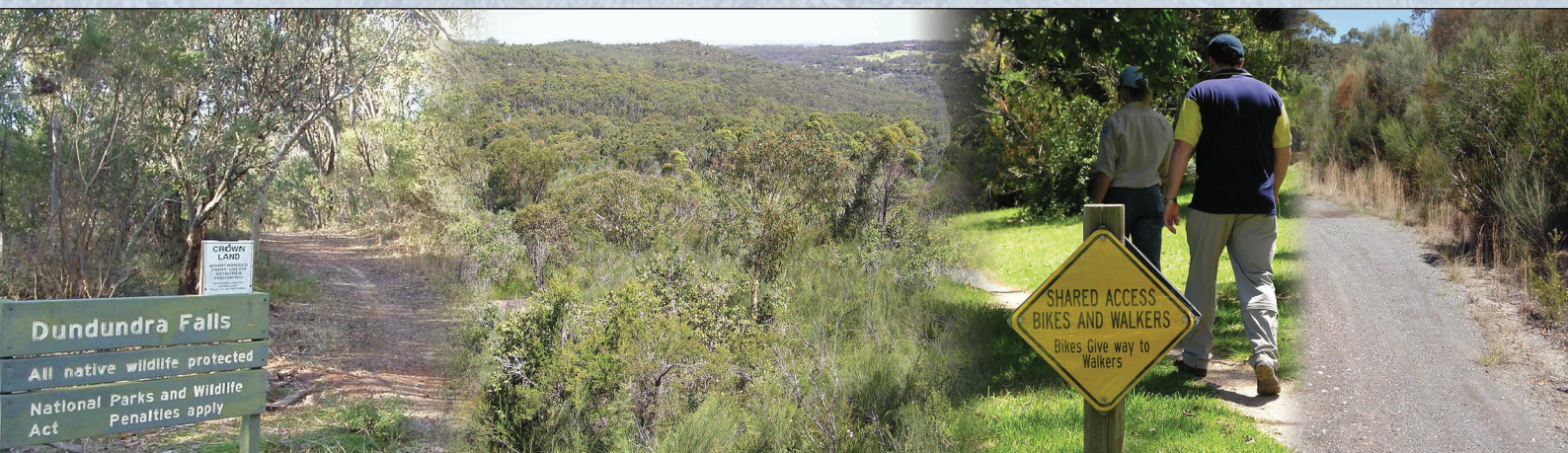




Warringah  
Council

WARRINGAH COUNCIL

# Warringah Regional Multiple-Use Trail Strategy



NSW GOVERNMENT  
Department of Planning

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# 1. INTRODUCTION

This document is a planning strategy for the implementation of a Regional multiple-use trails network for Warringah council area and surrounding region. It has been prepared by Planning for People for Warringah Council and is part of the consultancy to plan and survey multi-use trails in the study area, which will contribute to a regional system of trails.

The study has been funded by the Metropolitan Greenspace Program (MGP), which has been identified in the Government's *City of Cities* plan for Sydney's future as a key initiative for improving links between bushland, parks, waterways and centres. MGP's emphasis in 2006 encourages councils to enter into partnerships to develop regional trails projects across their local government boundaries. The Program's Key outcomes are:

- Partnering with local government to improve regionally significant open space and links between bushland, parks, centres and waterways.
- Enabling more people to enjoy more parks and trails and to appreciate and enjoy our healthy lifestyle, our heritage and our natural environment.
- Delivering the Government's long-term strategy for meeting the community's need for places of recreation.

The Strategy also supports the goal *"to provide recreational access to natural areas while ensuring the sustainability of the natural environment"* from Living Spaces program in Council's Strategic Plan, *Living Warringah*.

This project is about improving the recreation opportunities for the community and is a response to the increasing number of management issues associated with existing trails, and the growing demand for use of the trails.

The region has outstanding bushland recreation opportunities, which rely on a well planned and managed trails network for community access. The region has extensive areas of scenic National Park, bushland reserves and natural lakes and coastline. The region also has a large population of people interested in recreation in these areas. Warringah Council's community surveys have shown consistently that walking is the highest participation recreation activity in LGA.

Currently there are a number of trails that have been developed in response to local issues and demand with no overall regional strategic planning. With strategic planning and resources the region could achieve its potential and become an outstanding recreation area providing increased recreation benefits to the local community and visitors to the region. There are also unapproved trails, often poorly designed and built without consideration of the sustainability of the trail, developed to meet the unmet demands of specific user groups.

## Scope of project

The study area includes bushland public areas within the Warringah Council municipality and linkages with Manly, Ku-ring-gai, and Pittwater Council areas. Other land management areas within the region include the Department of Environment and Conservation (National Parks and Wildlife Service), Department of Planning, and the Department of Lands.

A working party with representation from all the councils and major land managers has overseen the development of the strategy. In addition trails users who are representative of key user groups (walkers, cyclists and horse riders) have been consulted during the development of the strategy. A focus group held at the beginning of the planning for the project allowed the consultants, land managers, and users to

share views and concerns and develop a consensus on the direction and outcomes of the project.

The project is focused on multiple use trails rather than special or single use trails. Examples of multiple use trails include trails used by more than one of the following activities: bushwalking; horse riding, and mountain bike (MTB) riding. "Multi-use" does not imply that all activities will be appropriate for all trails, and each land manager will have restrictions on the use of individual trails. In developing a regional multiple-use trails network Council expects that local and/or more specialised trails will be developed to link to the regional trails to provide expanded recreational opportunities.

## 2. SITUATION ANALYSIS

### 2.1 Supply of multiple-use trails in bushland areas

The existing multiple-use trails in bushland areas are primarily management tracks within National Parks, some recreation reserves and Manly Dam. Other bushland areas around Oxford Falls and Red Hill, which are often on private land, have informal trails which are in poor condition and not generally suitable as multiple-use trails. This strategy is intended to provide sustainable alternatives to the use of these trails for the majority of users.

There is a range of trails throughout the region. This project is focused on the regional strategic multiple use trails within the bushland areas of Warringah Council. However this project needs to consider the whole trail network, as regional multiple-use trails should link into other trail types such as cycle-ways as much as possible. Further, some existing trails, which are not multiple-use, could be developed into multiple use trails. The range of trail types are summarised in Table 1.

**Table 1 Range of trail types in the Warringah Council area**

Trail types	Example	Typical land use	Standard of trails
<b><i>Bushland</i></b>			
Walking tracks (designated)	Harbour to Hawkesbury walking track Bicentenary coastal walkway Allenby Park	Bushland recreation reserve	Usually of a easy/moderate track standard. Eg 1 – 4 classification walks (Australian Standards)
Walking tracks (informal)	Deep Creek	National Park	Hard tracks which require navigational skills classification 6
Mountain bike (MTB) cross country tracks (designated)	Manly Dam circuit	Bushland recreation reserve	Easy to moderate standard
MTB downhill (designated)	Currently no designated downhill trails	Crown Land, Council reserve	Hard and challenging trails
MTB tracks (informal)	Oxford Falls, Red Hill	Crown Land, often private lands	Hard and challenging trails
Management tracks	Slippery Dip Fire Trail, Pipeline track	National Park	Often high standard suitable for multiuse
Horse trails	Perimeter Trail	National Park,	Easy often suitable

Trail types	Example	Typical land use	Standard of trails
		Council reserve	for multiple-use
<b>Urban</b>			
Multiple use	Dee Why and South Creek Valley trail Lagoon	Council	Easy
Bicycle paths (local)	Addiscombe Rd	Council	Easy
Bicycle paths (regional)	Burnt Bridge Cycleway	Council, RTA	Easy
Pedestrian shared use pathways	Numerous	Council	Easy

## 2.2 Condition of bushland trails

A comprehensive condition report of all the proposed trails is shown at Attachment 1. A summary of the condition of the proposed trails is shown at Table 2.

In summary the condition of the trails is variable. Some areas have trails in very poor condition and some areas have outstanding multiple-use trails. The management track network within the study area is well managed and maintained and provides a good basis from which to develop a multiple use trail network.

The Manly Dam area is becoming very popular for mountain biking. Although well managed the current usage levels are still causing environmental impacts and as such the use of this trail will require regular maintenance to be ecologically sustainable.

There are very poor trails in the bushland areas such as Oxford Falls and Red Hill where there is often no effective management. These areas have frequent track erosion, flooding, multiple tracking, and weed and rubbish issues. At some locations the track erosion is excessive. With the increasing use levels these areas are likely to get increasing erosion without management intervention, and in many cases the trails will continue to degrade even without further use if they are not rehabilitated.

## 2.3 Use of bushland trails

The use of the trail system is high on some trails such as Manly Dam and lower in more remote informal trail areas such as Red Hill. There has been no formal surveying of the use of the entire trail network. Observations indicate that the demand for use of trails in the region is increasing. For example, surveys have shown that at peaks times up-to 500 people/weekend have been using the Manly Dam circuit. Information on mountain bike trails has been publicised both in print and on the Internet in response to increasing interest.

The increase in demand for use of trails conforms to recreation trends including:

- Increasing demand for adventure related recreation activities such as mountain biking;
- Less time for recreation activities with increased use of locally available facilities;
- Increasing demand for organised recreation activities; and
- Increasing interest in recreation for fitness.

The use of trails is also likely to increase due to increasing population pressures in the region.

## 2.4 Design of bushland trails

The design, siting and management of a trail are factors that influence the quality of the recreation experience and the level of environmental impacts. Poor design can lead to significant environmental degradation (eg a trail located straight down a steep hill with poor drainage controls). Poor design can also reduce the recreation experience (eg trail surface too rough for many user groups). Trail degradation can also create public safety issues.

The design and siting of many trails in the study area is poor, especially on lands that are not managed for recreation such as private lands (eg Red Hill area). There are also many bushland areas that have trails illegally created and are generally poorly designed.

Some trails such as the Manly Dam fire trail is well managed however still has some design problems. For example at some locations the trail narrows considerably creating safety issues especially for bushwalkers.

All trails should be located sympathetically within the landscape and use natural materials wherever possible.

## 2.5 Management issues

The existing trail network in bushland areas has the following management and planning issues:

- Conflict of use between users;
- Environmental sustainability of trails;
- Overuse and crowding on popular trails (eg Manly Dam);
- Demand for more Mountain bike trails;
- Increasing demand for use of trails;
- Creation of unsustainable tracks and trails;
- Trails poorly linked between areas;
- Lack of co-operation and trail linkages across land management agencies;
- Public hazards along trails;
- Poor maintenance of trails;
- Poor identification of the purpose of trails;
- Inconsistent and limited signage and interpretation.

