350m	600m		2,840m	10,440m
Marrickville							
Rockdale							
Botany							
Sydney							
<b>Total</b>	<b>380m</b>	<b>5,450m</b>	<b>2,350m</b>	<b>600m</b>		<b>2,840m</b>	<b>11,620m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Strathfield / Burwood - North side**

- Georges River Road underpass
  - improve lighting
  - improve drainage

#### **Burwood / Canterbury - North side**

- Lees Avenue - widen footpath on west side of bridge over the River (1.0m widening)
- Burwood Road / Fifth Avenue
  - realign path
  - wide refuge with kerb extensions
  - speed humps on both approaches
  - repair western footpath on Cooks River Bridge

#### **Burwood - North side**

- Walsh Avenue - improve kerb ramps, double width, both approaches (ie Walsh Avenue Reserve and Whiddon Reserve)
- Lees Avenue
  - realign path
  - wide refuge with kerb extensions with speed humps on both approaches and lighting improvements





### **Canterbury - North side**

- Brighton Avenue
  - widen footpath north of crossing, west side
  - wide refuge with kerb extensions
  - speed humps on both approaches
  - underpass and Picken Oval / Korean Soccer Club bypass (future)
- Balmoral Avenue - realign path to improve poor combination of horizontal and vertical alignment
- Hampton Street to Rosedale Reserve - pavement repairs (included in 2005/2006 works program)
- Lees Park Tennis Courts
  - relocate parking area (budgeted for approximately 16 cars) to Harmony Street and close current access permanently
  - repair and clean existing pavement
  - rationalise use of bollards (all can probably be removed when the carparking is relocated)
- Canterbury Racecourse
  - remove casuarinas and replace by more suitable path-side vegetation
  - remove existing pavement
  - construct new pavement
- Bankstown Railway Line - narrow road and build new footpath (west side) under railway bridge between Broughton Street and Charles Street with new kerb ramps as appropriate
- Canterbury Railway Station
  - Integrate with Masterplanning for Canterbury Town Centre
  - On-road bike lanes in Broughton Street
  - On-road bike lanes in Charles Street
  - Sign and mark the western footpath of Canterbury Road for shared use from the River to Broughton Street for access to Canterbury Station
- Canterbury Road

*Although it is desirable to construct a full height, full width underpass, there are no opportunities in the foreseeable future. Access to the waterway below the height of the canal wall would provide a lower cost solution but is not available due to frequent flood events (2 year ARI). Sydney Water does not have current plans for flood mitigation. The Town Centre program does not provide adequate funding for higher cost solutions behind the bridge headwall, although this should be given further consideration as the plans are being developed.*





- Widen existing underpass using light weight structure suspended from bridge deck and headwall, at existing head room clearance
  - Provide an all weather at-grade crossing - traffic signals at Charles Street / Close Street intersection
  - Provide link from eastern footpath to pathway, including a new 3.0m wide pathway, supported by dual retaining walls
  - Detailed design to be developed in close cooperation with Sydney Water (refer **Appendix D**)
- Canterbury Road to Lang Road - high pressure pipeline signs have sharp edges close to pathway:
    - replace with in-ground concrete plates
    - liaise with "owners" eg Shell Oil (issues - mowers, visibility)
  - Sugar Works Footbridge approaches
    - realign to improve grades and sightlines
    - retaining wall
    - relocate power pole support post
  - Foord Avenue Footbridge approaches
    - realign to improve grades
    - retaining wall

### ***Canterbury - South side***

- Little Tasker Park - enhance existing trail bike park and encourage for use by "mini-motorbikes", incl behavioural signage and direction signage, enforce illegal riding outside the Park and along the pathways.
- Cup and Saucer Creek - widen bridge
- Complete missing sections of pathway at:
  - Second Avenue to Third Avenue, around remnant bushland (**Figure 5.2** shows possible pathway options, which preserve the remnant vegetation at this location)
  - Fifth Avenue to Canterbury Road, suitable crossing facilities (future)
  - Younger Avenue to Lang Road (included in current works program)



**Figure 5.2 - Possible Pathway Options at Third Avenue**





### 5.3.5 Lang Road to Bayview Avenue / Richardsons Crescent

Table 5.7 provides an overview of the existing and proposed route lengths along Cooks River Pathway from Lang Road to Bayview Avenue / Richardsons Crescent. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.7 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield							
Burwood							
Canterbury		1,820m	1,410m				3,230m
Marrickville		1,550m				2,400m	3,950m
Rockdale							
Botany							
Sydney							
<b>Total</b>		<b>3,370m</b>	<b>1,410m</b>			<b>2,400m</b>	<b>7,180m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Canterbury / Marrickville - North and south sides**

- Flinders Road timber bridge
  - provide smooth seal on bridge deck
  - replace stairs on south side with ramp (3.0 wide, 20m long)
- Steel Park to Wanstead Reserve - additional river crossing

#### **Canterbury - North side**

- Provide on-road link from Lang Road to Hurlstone Park Station

#### **Marrickville - North side**

- Provide on-road link from Lang Road to Dulwich Hill Station
- Planning controls and negotiations to include access through golf course along foreshore (future) and from Wharf Street to Flinders Road (Stage 1)
- "Low key" path along golf course foreshore





- Steel Park, Debbie and Abbey Borgia Recreation Centre
  - Link path along Illawarra Road
  - Link path on east side of park
- Steel Park - realign path away from carpark (and preferably the playground) as part of imminent works on the playground and surrounds
- Steel Park, Warren Park, Mackay Park - high pressure pipeline signs have sharp edges close to pathway
  - Replace with in-ground concrete plates
  - Liaise with "owners" eg Shell Oil (issues - mowers, visibility)
- Mackay Park
  - "Flatten" grades on eastern approach to channel
  - Remove timber pathway edging in Mackay Park
  - Replace and widen pavement

### **Canterbury - South side**

- Lang Road timber bridge
  - replace right-angle ramps (3.0m wide, both approaches 20m each)
  - provide smooth seal on bridge deck
- Wardell Road
  - Short term - wide refuge with kerb extensions and speed humps on both approaches, new footpath along northeastern side of Lang Road
  - Long term - underpass and new path along foreshore from Lang Road to Wardell Road
- Homer Street and Illawarra Road
  - Short term - wide refuge, kerb extensions, reallocate road space east side of bridge to exclusive bike lane, protected by kerb extension on northern approach
  - Long term - underpass
  - Footpath widening adjacent to Adora coffee shop
  - West of road, south of bridge - adjust gate and ensure compliance with guidelines
- Homer Street to Bankside Avenue - embankment and pavement repairs and replacement of the stairs with a ramp at Homer Street (included in works program for 2006/2007)
- Gough Whitlam Reserve - pavement and embankment repairs



### 5.3.6 Bayview Avenue / Richardsons Crescent to Princes Highway

**Table 5.8** provides an overview of the existing and proposed route lengths along Cooks River Pathway from Bayview Avenue / Richardsons Crescent to the Princes Highway. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.8 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield							
Burwood							
Canterbury					220m		220m
Marrickville		630m					630m
Rockdale					380m		380m
Botany							
Sydney							
<b>Total</b>		<b>630m</b>			<b>600m</b>		<b>1,230m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Canterbury / Marrickville - North and south sides**

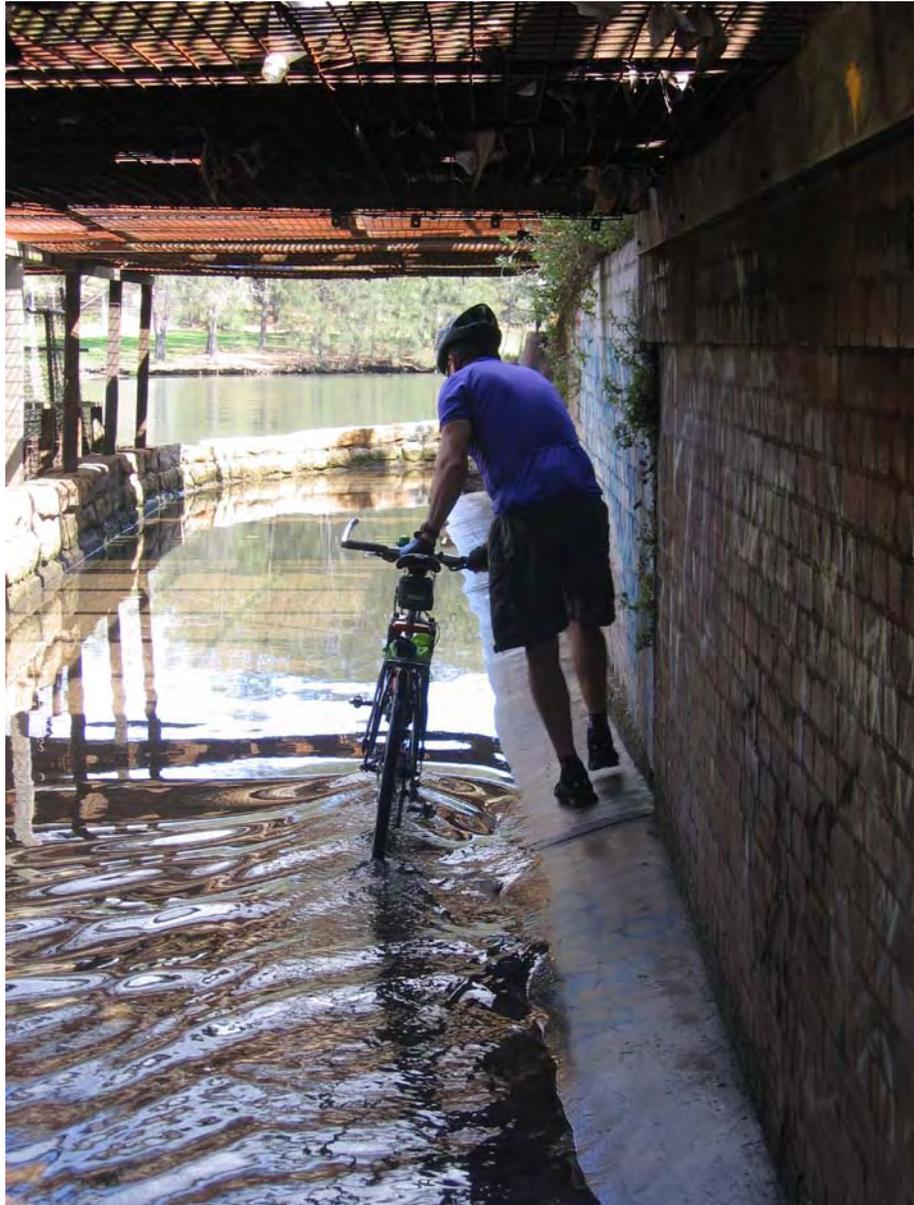
- Unwins Bridge from Richardson Crescent to Bayview Avenue - widen eastern footpath (1.0m widening)