Specific issues for multiple-use trails include:

- Avoiding conflict between user groups;
- Good design and construction, and appropriate maintenance to achieve environmental sustainability;
- Selection of appropriate trails for multiple use;
- Linking multiple use trails;
- Inappropriate use of trails and opportunities to redirect use to sustainable trails (especially after wet weather)
- Clear identification of trail purpose (i.e. multiple-use trail) and direction.

Maintenance of the trails, being across multiple landowners and different land uses (bushland, parks and reserves, roads (both made and unmade)) will require coordination both within and between agencies. In the case of fire trails the Rural Fire Service often carries out any maintenance and Councils and NPWS will need to liaise accordingly.

The "*adopt a track*" program, similar to bush regeneration programs, provides opportunities for user groups to contribute to the construction and maintenance of

trails. Mountain bike riders have worked with the staff of Manly Dam in developing and maintaining the current bike trail at the Dam.

### **3. GAPS IN SUPPLY**

#### **3.1 Demand**

The Northern Sydney Recreation Demand and Opportunities Assessment (2004) highlighted that there is a considerable and growing demand for use of trails (for jogging walking and horse riding) in the Northern Sydney region. This study stated that:

Bushwalking and cycling are among the most popular of all recreational activities of Northern Sydney residents, with participation significantly higher than national rates.

In the greater metropolitan region, 1.2% of residents cycle each day, with most bike trips being for social or recreational travel. Bicycles account for 0.5% of all trips by Sydney residents on weekdays and 0.9% on weekends. The largest group is male, aged less than 20 years (Transport NSW & RTA 2003) although there has been growing interest by women and older males and a growing MTB community.

NPWS reports increasing use of Ku-ring-gai Chase National Park and a boom in cycling and jogging in Ku-ring-gai Chase and Lane Cove national parks.

#### **3.2 Gaps in supply**

Overall there is an under-supply of regional trails in the study area and a lack of coordination and planning to exploit the potential uses of the trails that are there. Many bushland areas have management trails, and informal trails (usually of poor quality) are widespread. The demand for trails for walking, jogging and horse riding is increasing and while many of the existing trails are unsuitable, either by design or standard, some of these trails could be improved and made sustainable.

Manly Dam provides a limited multiple-use trail experience with a dominance of mountain bike usage given the narrow sections and difficult standard of some sections. Management trails are often not preferred by recreation users, as they are often wide and straight and associated with management facilities, which reduce the natural experience of the activity.

The development of more multiple-use trails, which are no more than 2 metres wide, located and designed to enhance the recreation and natural bushland experience is desirable. This study has, however, focused on using the existing trails, including management trails, to facilitate a cost-effective approach to developing a regional strategy, and fire trails are popular cycling routes in many places.

There is a growing demand for the longer distance off road bike touring which requires longer trails. The strategy investigates routes that can be developed from linking existing trails.

Linking trails also increases the convenience and improves the recreation experience by providing opportunities for trail users to begin their recreation experience from their home without having to use a car to access a trailhead. People have less time for recreation and are seeking an escape from the urban lifestyle as quickly as possible.

There is also a gap in the supply of designated down hill and touring mountain bike trails in the region. Development of more of these trail types will reduce the pressure on existing areas such as Manly Dam, Oxford Falls and Red Hill.

There are significant opportunities to improve the existing bushland trail network by addressing the gaps in supply for these areas and improving links between trails.

## 4. USER GROUPS

It is important to understand the recreation users of the trails as a basis from which to plan development of the trail network. Key user groups can be defined based on the existing trail activities and peoples' motivations for use of the trails.

Motivations of trails users include:

- Experiencing nature;
- Fitness;
- Competition;
- Relaxation;
- Companionship;
- Education; and
- Access and transport.

The range of activities undertaken on trails includes: bushwalking, horse riding; running; cycling; dog walking; nature observation; and competitive navigation.

The trail system will be designed to meet the needs of these key trail use groups. The following user groups are proposed:

1. Challenging off road bike touring
2. Easy off road bike touring;
3. Local bushwalkers/joggers;
4. Bushwalkers seeking iconic experiences;
5. Horseback trail riders.

These user groups are likely to use multiple use trails as an essential part of their preferred recreation experience. Adventure mountain bike riders are likely to use multiple-use trails to access their downhill trail areas (downhill trails for mountain bikes are usually single track and developed specifically for very experienced bike riders). Bushwalkers seeking iconic walks are less likely to use multiple-use trails than the other groups, and will use them to access other areas, given that most iconic bushwalking tracks are generally not suitable for mountain bikes or horses.

### ***Challenging off road bike touring***

Challenging off road bike touring includes those people seeking a mountain bike challenge within a natural bushland setting to escape from the urban environment and improve their health. They often prefer long distance circuits which take between half a day and a day to complete, and may have some challenging technical sections, urban sections as well as bushland touring sections. These people often ride in groups with friends on a weekend. They are interested in fitness, group interactions and being in a natural setting. Trail users in this group are prepared to travel from elsewhere in Sydney to ride an interesting route with a bushland setting.

Larger trail loops would be preferred by this user group.

### ***Easy off road bike touring***

This group includes people seeking a more relaxed mountain bike experience including families and local users. These users are generally interested in smaller mountain bike loops that are less than half a day in duration and preferably within a bushland setting. Many of the people in this group are likely to be local people who ride from their home. They are also interested in riding to a destination such as the beach or National Park.



### ***Local bushwalkers/joggers***

Local bushwalkers are people who walk/jog from their home to the nearest bushland reserve for a short walk for fitness and to experience nature. Walking the dog is a common activity for this group. The trails used by these people are generally located in Council reserves.

### ***Iconic bushwalkers***

This user group includes people seeking a longer iconic bushwalking experience. They often bushwalk in social groups or organised groups such as clubs. These people will travel from elsewhere in Sydney to do a recognised bushwalking trail. The preferred trails for these people are generally located in National Parks and include walks such as the Harbour to Hawkesbury walk.

### ***Horseback trail riders***

This user group includes people interested in cross-country horse riding in a natural setting. Most of the horse-riding trails are located around the Terrey Hills area. This group includes local horse riders who live in the Terrey Hills area and horse riders who are prepared to travel from other parts of Sydney with their horses to trailheads.

### ***Adventure Mountain Bike Riding***

These users of trails are seeking a thrilling or technical mountain bike experience. They are interested in more challenging trails in a bushland setting. They include people interested in technical downhill riding and challenging bushland riding (eg Manly Dam). They are a dedicated and growing user group who are prepared to travel from elsewhere in Sydney to access suitable trails and invest large amounts of money in equipment. They often ride in small groups and participate in organised competitions. There is lack of trails for this user group due to institutional reluctance to develop these types of trails given the public risks and environmental impacts of the activity. This results in informal or illegal construction of mountain bike trails in isolated bushland areas usually Council Reserves or Crown lands or large private holdings.

Down hill trails have been developed on public lands elsewhere and different management models have been used. The development of specialised MTB facilities will be investigated separate from this study.

## 5. PLANNING PRINCIPLES

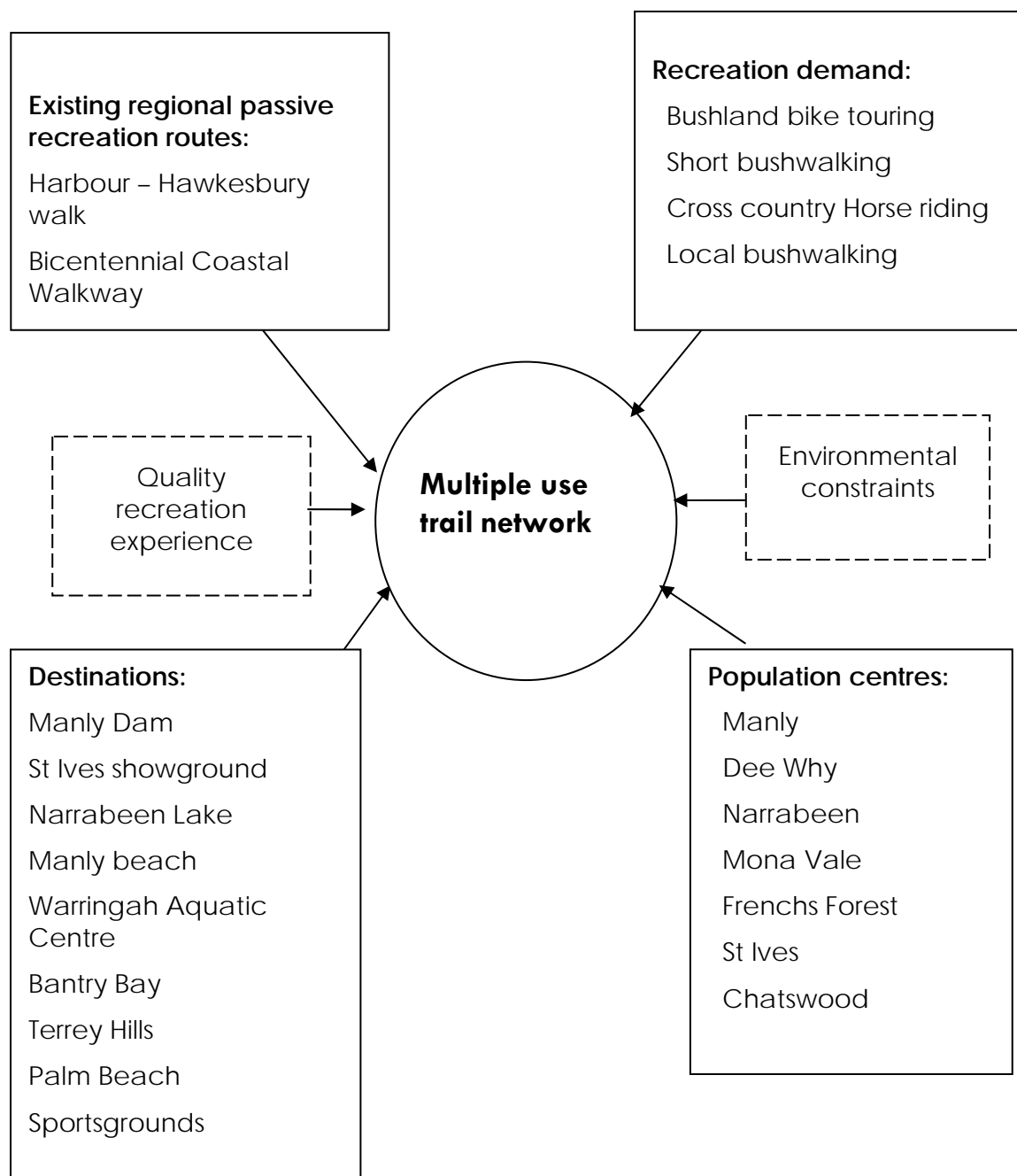
The following planning principles are proposed as a basis for planning a regional trails network.