#### **Marrickville - North side**

- Tempe Station
  - Provide bike lamps at traffic lights at carpark exit
  - Improve legibility through the carpark using signs and markings
  - Liaise with SRA regarding redevelopment of carpark and adjacent surplus lands
  - Improve bike access on stairways to railway station footbridge as well as the stairway from Griffiths Street to Kendrick Park (eg u-rail to guide bike wheels)
- Richardson Crescent (near Tempe Station) - underpass with bridging over adjacent stormwater feeder channel (4.0m wide, long term)
- Railway underpass:
  - improve stormwater drainage
  - seal off from tides using flap/valve (**Figure 5.3**)
  - provide consistent headroom at maximise level



**Figure 5.3 - Tidal Flooding at Tempe Railway Underpass**



- Kendrick Park
  - adjust Plan of Management (PoM) for path access to foreshore for new underpass
  - new underpass at Princes Highway / Cooks River Bridge (4.0m wide)
- Kendrick Park / Holbeach Avenue
  - relocate bus shelter clear off footpath
  - remove handrail at signals



### **Canterbury / Rockdale - South side**

- Commence negotiations with stakeholders for access along foreshore, under Princes Highway, railway and over Wolli Creek
- Bridge over Wolli Creek (4.0m wide)

### **Canterbury - South side**

- Bayview Avenue - wide refuge, kerb extensions, speed humps on both approaches
- New path from Bayview Avenue to Wolli Creek (Section 94 funding available from the Australand Discovery Point development)

### **Rockdale - South side**

- New path from Wolli Creek to Princes Highway (currently being developed as part of Australand Discovery Point development)
- Underpass of railway, 4.0m wide (Section 94 funding available from the Australand Discovery Point development)
- Underpass of Princes Highway at foreshore (4.0m wide)



### 5.3.7 Princes Highway to General Holmes Drive

Table 5.9 provides an overview of the existing and proposed route lengths along Cooks River Pathway from Princes Highway to General Holmes Drive. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.9 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield							
Burwood							
Canterbury							
Marrickville	530m	250m	1,850m				2,630m
Rockdale	500m	4,800m	1,220m		320m	1,600m	8,440m
Botany							
Sydney							
<b>Total</b>	<b>1,030m</b>	<b>5,050m</b>	<b>3,070m</b>		<b>320m</b>	<b>1,600m</b>	<b>11,070m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### ***Marrickville / Rockdale - North and south sides***

- Giovanni Brunetti Bridge
  - widen footpaths on both sides (1.0m widening)
  - relocate pole and control box on northern footpath, western approach

#### ***Marrickville - North side***

- Princes Highway / Holbeach Avenue - lengthen pedestrian phase
- Tempe Reserve - remove debris, minor pavement repairs, reposition CORA bike rack to face correct way
- Princes Highway services bridge
  - Negotiate access with stakeholders
  - Resurface pavement
  - Protective fencing both sides





### **Rockdale - South side**

- Princes Highway and West Botany Street
  - Provide bike lamps at signals (4 intersections) on all approaches (3 each)
  - Improve / replace kerb ramps
  - Remove obstacles, including seats, posts, overhead signs
- Cahill Oval - kerb extensions at Levey Street and Marsh Street off-ramp
- Kogarah Golf Course
  - Verify planning controls for foreshore pathway, including a new bridge over Muddy Creek
  - Commence construction
- Marsh Street
  - Levey Street off-ramp - standard signage for ramp crossing
  - Westbound carriageway - widen shoulder
  - Westbound carriageway - negotiate land acquisition and fence relocation for shoulder widening
  - Innesdale Street - remove right turn filter phase
  - Flora Street - provide narrow kerb extension to prevent truck overruns onto footpath
  - Valda Avenue underpass - low headroom warning signage
- Eve Street - remove steel reflector posts
- Riverine Park carpark driveways - sign and mark path with priority for pathway (3 locations)
- Francis Avenue / Bestic Street - realign and widen approaches to roundabout
- Kyeemagh Reserve
  - Off-road path through carparks
  - Raised priority crossing of carpark roadways/aisles
- Endeavour Bridge - realign path on eastern approach to improve sightlines
- Kyeemagh Avenue - complete pathway loop along loop road under the bridge