Trails should be designed, located and managed to:

- Ensure the development and management of ecologically sustainable trails;
- Minimise impacts on the environment and avoid impact on sensitive environments;
- Ensure that the risk of using the trails is managed and minimised;
- Link into other trails where possible to expand recreational opportunities;
- Provide access to popular destination nodes;
- Provide for a range of recreational opportunities to accommodate different interests and needs;
- Give people opportunity to experience a natural environment as directly as possible from their homes;
- Meet and manage the recreation demand for trails (within landuse and environmental constraints);
- Avoid conflict between different user groups;
- Use existing trail infrastructure as much as possible;
- Provide for linkages with existing and/or propose Bike Plan routes and public transport;
- Reduce ongoing maintenance costs.

The aim is to produce a regional trail network that meets the demands and opportunities of the study area as shown in Figure 1 below.

**Figure 1 The considerations of developing a regional multiple-use trail network in and around Warringah.**



The destinations and demand for trails is illustrated at Map 1.

Map 1. Regional multiple-use trail demands and destinations



## 6. PROPOSED TRAIL NETWORK

The proposed trail network applies the above principles to meet the demands of the identified trail user groups within the constraints and opportunities of the study area.

The Strategy (shown on Map 2) develops a concept of a network including:

- short loops;
- large loops
- connecting trails (both regionally and intra-regionally between trails)

The Strategy is intended to provide links to possible urban bike routes (including the Warringah Bike Plan). The Bike Plan, when reviewed, will identify and incorporate links to the Multi-use trails. The trail network has the potential to complement Councils bike planning by allowing users to follow safe on-road routes to connect to the off-road trails.

In addition public transport information will be integrated in publicity material to provide users with broader opportunities without being limited by the need to use only trails that link back to the starting point.

Priorities for the proposed works were based on:

- Cost effectiveness of upgrading the existing trail(s)
- The ability to develop linkages to achieve a coordinated outcome
- The strategic significance of the trail

Descriptions of the proposed regional multiple-use bushland trails and urban link routes are shown in Table 2. This table includes a summary of the condition and upgrade requirements for each proposed bushland multiple-use trails.



## Map 2. Proposed regional multiple-use trail network

**Table 2 Proposed strategic bushland multiple-use trails (See Map 2).**

Existing track	Values	Planning issues	Linkages	Target user group	Current Suitability for multiple use	Condition summary	Required Development
1. Centre track (Ce)	Outstanding natural scenery	Management Trail	Ku-Ring-Gai National Park link (U3) and Pittwater and West Head	Bike riding and walking	Yes	Excellent track with outstanding scenic values. Steep section at start	No major development required
2. Chiltern track (Ch)	Woodland setting	Management Trail	Links Terrey Hills to Pittwater. Duckholes track (3) and Pittwater link (U2)	Walking and Bike touring	Yes	Some steep sections and wet spots minor works. Bushwalking only	No major development required
3. Duckholes track (Du)	Scenic views to Pittwater. Woodland setting	Management Trail	Links Terrey Hills to Pittwater. Chiltern track (2) and Terrey Hills Trail (4)		Yes	Some sections prone to getting muddy. Minor works to upgrade. Bushwalking only.	Repair and improved drainage of numerous wet spots on track
4. Terrey Hills trail (TH)	Forest setting		Start of link from Terrey Hills to Pittwater Ku-Ring-Gai-Chase National Park link (U3), Duckholes track (3)	Horse riding, Off road bike touring, Bushwalking	Yes	Good management track around contour	No major development required
5. Perimeter trail (Pe)	Woodland and forest	Flat management track	Cullamine trail, Terrey Hills link (U4),	Horse riding, Bushwalking Bike touring	No	Significant sections of this trail are Suitable	Some sections of Perimeter Track very wet and

Existing track	Values	Planning issues	Linkages	Target user group	Current Suitability for multiple use	Condition summary	Required Development
			Ku-Ring-Gai-Chase National Park link (U3).			however there are poorly drained sections which are not suitable during wet conditions. Major drainage works are required	muddy require drainage works.
6. Cullamine (Cu)	Forest setting		Links to Booralie Rd (U5) and Perimeter trail	Horse riding, Bushwalking Bike Touring	Yes	Excellent condition one sandy section.	Improved erosion controls
7. Weemala link (WL)	Forest/ riparian setting	Major track erosion	Booralie Rd (U5) and Killawarra Rd (U6)	Horse riding, bushwalking Bike touring	No	Significant erosion section for 200m requires significant works (fill, gravel drainage)	Major rehabilitation works required
8. Killawarra link (KL)	Forest track	Major track upgrade	Cooyong track (9) and Killawarra Rd (U6)	Horse riding, bushwalking Bike touring	No	Numerous rocky sections and poorly drained sections. Major works required to gravel and drain almost entire length of track	Major track upgrade through length of track
9. Cooyong track (Co)	Forest/ riparian setting,	Crossing of Kierans Creek	Mona Vale Rd (U9,) and Neverfail Gully track (11)	Bushwalking Bike Touring Horse riding	No (Minor works required)	Mostly suitable except for a 200m section across the creek. Works required include gravel	200m section across creek requires works

Existing track	Values	Planning issues	Linkages	Target user group	Current Suitability for multiple use	Condition summary	Required Development
						track and steeping stone crossing	
10. Mona Vale link (MV)	Forest setting	Approval for use	Links to Larool track (12) and Cooyong track (9) via Mona Vale Rd	Bushwalking Bike Touring	Yes	Gravel required in 1 location	Minor erosion works
11. Neverfail Gully Track (NG)	Forest, views, streams		Links Cooyong track (9) and Aumuna Rd (U7)	Bushwalking Bike Touring Horse riding	No (Minor works required)	A few muddy sections requiring better drainage	Numerous places require resurfacing and improved drainage
12. Larool Track (LT)	Forest, waterfall		Links Larool Rd (U8) and Aumuna Rd (U7) to Neverfail Gully track (11)	Horse riding, Bushwalking Bike Touring	No (Minor works required)	A few short sections require gravel and drainage	Numerous places require resurfacing and improved drainage
13. Jamieson Track (JT)	Littoral Rainforest, Lake	Impacts from adjoining development. Access through picnic area	Links to Cromer Heights link (U13) and Narrabeen Lake Loop (U11)	Bushwalking Bike Touring	No	Major track works for approximately 100 m of track to avoid flooding	Track needs to be elevated in two major sections
14. Cromer Heights (Cr)	Woodland, Sandstone Plateau	Major rehabilitation	Sport and Rec link (15), and Beacon Hill (U15)	Bushwalking Bike Touring	No	Major works required in numerous locations	Major track upgrade for significant sections of the track

Existing track	Values	Planning issues	Linkages	Target user group	Current Suitability for multiple use	Condition summary	Required Development
15. Sport and Rec link (SR)	Open Forest, Views of Lake	Approval of access through Sport and Rec land	Wakehurst Parkway (U12) and Cromer Heights link (14)	Bushwalking Bike Touring	No	A mostly grade 2 track last section up to Cromer Heights link is steep and rocky.	Upgrade of last 80m section up to Cromer Heights track
16. Deep Creek Link (DC)	Riparian, Forest	Crossing of Deep Creek via metal bridge	Narrabeen Lake (U11) and Wakehurst Parkway (U12)	Bushwalking Bike Touring	No	Section of single track needs upgrading	Upgrade and resurface short single track section
17. Slippery Dip track (SD)	Open forest, Views of Lake	Link with Deep Creek	Belrose (U16) and Deep Creek Link (16) and Wakehurst Parkway (U12)	Bushwalking Bike Touring	No	Major track works are required for the last 500m down to Deep Creek	Major rehabilitation and track development for 500 m to link with Deep Creek
18. Kitchener track (KT)	Scenic forest track views down Middle Creek valley	Not recognised in POM	Quarry Track (19) and St Ives link (U17)	Bushwalking Bike Touring	Yes	Minor track works required	Minor rehabilitation works. Culvert crossing needs to be installed
19. Quarry track (QT)	Steep forest track, Waste site	Access and safety through old rubbish site	Mona Vale Rd (U9) Kitchener track (18) and Heath Track (20)	Bushwalking Bike Touring	Yes	Steep management track. Minor works	
20. Heath track (HT)	Uphill track through open forest	Access through to Ralston St Multiple land tenures	Quarry Track (19) Belrose (U16)	Bushwalking Bike Touring Horse riding	Yes	Good condition. Scenic setting	
21. Bare Creek track	Middle Harbour		Cascades Track (22) and	Bushwalking Bike Touring	Yes	Good condition. Scenic setting	



Existing track	Values	Planning issues	Linkages	Target user group	Current Suitability for multiple use	Condition summary	Required Development
(BC)	Creek		Heath track (20)	Horse riding			
22. Cascades track (CT)	Middle Harbour Creek		Bare Creek Track (21) and Davidson link (19)	Bushwalking Bike Touring Horse riding	Yes	Good condition. Scenic setting	
23. Davidson track (DT)	European heritage, Middle Harbour Creek	Crossing of Middle Harbour Creek	Pipeline track (24)	Bushwalking Bike Touring	Yes (except for bridge)	No significant works required on the track however bridge required to cross middle creek. Steep sections	Construction of Bridge
24. Pipeline track (PT)	Water pipeline, open forest	Numerous road crossings	Davidson Track (23) and Frenchs Forest Link (20)	Bushwalking Bike Touring	Yes (except for bridge)		Entry and exits across roads need signage and upgrade for safety
25. Allambie Heights link (AH)	Views of Manly Dam		Manly Dam link (27) and Frenchs Forest link (U20) and Beacon Hill (U15)	Bushwalking Bike Touring	Yes		Minor works on short rough section of track
26. Engraving s track (ET)	Cultural Heritage, Views over Sydney to South East	Aboriginal sites. Current section of single track needs to be reviewed for upgrade.	Manly Dam link (27) and Seaforth link (U23) and Bantry Bay Rd (U22)	Bushwalking Bike Touring	No	Rocky single-track sections. Bushwalking only.	Major works required on short steep rocky section of single track
27. Manly Circuit trail	Views of Manly Dam,	Conflict with bushwalkers,	Wakehurst, Allambie	Bike Touring, bushwalking	Yes	Ongoing maintenance	Ongoing maintenance

Existing track	Values	Planning issues	Linkages	Target user group	Current Suitability for multiple use	Condition summary	Required Development
(MC)	Forest, waterfalls, sandstone plateau	Ongoing sustainability of track	Heights Link (27) Burnt Bridge (25) Bantry Bay (U22)			required	
28. Burnt Bridge link (BB)	Forest setting	Routing and track type	Manly Dam link (27) and Burnt Bridge multiple use path	Bushwalking Bike Touring	Proposed	Needs routing	Planning and construction required
29. Corymbia Crt Link	Linkage from Belrose, Frenchs Forest to Oxford Falls	Access through to Oxford Falls Rd difficult along gazetted road	Link track of Oxford Falls Rd (U16)	Bushwalking Adventure Mountain Biking Bike touring	No	Significant works required to clear remaining section of track through to Oxford Falls Rd	Access road at the top is not complete through to Oxford Falls Rd (100 metres bushland)

**Table 3. Urban linkages to proposed bushland multiple use trails**  
(See Map 2)

Districts and Major Routes	Linkages
U1 McCarrs Creek Rd link	Chiltern track (2) Duckholes Track (3)
U2 Pittwater link	Chiltern track (2)
U3 Kur-Ring-Gai National Park link	Terrey Hills Trail (4), Perimeter trail (5), Centre Track (1)
U4 Terrey Hills link	Perimeter trail (5) Larool trail (12)
U5 Booralie Rd	Cullamine trail ( 6) Weemala link (7)
U6 Killawarra Rd	Killawarra link (8) Weemala link (7)
U7 Aumuna Rd	Larool trail (12) Neverfail Gully trail (11)
U8 Larool Rd	Larool trail (12) Mona Vale Link (10)
U9 Mona Vale Rd	Mona Vale Link (12) Cooyong track (9)
U10 Belrose North link	Larool trail (12)
U11 Narrabeen lake loop	Jamieson track (13)
U12 Wakehurst Parkway link	Sport and Rec link (15) Deep Creek Link (16)
U13 Cromer link	Sport and Rec link (15)
U14 Dee Why link	Jamieson track (13)
U15 Beacon Hill	Allambie Heights link (25)
U16 Belrose link	Heath track (20) Slippery Dip track (17)
U17 St Ives link	Kitchener track (18) Cascades track (22)
U18 Kitchener St	Kitchener track (18)
U19 Davidson link	Cascades track (22) Davidson track (23)
U20 Frenchs Forest link	Pipeline track (24) Allambie Heights link (25)
U21 Roseville link	Pipeline track (24)
U22 Bantry bay Rd	Engravings track (26)
U23 Seaforth link	Engravings track (26)
U24 Allambie Heights (U)	Allambie Heights link (25) Manly circuit (27)
U24 Manly Dam link	Manly Dam link (27)
U27 West Head Rd link	Centre track (1)

## **7. SIGNAGE AND INTERPRETATION**

### **7.1 Key messages and themes**

In developing and promoting a trail network, it is critical that information and interpretation messages are focused, meaningful and applied consistently so they are readily apparent to the users. This is especially important when messages about public safety need to be communicated.

The messages that need to be conveyed to users of trails can be grouped into four categories: basic user information/orientation; safety messages; management information; and interpretation information.

As each track has its own set of issues, the messages must be made relevant to individual trails. More developed and easier trails are suited to providing more information than for higher classification or more remote tracks.

#### ***Basic user information***

There is basic information that should be presented for all tracks either in pre-trip information, guidebooks, or signage. This basic information includes the standard and distance of track, and any major hazards. The more highly developed, lower classification (Class 1-3) trails are suited to having some interpretative signage.

It is recommended that the track standard pictograms be used at all trailheads to identify the standard of the trail. An example of these pictograms developed by the National Parks and Wildlife Service Blue Mountains Region that could be adapted is shown at Figure 2. Although these have been developed for walking tracks they are suitable to inform all users of the terrain and level of difficulty of the trail.

The distance of the trail if possible should be located on trailhead signage otherwise within the proposed DL-sized pamphlet.

Figure 2 Trail Standard Pictograms





### *Safety messages*

In order to satisfy the 'duty of care' requirement to visitors, the following safety messages must be effectively communicated:

- Only undertake a standard or length of walk that is suitable for your level of fitness and ability.
- Understand that longer trails require extra preparation and supplies such as food and water.
- You should always dress appropriately, including sturdy footwear, safety equipment for bike riding and horse riding, and carry water and food if necessary. In more remote areas, you should include an accurate map, whistle, compass, first aid and clothing, including a waterproof coat, suitable for changing conditions.
- Check weather forecasts before departure.
- Bike riders watch-out and slowdown for walkers and horse riders.

Sharing of the trails has been seen as an important issue with concerns that some users do not show sufficient consideration for other trails users. Trail etiquette signs will be included to promote safe and responsible use. The sign below has been used internationally and Council will work with user groups and other land managers to develop clear and understandable signs.



### ***Management and regulation messages***

Examples of management and regulation messages include:

- Reduce your level of disturbance to the environment – stick to the designated tracks and carry all your rubbish out;
- No domestic animals are allowed in this area;
- Watch out for other users of the trails;
- No lighting of fires;
- Do not disturb or spread weeds;
- During summer, fires occur in the region. Visitors should check with the relevant land management authority about fire risk before departure;
- Minimum impact messages are important as they assist management to reduce impacts on the environment and promote a conservation ethic within the community. The 'Leave no trace' principles (Attachment 4) could be used as the minimum impact messages.

### ***Interpretation themes***

Current interpretation of the regional trails is very limited. There is an opportunity to promote the values of the region and inform and inspire trail users. Interpretation signage should be developed consistent with the principles shown in Attachment 3.

Possible interpretation themes could include:

- The historic values of the area in the development of Sydney (eg Bantry Bay and Davidson Track);
- The Aboriginal values of the area (eg Engravings Track);
- The special and endangered flora and fauna (Cascades track, Centre track);
- The diverse natural landscape connecting escarpments through valleys to lakes to the beaches (Slippery Dip track).

Any interpretation of Aboriginal heritage requires that the relevant Aboriginal Land Council be contacted and consulted about appropriate design and messages.

## **7.2 Regional trails brand**

To develop an identity for the regional strategic trails a title is recommended "Sydney North Regional Multiple-use Trails". The title should be applied in a consistent style and placed on all information products such as the proposed pamphlets and signage. A title is illustrated on Figures 5 - 8. This title should be reviewed in terms of the wording and style font to reflect organisational styles. A more simple title could be applied to intermediate signs to reduce impact and use colour coding for identification.

It is possible to copyright a brand to protect it from use by other authorities; however it is difficult and expensive to register typography or text. Given this expense copyright of the title is not recommended.

## **7.3 Information strategy**

The proposed information strategy and products based on the:

- target audience (section 2);
- trip cycle;
- resource limitations.

Information delivery should include as many stages of the trip cycle as possible. Key stages of the trip cycle include:

- pre-trip – before leaving for the trail eg guide book, or brochure;
- orientation – while in the general area of the trail eg signage, brochure;
- on-track – while on the trail eg signage; and
- post-trip – after completing the trail eg book.

Two priority information products are recommended: an information pamphlet and track signage. These products will address the first three stages of the trip cycle from pre-trip to on-track.

#### **7.4 Information Pamphlet**

A DL size coloured information pamphlet is recommended. The purpose of the pamphlet is to communicate the regional multiple-use trail concept, orientate the users to where the tracks are located and inform users of some of the management issues of the trails. Healthy activity logos/promotion could be included to encourage use of the trails.

The proposed pamphlet should include the following:

- A colourful cover with a typical landscape view of the area;
- Major information messages (see section 2);
- Description of multiple use trails including permissible use;
- Trail standards;
- A map of the region identifying the trails (colour-coded for the types of use)
- On-road bike routes (Bike Plan) and public transport routes.

The pamphlet should be professionally designed and printed. It could be distributed to all ratepayers in the region with their rates notices or be distributed to relevant public, retail and tourist outlets.