## 5.4 Alexandra Canal

**Table 5.10** provides an overview of the existing and proposed route lengths for the Alexandra Canal Pathway for each Local Government Area. The following sections provide a detailed description of the recommended route improvements. In summary these include:

- Safety improvements based on the road safety audit
- Other improvements identified by Councils, user groups and other stakeholders
- Access to the various railway stations near the pathway
- Long term development strategy for pathways along both sides of the Canal for its full length

**Table 5.10 - Pathway Lengths, Alexandra Canal\***

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works**	Proposed Stage 1	Potential Future	Total
Strathfield							
Burwood							
Canterbury							
Marrickville		1,060m			2,000m		3,060m
Rockdale							
Botany		630m			1,030m		1,660m
Sydney					2,860m		2,860m
<b>Total</b>		<b>1,690m</b>			<b>5,890m</b>		<b>7,580m</b>
* Perry Park to Cooks River							
** Works included in the 2005/2006 or 2006/2007 Council works programs							





### 5.4.1 Perry Park to Head of Canal

**Table 5.11** provides an overview of the existing and proposed route lengths along the Alexandra Canal Pathway from Perry Park to the Head of the Canal. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.11 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield							
Burwood							
Canterbury							
Marrickville							
Rockdale							
Botany							
Sydney					750m		750m
<b>Total</b>					<b>750m</b>		<b>750m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Sydney**

- Adjust Masterplan and other instruments and commence land tenure negotiations  
*The current Masterplan for the Canal does not include the area along Maddox Street and through Perry Park. The road crossings at Maddox Street and Huntley Street are of a lower standard than that recommended here.*
- Perry Park to Channel - construct path within park and along Maddox Street (north side)
- Channel - Maddox Street to Head of Canal - construct path
- Maddox Street at channel - wide refuge, kerb extensions, speed humps on both approaches
- Huntley Street at channel - wide refuge, kerb extensions, speed humps on both approaches



## 5.4.2 Head of Canal to Canal Road

**Table 5.12** provides an overview of the existing and proposed route lengths along the Alexandra Canal Pathway from the Head of the Canal to Canal Road. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.12 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield							
Burwood							
Canterbury							
Marrickville							
Rockdale							
Botany					230m		230m
Sydney					2,110m		2,110m
<b>Total</b>					<b>2,340m</b>		<b>2,340m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

### **Sydney and Botany - East side**

- Head of Canal to Canal Road - adjust Masterplan and other instruments and commence land tenure negotiations with Sydney Water and private land owners  
*The works recommended here are largely included in the current Masterplan, with the exception of an improved crossing facility at Bourke Road. It is also recommended to continue the pathway along the Canal to Coward Street as well as to build an off-road route along Bourke Road between the Sydney Water site and Coward Street. This is already included in the Botany Bike Plan, but not yet in the Sydney Bike Plan that is currently under preparation.*
- Sydney Water site to Canal Road - construct pathway with access ramps to Canal Road on both the northern and southern sides
- Bourke Road / Gardeners Road
  - Include bike+ped phase on western approach
  - Bike lamps on all approaches
  - Adjust signal phasing





### **Sydney - East side**

- Head of Canal to Sydney Water site
  - construct full width off-road path with connection to Bourke Road
  - negotiate access to Sydney Water property
  - negotiate access to the channel in the reserve with private land owner
- Sydney Water site at Bourke Road - wide refuge, kerb extensions, speed humps on both approaches
- Bourke Road, Sydney Water site to Gardeners Road - construct off-road path on east side
  - remove old footpath
  - construct new path (3.0m wide)

### **Sydney - West side**

- Develop Masterplan and other instruments for a pathway along the Canal, including full access to Canal Road and to Sydney Park



### 5.4.3 Canal Road to Tempe Reserve

**Table 5.13** provides an overview of the existing and proposed route lengths along the Alexandra Canal Pathway from Canal Road to Tempe Reserve. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.13 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield							
Burwood							
Canterbury							
Marrickville		1,060m			2,000m		3,060m
Rockdale							
Botany		630m			800m		1,430m
Sydney							
<b>Total</b>		<b>1,690m</b>			<b>2,800m</b>		<b>4,490m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Botany - East side**

- Canal Road to Coward Street
  - Adjust Masterplan and other instruments and commence land tenure negotiations
  - Construct full width off-road path with connection to Canal Road
- Bourke Road, Gardeners Road to Coward Street - widen existing path by 1.0m
- Bourke Road / Coward Street - bike lamps on all approaches
- Coward Street, Bourke Road to Dalmeny Avenue - adjust kerb extensions so that they don't protrude into the bike lane
- Coward Street, Bourke Road to Canal
  - review use of bollards and police illegal parking
  - priority signs and markings at major driveways
- Coward Street to Airport Drive, railway underbridge - extend roofing to prevent rainwater entering the underpass and causing ponding