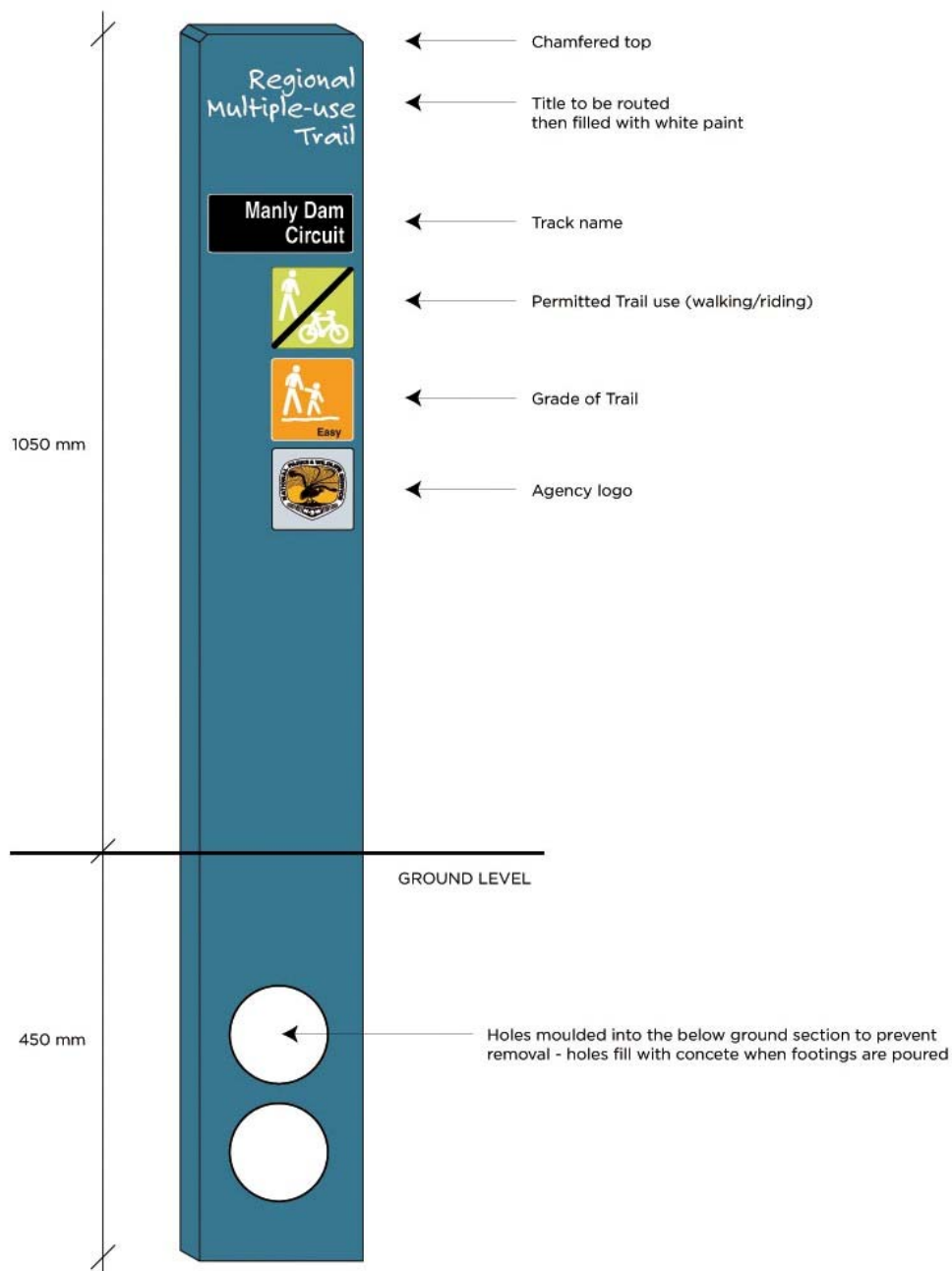
#### **7.5 Track-head signage**

A standard track-head sign or totem is proposed as a cost-effective option for all regional trails. It would also identify the regional trails. These totems would be significantly less than half the cost of larger track-head signage and would be easy to maintain and replace. Figure 3 shows the proposed totem constructed of recycled plastic. It provides a practical and cost-effective way of communicating basic information about the trail such as name, distance, standard, and land manager. Management could easily develop and install these totems by using relevant pre-made pictograms. The cost of these totems is approximately \$400 each including the pictogram plates. Totems should be located at the ends of all the identified regional trails.

With increased resources more comprehensive track head signage may be possible such as aluminium panels that have maps and more detailed track information and possibly some interpretation.

Existing track head signage such as areas managed by National Parks and Wildlife Service should be amended in time to include the identification of the trail as a Regional Trail, and include the basic information as identified in section 2.

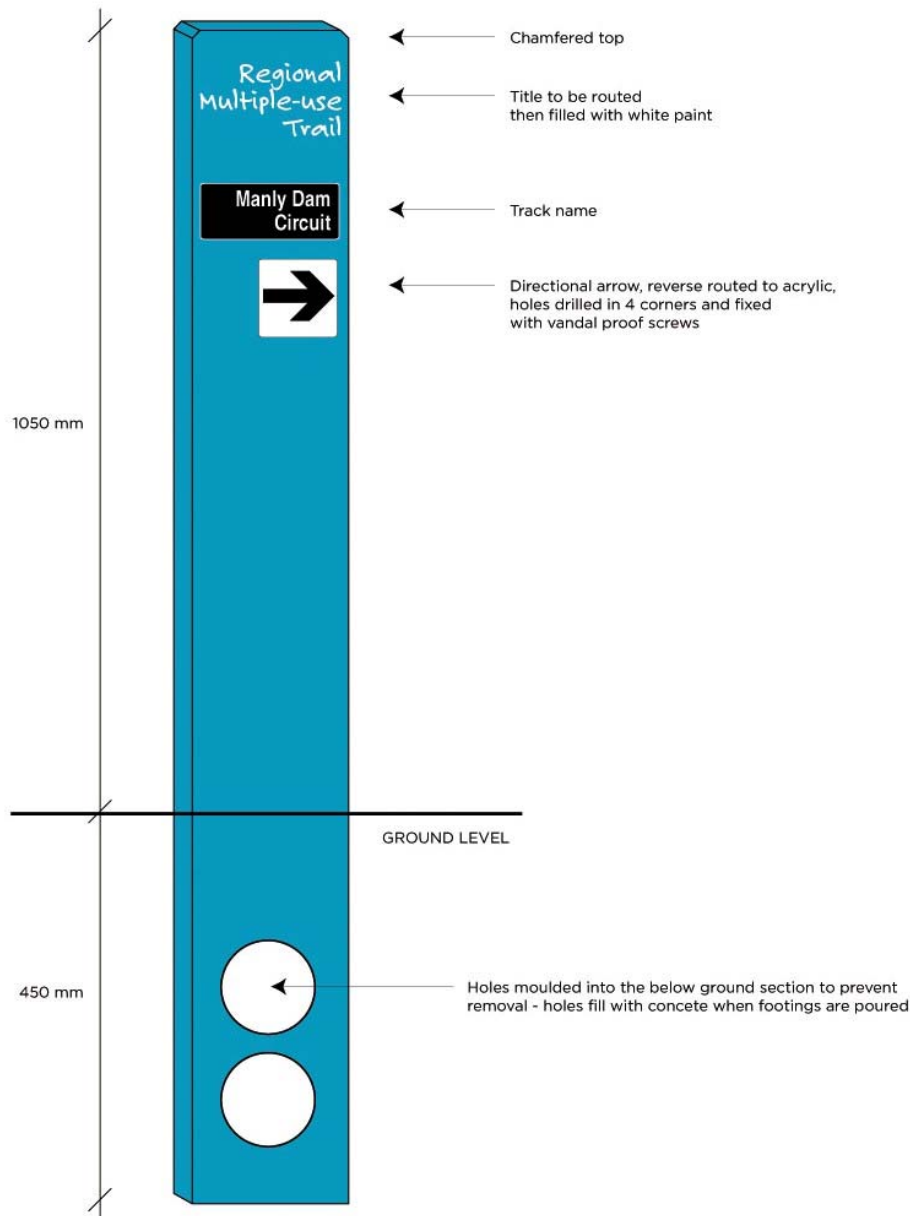
**Figure 3 Proposed Track head Totem**



## 7.6 Directional Signage

At many locations on the regional trails there are navigational challenges, which require some assistance. Directional signage is proposed as shown in Figure 4.

**Figure 4 Bushland directional totem**

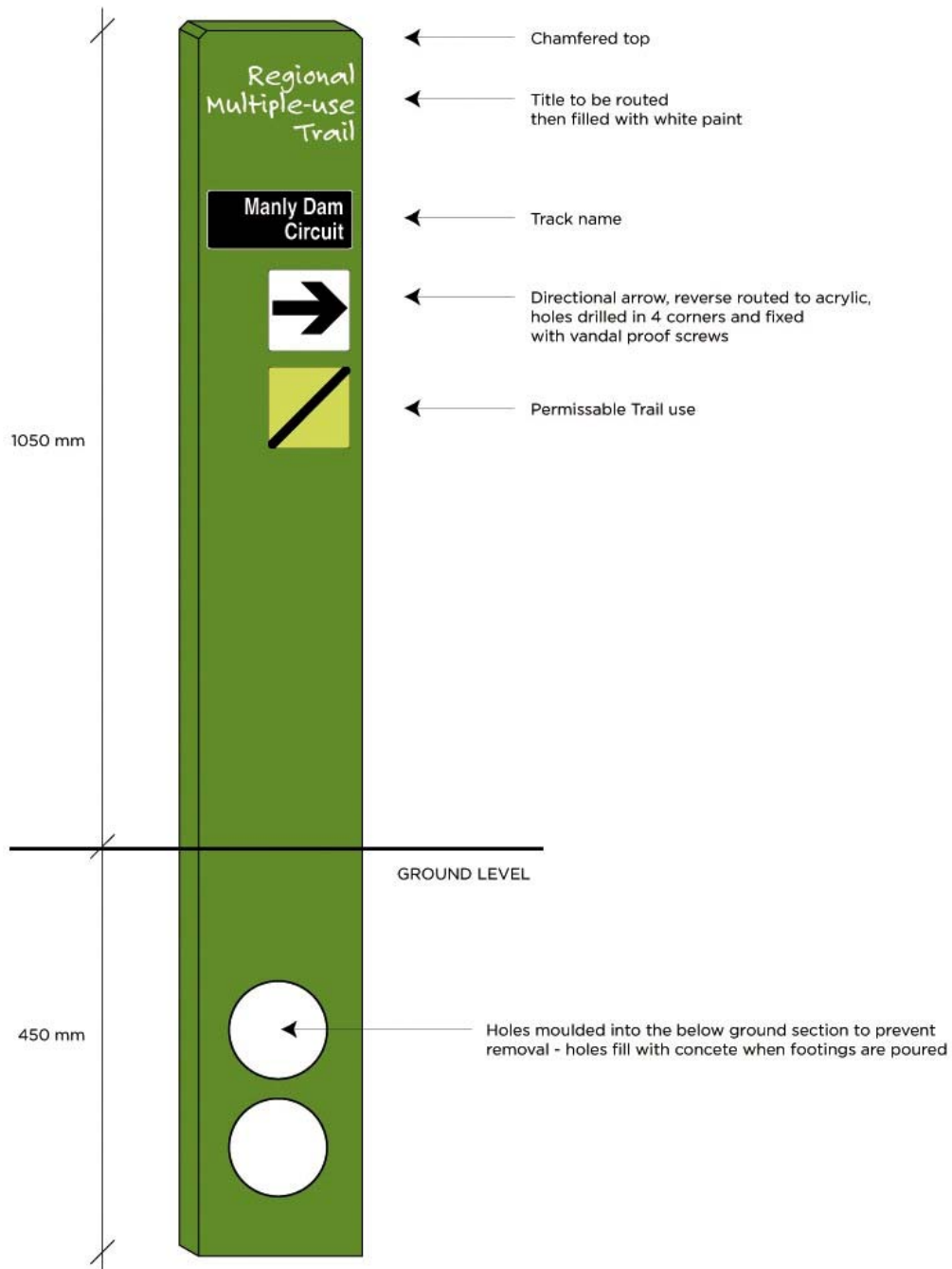


## 7.7 Urban linkage signage

Many of the regional trails go through or connect to urban trails or pathways. The marking of the regional trail in an urban area could be done as a different colour as shown at Figure 5.