### ***Marrickville - East side***

- Airport Drive
  - replace missing bollards and provide Standard signs and marking
  - repair safety barrier (many missing and damaged posts)
  - Provide safety rail on inside of safety barrier to protect cyclists from injury on protruding edges of posts
  - Improve sightlines at Tempe Reserve Bridge
  - Improve lighting under flight path

### ***Marrickville - West side***

- Develop masterplan and other planning instruments and commence land tenure negotiations, ensure full access to Canal Road Marrickville



## 5.5 Strategic Links

**Table 5.14** provides an overview of the existing and proposed route lengths for a number of strategic links with other major pathways. The following sections provide a detailed description of the recommended route improvements. In summary these include:

- Safety improvements based on the road safety audit
- Other improvements identified by Councils, user groups and other stakeholders
- Access to the various railway stations near the pathway
- Medium and long term development strategy to develop the various strategic links

**Table 5.14 - Pathway Lengths, Strategic Links**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield		290m			1,260m		1,550m
Burwood							
Canterbury		1,920m			1,810m	920m	4,650m
Marrickville		110m			1,380m		1,490m
Rockdale					1,000m	2,700m	3,700m
Botany					810m	640	1,150m
Sydney							
<b>Total</b>		<b>2,320m</b>			<b>6,260m</b>	<b>3,960m</b>	<b>12,540m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs





### 5.5.1 Bay to Mountains Trail

**Table 5.15** provides an overview of the existing and proposed route lengths along the link with the Bay to Mountains Trail at Strathfield Golf Course. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.15 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield		290m			420m		710m
Burwood							
Canterbury							
Marrickville							
Rockdale							
Botany							
Sydney							
<b>Total</b>		<b>290m</b>			<b>420m</b>		<b>710m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Strathfield**

- Negotiate access to existing underpass at Strathfield Golf Course
- Provide link to the Weeroona Road pathway
- Liaise with adjacent Councils, State Government agencies and other stakeholders to develop and upgrade whole Bay to Mountains trail to be fully off-road with high quality road crossings



## 5.5.2 Coxs Creek

**Table 5.16** provides an overview of the existing and proposed route lengths along Coxs Creek. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.16 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield					840m		840m
Burwood							
Canterbury							
Marrickville							
Rockdale							
Botany							
Sydney							
<b>Total</b>					<b>840m</b>		<b>840m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

### **Strathfield**

- Develop Masterplan and other instruments for a pathway from Cooks River to Cosgrove Road via Cooke Park and Begnell Park
- Liaise with Sydney Water to confirm details of design requirements early in the design process
- Twin bridges across Coxs Ck and Cooks River immediately west of Water Street
- Pathway to Cosgrove Road
- Madeline Street - wide refuge, kerb extensions, speed humps on both approaches





### 5.5.3 Rudd Park Channel

**Table 5.17** provides an overview of the existing and proposed route lengths along Rudd Park Channel. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.17 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield							
Burwood							
Canterbury						670m	670m
Marrickville							
Rockdale							
Botany							
Sydney							
<b>Total</b>						<b>670m</b>	<b>670m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Canterbury**

- Develop Masterplan and other instruments
- Continue pathway from Third Avenue to Rudd Park and Omaha Street
- Second Avenue and First Avenue - wide refuge, kerb extensions, speed humps on both approaches



## 5.5.4 Campsie Town Centre

**Table 5.18** provides an overview of the existing and proposed route lengths along the links with the Campsie Town Centre. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.18 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1**	Potential Future	Total
Strathfield							
Burwood							
Canterbury		280m			1,810m		2,090m
Marrickville							
Rockdale							
Botany							
Sydney							
<b>Total</b>		<b>280m</b>			<b>1,810m</b>		<b>2,090m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs  
 \*\* on-road loop, via Beamish St and South Pde

### **Canterbury**

- Develop on-road loop route to Campsie Town Centre via Byron Street Bridge, Beamish Street, South Parade and Tasker Park Bridge





### 5.5.5 Cup and Saucer Creek

**Table 5.19** provides an overview of the existing and proposed route lengths along the Cup and Saucer Creek pathway. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.19 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield							
Burwood							
Canterbury		1,440m				250m	1,690m
Marrickville							
Rockdale							
Botany							
Sydney							
<b>Total</b>		<b>1,440m</b>				<b>250m</b>	<b>1,690m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Canterbury**

- Develop Masterplan and other instruments
- Repair and widen existing pathway from the River to Berna Street
- Construct new pathway from Berna Street to Fore Street
- Retaining wall from Curtin Lane to Fore Street
- Fore Street - wide refuge, kerb extensions, speed humps on both approaches
- Develop whole route to high standard with matching road crossing facilities to link with M5-East pathway



## 5.5.6 Cooks River to Iron Cove GreenWay Route

**Table 5.20** provides an overview of the existing and proposed route lengths along the Cooks River to Iron Cove GreenWay Route. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.20 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1**	Potential Future	Total
Strathfield							
Burwood							
Canterbury		200m					200m
Marrickville		110m			1,380m		1,490m
Rockdale							
Botany							
Sydney							
<b>Total</b>		<b>310m</b>			<b>1,380m</b>		<b>1,690m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs  
 \*\* 830m on-road, rest off-road; to Constitution Rd only

### **Canterbury / Marrickville**

- Widen western footpath on Wardell Road Bridge and approaches

### **Canterbury / Marrickville**

- Develop Masterplan and other instruments
- Provide pathway from the Bridge to Tennyson Street Reserve and Tennyson Street
- Sign and mark on-road route from Tennyson Reserve to Canterbury Road and beyond
- Provide pathway along western side of Dulwich Hill goods railway from Hercules Street to Constitution Road





### 5.5.7 Airport Tunnel

**Table 5.21** provides an overview of the existing and proposed route lengths for a route through a new pedestrian and bicycle tunnel under the airport runway south of General Holmes Drive.

It is acknowledged that such a project would be expensive, but it is of great strategic importance for walking and cycling in the eastern and southern suburbs. At least the appropriate planning instruments need to be developed to inform future development strategies for the airport and its surrounds.

The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.21 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield							
Burwood							
Canterbury							
Marrickville							
Rockdale						1,650m	1,650m
Botany						340m	340m
Sydney							
<b>Total</b>						<b>1,990m</b>	<b>1,990m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Rockdale / Botany - South side**

- Develop Masterplan and other instruments for a separate tunnel for pedestrians and bicycles



## 5.5.8 Muddy Creek Channel

**Table 5.22** provides an overview of the existing and proposed route lengths along Muddy Creek. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.22 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future**	Total
Strathfield							
Burwood							
Canterbury							
Marrickville							
Rockdale						1,050m	1,050m
Botany							
Sydney							
<b>Total</b>						<b>1,050m</b>	<b>1,050m</b>
* Works included in the 2005/2006 or 2006/2007 Council works programs							
** Bestic St to Bay St							

### **Rockdale**

- Develop pathway network from Bestic Street to Bay Street and beyond with suitable road crossings



### 5.5.9 International Terminal

**Table 5.23** provides an overview of the existing and proposed route lengths for a pathway to the International Terminal at the Airport. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.23 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1	Potential Future	Total
Strathfield							
Burwood							
Canterbury							
Marrickville							
Rockdale					1,000m		1,000m
Botany							
Sydney							
<b>Total</b>					<b>1,000m</b>		<b>1,000m</b>

\* Works included in the 2005/2006 or 2006/2007 Council works programs

#### **Rockdale**

- Construct two access link paths from Giovanni Brunetti Bridge to international terminal
- Integrate with airport masterplan and redevelopment in this precinct



### 5.5.10 Domestic Terminal

**Table 5.24** provides an overview of the existing and proposed route lengths for a pathway to the Domestic Terminal at the Airport. The remainder of this section provides a detailed description of the recommended route improvements.

**Table 5.24 - Pathway Lengths, Section**

LGA	Existing On-road	Existing Off-road	Existing - Duplicate	Current Works*	Proposed Stage 1**	Potential Future	Total
Strathfield							
Burwood							
Canterbury							
Marrickville							
Rockdale							
Botany					810m		810m
Sydney							
<b>Total</b>					<b>810m</b>		<b>810m</b>
* Works included in the 2005/2006 or 2006/2007 Council works programs							
** Link from Alexandra Canal to Lancastrian Rd (incl)							

#### **Botany**

- Develop a Masterplan and other instruments for a pathway network to and within the Domestic Terminal, including suitable road crossings
- Construct first section from the Alexandra Canal to Lancastrian Road
- Adjust phasing at Lancastrian Road
- Provide bike lamps at Lancastrian Road





## 6 COST ESTIMATES

Tables 6.1 to 6.4 provide a summary of the cost estimates for the recommended works. Appendix F provides the details. The following comments are offered for consideration:

- The cost estimates are indicative only and should only be used for budgeting purposes. The base costs originate from a number of sources including costs for works and services at Leichhardt Council, Rawlinsons Australian Construction Handbook, experience from the consultant team and a range of other sources.
- Costs are split in three stages for the works, including:
  - Existing Route Improvements - these are short term works required to address the issues identified in the road safety audit and through the stakeholder consultation process
  - Stage 1 Proposed Routes and Improvements - these are medium term opportunities
  - Future Routes and Improvements (longer term, as opportunities arise)
- In addition to these works, there is a need for general maintenance / minor repairs and for adjustments to / development of planning controls. No costs were allocated for these items.