Figure 5 Urban directional Totem



### **7.8 Interpretation signage**

Interpretation signage placed at the start or along the length of the trail enhances the visitor experience as long as the signage is undertaken consistent with the standard of the track (see Attachment 3) and professionally designed and implemented.

There are many trails in the region, which have points of interest that could be interpreted including:

- Engravings track
- Davidson track
- Pipeline trail
- Centre track
- Cooyong track
- Perimeter track

There are likely to be many other tracks that have special interest value that could be interpreted. Each track should be assessed for its interpretation values and appropriate interpretation installed consistent with the guiding principles shown in Attachment 3.

## **8. IMPLEMENTATION PLAN**

Resources may limit implementation of the regional multiple-use trails network and a staged implementation approach is therefore proposed according to Table 4 and illustrated at Map 3.

This table ranks all the high priority trails from Table 2 in terms of importance to implement works to develop a regional multiple-use trail network. The priority for development of trails was developed based on the following criteria:

1. Strategic importance, which links destinations and population, centres (Map 1);
2. The lack of other multiple use trail opportunities which would achieve similar objectives (i.e. no alternatives);
3. The existing level of environmental degradation. A high level of environmental degradation requires urgent action;
4. Resources required to upgrade – must be achievable without excessive cost;
5. Environment and terrain suitable to have a sustainable multiple-use trail.

**Table 4 Priorities for implementation of works on bushland multiple-use trails**

Track	Ranking	Strategic justification	Works/Actions	Cost	Land Manager
Davidson Track Pipeline track	1	One of the few trails which provides an East West linkage between large population centres of St Ives and Frenchs Forest	Investigate opportunities to develop the pipeline management track for multiple use trail Add gravel to few wet spots along trail Redevelop pedestrian overpass to allow access along pipeline track Construct bridge over Middle Harbour Creek Safety or directional signage will need to be located at steep sections and road crossings.	Minor costs to upgrade to a good track Construction of bridge over Middle Harbour Creek – needs investigation.	Department of Conservation and Environment (DEC) Sydney Water Corporation
Slippery Dip track	2	No other safe options for a trail which links Oxford Falls to Narrabeen Lake	500 metres of trail up steep incline.	1 km of new switch back trail recommended at \$150/metre (\$75 000). Plus rehabilitation, environmental and design. Total \$200 000.	DEC. Warringah Council
Burnt bridge track	3	Critical link into Manly from Manly Dam. High demand for access to Manly Dam	1 km of 2 metre wide multiple use Class 3 trail. Route needs to be carefully surveyed, and environmental impacts	Approximately \$200/metre (Class 1 or 2) and \$70/metre (Class 3). Require further investigations to identify	Warringah

Track	Ranking	Strategic justification	Works/Actions	Cost	Land Manager
			assessed. Environmental assessment Route location	actual costs	
Killawarra Rd link	4	Provides a bushland link around Terrey Hills. Currently degraded.	Upgrade track – numerous wet and rocky sections (1.92 kms to Cooyong track)	Gravel surfacing and drainage.	DEC
Weemala Link	5	High erosion of track. Important link around Terrey Hills	Rehabilitate existing track erosion. Fill and provide track surface	200 m of new track at 50\$/m plus rehabilitation @ \$40/m (\$18 000)	
Perimetre trail	6	High use trail. Important loop around Terrey Hills. Current erosion problems	Approximately 1 km of works on drainage. Top drain and possible culverts	1km at \$20/m (\$20 000)	DEC
Cooyong Track	7	Short section requires works to provide bushland link to Terrey Hills	Complete track upgrade across Kierans Creek	200 metres left to upgrade. Investigate Creek Crossing. \$30 000	DEC
Manly Dam (Eastern and Southern sections)	8	High use circuit – needs ongoing maintenance to ensure sustainability. Northern section is suitable for multiple use however the Eastern and southern sections require further works	Northern section -Minor drainage works on steep sections. Creek crossings require signage. Some sections very rocky. Southern and Eastern sections – improved drainage and some track widening, signage and track surfacing	Minor drainage works and track surfacing.	Warringah
Engravings track	9	Provides bushland link to Seaforth	Upgrade of track to make suitable for off road bike	Minor drainage works and signage,	DEC

Track	Ranking	Strategic justification	Works/Actions	Cost	Land Manager
			touring	Upgrade rocky sections of single track. Approximately \$30 000	
Pittwater Trails	10	Numerous trails in good condition. Terrey Hills Trail, Duckholes Trail, Chiltern track, Centre Track	Require minor works to upgrade	\$20 000	DEC
Corymbia Crt link	11	East-West link from Frenchs Forest to Oxford Falls	Install remaining 100 metres of track through to Oxford Falls Rd. Improve access along bottom track. Investigate option of developing the area as a downhill bike precinct	100 metres of new track at \$60/m including environmental and drainage works (\$6000)	Warringah
Jamieson track	Currently being upgraded	Potentially an outstanding track with high interest values. Important part of a loop around Narrabeen Lake	Upgrade and re-alignment of Jamieson Park bushland trail as part of the Narrabeen Lake loop trail (Funding allocated for FY 06-07 for design of trail) Continue investigation of opportunities to complete trail around lake	Approximately 100 metres of raising the track above flood level @ \$70/metre (including drainage) and gravel surfacing of 200 metres @ \$40/m	Warringah

**Table 5 Priorities for the development of linkage trails which are outside of bushland areas however are important for the development of the strategic trail network**

Trail	Priority	Works/actions	Cost	Land Manager
Signage	1	Installation of urban linkage signage	Unknown	Warringah Pittwater Manly
Narrabeen Lake (U11)	2	Bridge across Deep Creek or upgrade track around Deep Creek through Dog exercise area  Route around Narrabeen Lake avoiding areas of conservation significance, including bird breeding areas. Approval of access via Sport and Recreation	Requires further investigation by engineer. Elevated boardwalk construction costs - \$150/metre. (\$150 000) Plus likely additional costs for pile driving and marine proofing posts.	Warringah Pittwater
Belrose North (U10)	3	Formalise link Oxford Falls with Belrose & Terrey Hills		Warringah
Roseville Link (U21)	4	Improve the link down the Warringah Rd across Roseville bridge		Warringah

In addition to these priorities critical urban linkages that are currently poorly established and require works to be improved include Beacon Hill (U15), and Manly Link (U24).

**Table 6 Information strategies and priorities**

Action Strategy	Trails	Priority	Estimated number	Cost
Install track-head signage at all the identified regional bush land trails in priority order of trails	All	1	22	\$8 800
Develop and distribute Regional Trails Flyer		2	50 000	\$5000 (for production and printing of 50000 copies
Install urban linkage track-head signage		3	15	\$6000
Install all directional signage (bush land and urban)		4	30	\$12000
Install interpretation signage consistent with the outlined principles		5	Unknown review on a trail by trail basis	



## 8.1 Action Plan

Given the limited resources available for development of the Regional Trail network the following stages for implementation are recommended:

1. Establish Davidson/Pipeline trail, dependent on investigation of a crossing over Middle Creek;
2. Development of Condoover Reserve - Burnt Bridge Link including signage and rehabilitation of degraded areas (Warringah Council - reserve funds available);
3. Installation of standard trackhead signage (to be detailed in signage and interpretation component of this project) on all existing regional strategic trails that require no significant development or linkages (All Councils and NPWS);
4. Joint application for grants for development and rehabilitation of Terrey Hills trails (Cooyong, Perimeter, Killawarra Rd, and Weemalla) , including signage;
5. Linkage of Slippery Dip track to Wakehurst Parkway including signage (Warringah Council and NPWS). Investigate alternative route(s) for multiple-use trail and possible specialised down hill bike track built to sustainable design;
6. Investigate development of the Narrabeen Lake loop including upgrading of Jamieson Park trail and investigations of opportunities to complete trail;
7. Review relevant bike plans and integration with multiple-use trails;
8. Upgrade existing single use tracks such as Duckholes and Chiltern tracks to multiple-use – Liaise with Land Manager;
9. Investigate development of a designated mountain bike park(s) as part of Crown Lands review and development of regional recreational reserve to take pressure of existing mountain bike areas such as Manly Dam;
10. Liaise with relevant landholders for rehabilitation and management of trail degradation in the Red Hills area.

## ATTACHMENT 1 CONDITION REPORT FOR PROPOSED TRAIL NETWORK

Required works ratings

- 1 – low level erosion or minor track surface problems (such as muddy section of track) which requires ongoing maintenance
- 2 – medium level track erosion or track surface problems requiring minor works to improve the trail to a sufficient level suitable for sustainable multiple-use
- 3 – high level erosion or track surface problems requiring urgent significant works for dual use or track closure

Track segment/point	Infra-structure	Map point	Photo	Track description	Management issues	Works rating	Standard
Pittwater							
1. Centre Track							
Steep section	Gate and trackhead sign	Ce1- S33 39.165 E151 15.275	Ce p1	120m section from trackhead. Rocky 20-30% management track section up-to plateau.	Minor erosion and drainage problems	1	3
Scenic Plateau		S33 39.165 E151 15.275 – Ce5		3km undulating and flat section of open track through low shrubland with outstanding 360 degree views. Track sandy and rocky in sections.	Outstanding viewing spots could be interpreted. Interesting flora and fauna		3
Summary Assessment Outstanding scenic trail across an open ridgeline. Track in good condition with some sandy and wet spots. Important link from Terrey Hills to West Head Rd.							
2. Chiltern Trail							
Uphill section	Entry Gate off McCarrs Creek Rd	Ch1 – Ch4	Ch p1	990m uphill (10-20% slope) undulating section of sandstone surfaced track. Numerous rollovers. Few wet spots. Views to the North. Woodland setting			3