- Total costs for the three main elements of the project are:

<i>Project Element</i>	<i>Existing Route Improvements</i>	<i>Medium/ Long Term Improvements</i>
● Cooks River	\$4,049,000	\$12,702,000
● Alexandra Canal	\$91,000	\$2,215,000
● Strategic Links	--	\$2,873,000
● <i>Total</i>	<i>\$4,140,000</i>	<i>\$17,789,000*</i>

\* The total does not match the sum of the items due to rounding





- Total costs within each Local Government Area are:

<i>LGA</i>	<i>Existing Route Improvements</i>	<i>Medium/ Long Term Improvements</i>
• Strathfield	\$445,000	\$1,970,000
• Burwood	\$128,000	\$213,000
• Canterbury	\$1,222,000	\$6,128,000
• Marrickville	\$1,095,000	\$4,334,000
• Rockdale	\$1,159,000	\$2,604,000
• Botany	\$91,000	\$721,000
• Sydney	\$0	\$1,819,000
• <i>Total</i>	<i>\$4,140,000</i>	<i>\$17,789,000</i>

- The most significant short term cost items are:

<i>Item</i>	<i>Cost Estimate</i>
• Bridge structures to widen the pathway eg Giovanni Brunetti bridge, Unwins Bridge footpath, Canterbury Rd underpass	\$2,025,000
• Pavement replacement and realignment, eg Canterbury Race Course, Kyeemagh Res, Steel Park	\$571,000
• Kerb extensions, refuges, etc	\$385,000
• Replace staggered crossings and improve other road crossings	\$348,000
• Centrelines, pavement logos and regulatory signs	\$308,000
• Other works	\$503,000
• <i>Total</i>	<i>\$4,140,000</i>

- The most significant medium to long term cost items are:

<i>Item</i>	<i>Cost Estimate</i>
• New sections of pathway	\$6,962,000
• Road, rail and river under and overpasses	\$6,131,000
• Solar lighting	\$2,265,000
• Widening of the existing paths	\$1,495,000
• Other works	\$936,000
• <i>Total</i>	<i>\$17,789,000</i>





- The total costs for the strategic links are:

<i>Item</i>	<i>Cost Estimate</i>
• Bay to Mountains (connection on edge of through golf course and 0.9km new path)	\$431,000
• Coxs Creek (0.8km new path and twin bridges)	\$576,000
• Rudd Park Channel (0.7km new path)	\$405,000
• Campsie Town Centre (1.8km on-road loop)	\$28,000
• Cup and Saucer Creek (0.3km path upgrade and new link)	\$177,000
• GreenWay link (1.5km mixed on- and off-road link to Constitution Rd)	\$453,000
• Airport Tunnel (long term planning)	--
• Muddy Creek Channel	--
• International Terminal (two 0.5km links)	\$477,000
• Domestic Terminal (0.6km link)	\$325,000
• <b>Total</b>	<b>\$2,873,000*</b>

\* The total does not match the sum of the items due to rounding



**Table 6.1 - Cost Summary by Item Type**

Item Number	Description	Type of Works	Cooks River	Alexandra Canal	Links
<b>GENERAL</b>					
0	Works included in 2005/2006 or 2006/2007 programs	CURRENT WORKS	\$0	\$0	\$0
1	General maintenance and low cost repairs	MAINTENANCE	\$0	\$0	\$0
2	Planning Controls	PLANNING	\$0	\$0	\$0
	<b>Subtotal - General</b>		<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>CIVIL WORKS</b>					
24	Civil - replace staggered crossings	CIVIL	\$348,000	\$131,000	\$174,000
17	Civil - Bicycle Refuge / LATM / Traffic Facilities	CIVIL	\$397,000	\$51,000	\$0
29	Civil - steel mesh protective fence	CIVIL	\$20,000	\$0	\$0
16	Civil - Kerb Ramp	CIVIL	\$5,000	\$0	\$0
10	Civil - remove existing landscaping and replace	CIVIL	\$20,000	\$0	\$0
20	Parking - Bicycle Locker	CIVIL	\$0	\$0	\$0
7	Parking - Bike Parking U-rail	CIVIL	\$89,000	\$8,000	\$0
13	Pavement - Footpath - Bitumen (2.0m two-way) - LOW KEY	CIVIL	\$730,000	\$0	\$0
8	Pavement - Footpath reseal	CIVIL	\$37,000	\$0	\$0
12	Pavement - Footpath - Concrete (3.0m, two-way)	CIVIL	\$2,895,000	\$1,595,000	\$2,314,000
14	Pavement - Footpath - Widen existing, Concrete (1.0m)	CIVIL	\$1,430,000	\$71,000	\$0
15	Pavement - new car park - bitumen seal	CIVIL	\$94,000	\$0	\$0
21	Pavement - Green Pavement	CIVIL	\$0	\$0	\$0
32	Pavement - Remove existing path	CIVIL	\$63,000	\$40,000	\$0
31	Pavement - sealed shoulder, 1.5m	CIVIL	\$31,000	\$0	\$0
36	Pavement - red pavement at pathway intersections	CIVIL	\$65,000	\$10,000	\$14,000
26	Signals - Bike Lamps at Signals per pair	CIVIL	\$31,000	\$12,000	\$5,000
27	Signals - Pedestrian Signals	CIVIL	\$0	\$0	\$0





Item Number	Description	Type of Works	Cooks River	Alexandra Canal	Links
9	Signals - Traffic modelling to investigate and design additional phases	CIVIL	\$20,000	\$0	\$5,000
28	Signals - Traffic Signals	CIVIL	\$187,000	\$0	\$0
<b>Subtotal - Civil Works</b>			<b>\$6,462,000</b>	<b>\$1,918,000</b>	<b>\$2,512</b>
<b>STRUCTURES</b>					
34	Structure - Bus Shelter	CIVIL	\$8,000	\$0	\$0
11	Structure - Cut and cover tunnel	CIVIL	\$388,000	\$0	\$0
33	Structure - General Bridge Cost	CIVIL	\$7,491,000	\$0	\$305,000
19	Structure - Retaining wall	CIVIL	\$86,000	\$0	\$15,000
22	Structure - Solar Street Lighting	CIVIL	\$1,969,000	\$331,000	\$0
23	Structure - Tree Root Bridging	CIVIL	\$0	\$0	\$0
<b>Subtotal - Structures</b>			<b>\$9,914,000</b>	<b>\$331,000</b>	<b>\$320,000</b>
<b>SIGNS AND MARKINGS</b>					
18	Signs & Markings - Bicycle Logo	LINE	\$0	\$0	\$0
30	Signs & Markings - Linemarking	LINE	\$0	\$0	\$0
4	Signs & Markings - Edgeline, Laneline & Bike Logos every 100m, signs at 200m - on road	LINE	\$68,000	\$0	\$41,000
3	Signs & Markings - Centreline & Bike Logos every 100m, signs at 200m - off road	LINE	\$252,000	\$54,000	\$0
25	Signs & Markings - priority for path at driveways	LINE	\$2,000	\$3,000	\$0
35	Signs & Markings - low key shared path, regulatory signs and logos at 200m	SIGN	\$9,000	\$0	\$0
5	Signs & Markings - Directional Signs	SIGN	\$0	\$0	\$0
6	Signs & Markings - Regulatory, Warning, Advisory Signs	SIGN	\$15,000	\$0	\$0
<b>Subtotal - Signs and Markings</b>			<b>\$347,000</b>	<b>\$58,000</b>	<b>\$41,000</b>
<b>Total</b>			<b>\$16,750,000</b>	<b>\$2,306,000</b>	<b>\$2,873,000</b>

Note - some totals and subtotals may not add up to the sum of the items due to rounding



**Table 6.2 - Cost Summary by LGA for Cooks River**

Section	Existing Route Improvements	Stage 1 Proposed Routes and Improvements	Future Routes and Improvements	TOTAL
Strathfield	\$445,000	\$126,000	\$836,000	\$1,407,000
Burwood	\$128,000	\$0	\$213,000	\$340,000
Canterbury	\$1,222,000	\$611,000	\$4,823,000	\$6,657,000
Marrickville	\$1,095,000	\$436,000	\$3,529,000	\$5,060,000
Rockdale	\$1,159,000	\$0	\$2,128,000	\$3,287,000
Botany	\$0	\$0	\$0	\$0
Sydney	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$4,049,000</b>	<b>\$1,173,000</b>	<b>\$11,529,000</b>	<b>\$16,750,000</b>

*Note - some totals may not add up to the sum of the items due to rounding*

**Table 6.3 - Cost Summary by LGA for Alexandra Canal**

Section	Existing Route Improvements	Stage 1 Proposed Routes and Improvements	Future Routes and Improvements	TOTAL
Strathfield	\$0	\$0	\$0	\$0
Burwood	\$0	\$0	\$0	\$0
Canterbury	\$0	\$0	\$0	\$0
Marrickville	\$0	\$0	\$0	\$0
Rockdale	\$0	\$0	\$0	\$0
Botany	\$91,000	\$376,000	\$20,000	\$487,000
Sydney	\$0	\$1,819,000	\$0	\$1,819,000
<b>Total</b>	<b>\$91,000</b>	<b>\$2,195,000</b>	<b>\$20,000</b>	<b>\$2,306,000</b>

*Note - some totals and subtotals may not add up to the sum of the items due to rounding*

**Table 6.4 - Cost Summary by LGA for Strategic Links**

Section	Existing Route Improvements	Stage 1 Proposed Routes and Improvements	Future Routes and Improvements	TOTAL
Strathfield	\$0	\$0	\$1,008,000	\$1,008,000
Burwood	\$0	\$0	\$0	\$0
Canterbury	\$0	\$111,000	\$582,000	\$693,000
Marrickville	\$0	\$370,000	\$0	\$370,000
Rockdale	\$0	\$477,000	\$0	\$477,000
Botany	\$0	\$325,000	\$0	\$325,000
Sydney	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$0</b>	<b>\$1,283,000</b>	<b>\$1,590,000</b>	<b>\$2,873,000</b>

*Note - some totals and subtotals may not add up to the sum of the items due to rounding*