Track segment/point	Infra-structure	Map point	Photo	Track description	Management issues	Works rating	Standard
Undulating section to Chiltern Rd	Trackhead gate at Chiltern Rd	Ch4-Ch6	Ch p2	540m undulating management track with few wet spots			3
<p>Summary Assessment</p> <p>Links McCarres Creek Rd to Chiltern Rd and Pittwater. Track with a long uphill climb and short section to Chiltern Rd. Need to provide urban linkage into Pittwater and south to Warringah via Cabbage Rd. Management Track in good condition. Currently one way and no bikes permitted. Existing track could cope with low-level bike usage.</p>							
3. Duckholes trail							
Woodland section	Gate and trackhead sign	Du1-Du3	Du p1	860m length of undulating management trail through open woodland onto heathland plateau. Smooth rocky track surface		1	3
Plateau section		Du3 – Du6	Du p2	900m section including numerous sections of wet and muddy, poorly drained track. Track sometimes flat rock and sand (120m section).	Extra gravel is required to improve trail standard at numerous locations	1	3
Woodland	Trackhead sign and gate	Du6-Du8	Du p3	890m undulating trail. Sandy and smooth rocky track surface. Muddy spots		1	3
<p>Summary Assessment</p> <p>Track provides link into Pittwater. Currently only for bushwalking. Could allow bike use with minor works to upgrade numerous spots and sections. Scenic track with views to the North</p>							

4. Terrey Hills Trail							
Undulating		TH1-Du1	TH p1 TH p2	2.06 kms undulating management trail through forest setting. Some minor erosion spots on track			3
<p>Summary Assessment</p> <p>Terrey Hills trail is a stable trail, which provides a link to Pittwater through Duckholes and Chiltern Tracks. Horse riding and bike riding is not permitted on these tracks.</p>							
Terrey Hills							
5. Perimeter Track							
Perimeter Trail Trackhead	Carpark, Signage, Gate	Pe1	Pe p1 Pe p2	Medium size carpark (10 vehicles)			
Contour trail		Pe1 – Pe5	Pe p3	3.9 kms flat hard sandy track. Forest setting			2
Creek Crossing		Pe5		Stream crossing rough and wet	Requires culvert and infill	2	3
Undulating track		Pe5 – Pe11	Pe p4	1km undulating track wet spots	Minor surface and drainage works	1	2
Rainforest Gully	Fence	Pe11- Pe13	Pe p5	Steep (15%) downhill section to rocky track section 100 m poor drainage from adjoining property	Surface and drainage (top drain needed)	2	3
Muddy sections		Pe13 – Pe23	Pe p7 Pe p8 Pe p9 Pe p10	1.8km of undulating wide sandstone management track adjacent to private property	Gravel has been applied but drainage works are limited and need upgrading including top drains and culverts	2	4
<p>Summary Assessment</p> <p>The Perimeter Track provides an outstanding multiple use trail around Terrey Hills. It is mostly well-maintained and easy to use trail except numerous muddy sections. These sections are only a problem during the wet. Improved drainage works is required as a priority.</p>							

6. Cullamine trail							
Down to trackhead		Ca1 – Ca2	Ca p1	40m 10% downhill slope. Management track			
Undulating trail			Ca p2 Ca p3	340 m undulating management track with some sandy sections.		1	3
Summary Assessment Well maintained track suitable for multiple-use. Some sandy sections may require stabilising and improved drainage.							
7. Weemala Rd link							
Flat section		WL1-WL2	WL p1	230m single flat track. Open Forest	Minor track erosion	1	3
Degraded section		WL2-WL3	WL p2 WL p3	Multiple tracking – deep scouring of tracks for 220m	Unsuitable for walking and riding. Major rehabilitation works	2	4
Creek section to Rd		WL4	WL p4	60m single track through riverine forest stream crossing to road slight incline. Rocky track	Need signage Resurfacing	1	4
Summary Assessment This link section to the other side of Terrey Hills is highly degraded in parts and requires rehabilitation as a high priority as it is currently unsustainable. May require barriers to prevent access by motorised vehicles.							
8. Killawarra Rd link							
Rocky section		KL1 – KL2	KL p1 KL p2 KL p3	350m rocky section of 3m wide track 10% slope. Sandy sections	Resurface and drain	2	4
Flat section		KL2 – KL5		300m flat rocky and sandy section of track	Resurface and drain	1	4
Rocky section		KL5 – KL8	KL p4 KL p5	570m hilly and rough rocky section. Downhill and uphill slopes of 15%	Resurface and drain	2	4
Wet section		KL8 – KL11	KL p6 KL p7 KL p8	350m section of flat poorly drained track – muddy and wet in many spots	Resurface and drain whole section	2	4

Rocky section		KL12- KL16		185m length rocky track with short steep sections	Resurface and drain	2	4
Concrete track		KL16- KL17	KL p9 KL p10	Steep 30% incline – 80m to gate			3
<p>Summary Assessment</p> <p>This link track is highly degraded and rough in many sections. It is not suitable for Bike touring in its current condition. Considerable work is required to improve this track to a suitable standard for dual use. However it is an important link part of the Terrey Hills loop and should have a high priority for upgrade. May require barriers to prevent access by motorised vehicles.</p>							
9. Cooyong Trail							
Steep section		NG13 – Co1	Co p1	25% slope to point where track narrows to single track	Very steep will require maintenance and drainage	1	3
Single track across creek		Co1 – Co3	Co p3 Co p4	70m single track across stream- rocky base- to management track	Single track requires gravel. Stream crossing should have stepping stones given size of creek	1	4
Steep section of management track		Co3 – Co4	Co p5	10-20% incline for 1km. Numerous rollovers. Sandstone surface	Minor drainage problems	1	3
Flat section to Mona vale Rd	Trackhead and sign at Mona Vale Rd	Co4 – Co5	Co p6	1km flat section along contour. Views to the North. Open Forest			3
<p>Summary Assessment</p> <p>Cooyong trail provides a bushland link between Belrose and Mona Vale Rd and Terrey Hills. It is well maintained and provides a diverse bushland walk. The section across the stream requires further works to make suitable for bike riding</p>							
10. Mona Vale Rd Link							
Link management track		MV1- MV2	MV p1	Management track running Parallel to Mona Vale Rd	Signage of Rd and gravel in spots	1	3

11. Neverfail Gully Trail							
Neverfail trackhead - stream	Gate	NG 1 – NG2	NG p1	80 m gravel management track down to stream		1	3
Wet spot		NG3		10 m wet spot	Requires gravel and drainage		
Flat section		NG1 – NG5		1.3kms flat management track with sandstone surface numerous muddy spots. Forest setting	Gravel surfacing and drainage of wet sections	1	3
Wet rocky section		NG5	NG p2	90m wet track section. Rocky surface	Gravel and drainage	2	4
Wet rocky section		NG6		20m wet track rocky surface	Gravel and drainage	2	3
Coonawarra Rd		NG5 – NG7		330m flat sandstone management track. Good condition except for wet spots	Gravel and drainage of wet spots	1	3
Muddy section	Trackhead gate, fencing	NG8 – NG10	NG p3 NG p4	200m muddy section of track	Requires gravel and drainage	2	4
Summary Assessment Trail links to Cooyong trail. Generally sound track, which is being improved with re-surfacing, however some muddy sections require drainage, works. Scenic views to South.							



12. Larool Trail							
Flat section	Trackhead sign and gate	LT0-LT1	LT p1	Open forest management track some minor drainage problems.		1	3
Short steep section		LT1	LT p2	Rocky track 15% slope 40m	Minor track erosion, drainage required	1	3
Wet section		LT3	LT p3	60 m muddy section	Requires resurfacing and cross drainage	2	3
Creek crossing up to Aumuna Rd		LT4	LT p4	Waterfall point of interest. Slope up to Road 20m	Minor track erosion up to road	1	
Summary Assessment Links Belrose to Terrey Hill and the Terrey Hills loop. Management trail which requires some drainage works in part. Waterfall provides a point of interest.							

Narrabeen Lake							
13. Jamieson track							
Eucalypt Forest	Boundary Fence. Signage	JT1 – JT2	JT p1 JT p2	840m, 2m wide track around retirement village. New gravel. Temperate coastal rainforest. Sandy track.	Some minor drainage problems. Numerous weed species.	1	2
Bridge		JT2	JT p3		Good condition		
Flooded Casuarina forest	Foot bridge	JT2 – JT 6	JT p4 JT p5	1km Casuarina forest with three flooded sections at high water mark.	Track to be built up. May need to construct rock wall facing lake	3	4
Picnic area	Fencing	JT6 – JT 7	JT p6	220m through picnic area	Define track through picnic area		2
Eucalyptus forest	Causeway trackhead fence and signage	JT7 –JT9	JT p7	130m section through Forest to link with the Esplanade Dual use pathway			2
<p>Summary Assessment</p> <p>A scenic and diverse track through forest and estuarine setting. Track is variable with good bridges however some sections prone to flooding requiring major track works including raising the surface of the track. Track could also have interpretation of the Coastal forest and rehabilitation areas.</p>							

14. Cromer Heights link							
Bitumen Rd	Gate (Wolbah PI)	CH1 – Cr2	CH p1 CH p2	120m section of bitumen Rd 30% slope	No trackhead signage		3
Gravel track		CH2 – Cr3		500 m section of rocky gravel track some short sections of rocky slope (20%). Rocky track surface		1	3
Powerlines track		CH3-CH4		460 m section of wide sandy track	Lookout opportunity to Narrabeen Lake		2
Single track		CH4 – CH5	CH p3 CH p4	550m section of single track with rocky and sandy sections	Difficult for bike use	3	4
Across heathland plateau		CH5 – CH6	CH p5 CH p6 CH p7	850m section of variable track with rocky cliff sections, and major drainage problems	Numerous major rehabilitation problems	3	4
Down to saddle	Fence barrier	CH6-CrH	CH p8	350m steep rocky very rough section with small cliffs	Numerous major rehabilitation problems. Not suitable for bikes	3	4
Steep section		CH8-CH10		530m rocky wide track major erosion and drainage problems	Poor track surface and drainage problems	3	4
Gravel section		CH10 – CH11		Flat 230 m section through gravel pit to private property access Rd	Numerous drainage problems. Multiple tracking. Illegal use	3	4
Access Rd	Gate at Lady Penrhyn Dr	CH11 – Lady Penrhyn Dr		Flat gravel road	Private access		2
<p>Summary Assessment</p> <p>This could be a good link from Narrabeen to the South, being part of a day-long loop trip for bike touring. However there are significant management and erosion issues along this track. We recommend that this track be closed for rehabilitation unless major upgrading can be undertaken. There are major rocky sections and flood prone areas of track combined with multiple tracking and use of the area for unsuitable use such as rubbish dumping and bike track construction.</p>							

15. Sport and Recreation Link							
Dam Rd	Entry gate, Lookout point with fence, Dam	SR1-SR3	SR p1	450m steep section (15 %) bitumen Rd to Dam	Poor signage and difficult to access trackhead from Wakehurst Parkway		2
Around Dam	Causeway crossings	SR3-SR4	SR p2	300m section of gravel flat management track			
Rocky section	Links to Cromer Heights track	SR5 –SR6	SR p3 SR p4 SR p5	Steep rocky section of track for 60m (30% slope)	Not suitable for bikes. Requires major track works including gravel and rollover drainage	3	4
<p>Summary Assessment</p> <p>This is a good track until it reaches the steeper section up towards the Cromer Heights track where it becomes very rocky with small cliffs. Access through the Sport and Recreation area is poorly marked and not authorised.</p>							
16. Deep Creek							
Section to bridge		DC1 – DC2	DC p1 DC p2	450 m section of flat wide track with minor drainage problems	Poor signage. Bridge section not suitable for bikes – steps	1	2
Bridge – Dog exercise oval		DC2-DC3	DC p3 DC p4 DC p5	100m section of single narrow track over footbridge. Sandy hard track surface	Track erosion near creek. Narrow for bikes	1	3
<p>Summary Assessment</p> <p>This is an important link around the bridge on Wakehurst Parkway, which is not passable for pedestrians. The initial section from the Dog exercise Oval is narrow however with some works could be improved for bikes. The bridge crossing is difficult for bikes given its height and steps. There are proposals for an improved pedestrian and bike viaduct over Deep Creek attached to the existing bridge; this would be integral to a continuous trail around Narrabeen Lake.</p>							

Oxford Falls							
17. Slippery Dip track							
Morgan Rd	Carpark, Road entry	SD 0	SD p1 SD p2		Poor entry signage. Minor erosion points	1	3
Undulating section	Gate	SD 0 – SD1	SD p3 SD p4 SD p5	2.7 km management track – solid surface on undulating gradient	Unclear about access to Slippery Dip track – private land		
Ponding		SD 1	SD p6		Ponding at bottom of slope. Improve drainage	2	4
Steep section		SD 1 – SD2		140 m 30% slope, some track erosion	Some track erosion, Improve drainage	1	3
Plateau		SD2-SD5	SD p7	1.3 km flat track section through heathland and into open forest. Track sandy and rocky in sections	Numerous wet sections of track require resurfacing and improved drainage.	2	3
Steep section down to Deep creek		SD5 – SD9	SD p8 SD p9 SD p10 SD p11 SD p12	500 m steep section single track through forest 20-30% slope	Major erosion and track alignment problems. Investigate alternate alignment along old fire trail.	3	5
Deep Creek section	Gate and signage, rehabilitati on area)	SD9 – SD 11	SD p13 SD p14 SD p15	200m flat section on bitumen road 1-2m wide	Few minor muddy spots which require gravel	1	3
<p>Summary Assessment</p> <p>Slippery Dip track is an important mountain bike touring link between Narrabeen and Belrose. At the Morgan Road end the track is poorly marked through private lands. Most of the length of the track is a good undulating management track, which is very wide and open reducing the recreation experience. A short steep section up-to a plateau has some minor erosion problems. There is a significant management problem linking the Deep Creek track to the top of the Plateau. A major track re-alignment is needed to reduce the gradient. Significant rehabilitation of the existing degraded tracking is also required.</p>							

St Ives							
18. Kitchener Track							
Trackhead		QT6		Single track			
Contour section		QT6 –KT1		Single track, .8m wide, rock and sand surface, through forest.	Views to the South. Minor drainage problems	1	3
Culvert Crossing	Culvert	KT1		Steep track down to culvert and up from crossing - wet and shady	Track resurfacing and drainage leading to and out of culvert crossing	2	
Kitchener ST		KT 2		Intersection with Kitchener St side track	McIntosh Lookout		
Wet section (Middle Creek headwaters)		KT2-KT3		500m wet section of track through open woodland and sedgeland. Smooth rocky track. Views to the South.	Drainage of track required in sections. Track also overgrown	2	4
Linegan Place trackhead	Chain gate	KT3 –KT4		200m flat track to Linegan Pl		1	3
Summary Assessment Kitchener track is a very scenic track in the forest and open forest along the contour. It is an important link to St Ives. It is a track that requires some maintenance to improve drainage and track surface.							

19. Quarry Track							
Middle Creek Crossing		QT1					
Uphill section	Park entrance sign	QT1 – QT2		Uphill management track to Park Boundary 20-30% slope – 500m		1	4
Up to Old Rubbish site	Old Quarry Water storage ponds, Old Rubbish site	QT2 – QT3		900m Slight uphill section – flat rocky/sandy track	Minor drainage problems	1	3
Flat section of track to Mona Vale Rd	Rubbish site , old sheds, signage	QT3 –QT8		1 km flat management track. Open sections through rubbish site	Directional signage through rubbish site. Hazardous waste issues ?	1	2
Old Sheds		QT4	QT p1				
Old road signage and sediment fencing		QT5			Remove		
Cattle Grid		QT7	QT p2		Should be removed and track resurfaced		
Mona Vale Rd trackhead		QT8	QT p3				
<p>Summary Assessment</p> <p>Quarry track is a diverse track starting from the Valley forest to an industrial wasteland out onto Mona Vale Rd. It is an important link to St Ives showground and Cooyong track just further up Mona Vale Rd.</p>							



Davidson							
20. Heath Track							
Up hill section		BC2- HT1		Undulating flat sandy management track		2	
Powerlines		HT1		Track intersects with powerlines start of uphill track 10-30% section numerous rollovers		1	3
Water Tank		HT2		Private property			
Ralston Ave		HT3		Some muddy sections close to Ralston Ave	Trackhead signage at Ralston Ave. Can also access Heath track from Wyatt Ave	2	3
<p>Summary Assessment</p> <p>Heath track is an uphill management track linking to the Belrose area. It also provides East West access from Oxford Falls into St Ives. It is relatively well maintained. The trackhead at Ralston Ave needs to be improved, or direct use of track to Wyatt Ave.</p>							
21. Bare Creek Track							
Flat track		BC1 – BC2		Flat track adjacent to Creek. Scenic - canyon. Closed Forest		1	3
<p>Summary Assessment</p> <p>Scenic track along valley floor adjacent to Middle Creek. No management issues</p>							

22. Cascades Track							
Trackhead Stone Pde	Gate and sign	CT 1	CT p1				
Steep section	Causeway , bitumen Rd	CT1 – S33 44.238 E151 11.812		65 m steep 25% slope, Management track			3
Causeway		CT 2					
Undulating		S33 44.238 E151 11.812 – CT 5		Wide management track with smooth gravel and sandy surface – rollover drainage. Forest setting			2
Middle Creek	Causeway crossings	CT 5 – CT 7	CT p2	Undulating rocky but smooth track through riverine forest. Causeway crossings		1	3
Steep section		CT 8		120 m steep 35% slope concrete surface	Steep section hazard signage		4
To Douglas St		CT8 –CT9	CT p3	Undulating uphill track 10-20% slope through forest. Rollovers		1	3
<p>Summary Assessment</p> <p>Cascade track is an easy track through forested National Park providing a link from Davidson to St Ives. It is a well managed and stable track. Care will need to be taken crossing the middle creek area.</p>							

Frenchs Forest							
23. Davidson Track							
Start of Davidson Track John Oxley Drive	Gate, Trackhead sign	DT1	DT p1		Need to improve pedestrian access around gate		2
Flat section to pump house	Fence and Gate	DT1 – DT3	DT p2	200m flat 2 m wide track to start of steep section			
Steep section	Pump house	DT3 – DT4	DT p3 DT p4	200m 40% slope grooved concrete track surface to culvert crossing	Dangerously steep for bikes		3
Flat forest section	Culvert	DT4– DT6	DT p5	300m flat section of wide track through pleasant forest setting. Solid track surface			2
Steep section to Middle Creek		DT6– DT7	DT p6	60m steep section 35% slope down to Middle Creek grooved concrete	Dangerously steep for bikes. Slow down signs necessary. Need a bridge crossing of Middle Creek to connect trail		4
Middle Creek valley	Pipeline bridge	DT8– DT9	DT p8 DT p9	450m steep section (25% slope to side track to pipeline	Maintain drainage rollovers		3
Flat section	Pipeline	DT9 – DT 10	DT p10	800m flat undulated section through Forest.			
Steep section	Pipeline, Hunter Road	DT10 – DT11		80m 20% slope section	Minor track erosion	1	
Hunter Rd access	Interpretation panels	DT11					
Undulated section to Hunter St	Pipeline, Hunter St access – gate, sign.	DT11 – DT12	DT p11	900m pipeline management track. Governor Phillip interpretation signage			3

	Interpretati on panel						
Davidson track is an important link from Warringah to St Ives, however there is no access across middle creek. A bridge crossing would be expensive but heavily used. The track provides a high quality experience through a range of natural habitats including the heavily forested and scenic Middle Creek. It is very steep in sections down to the creek and hazards signs should be installed especially for bike riders. The track also has some historic and interpretation value.							
24. Pipeline Track							
Trackhead Fitzgerald West Rd	Gate and sign	PT 1 –PT 2	PT p1	Wide gravel track, flat adjacent to pipeline			2
Footbridge	Footbridge	PT 2	PT p2	Single track drops down to bridge. Narrow bridge with eroded access and exit	Need signage and possible increasing width of entry and exit points	1	
Pipeline track	2 Road Crossings, Gates	PT2 – PT 6		Good wide gravel track well drained. Steeper rocky sections at road crossings			2
Kens Rd Intersection	Road	PT 3		Steep section approaching road then steep section other side	Need safety signage for road crossing. Minor drainage problems	1	3
John Oxley Drive intersection	Road	PT 4		Single track to road verge. Across to Prahara Ave up Road verge for 40 m to intersect with Pipeline track	Need directional signage to link back up with pipeline track		
Bridge overpass	Bridge overpass and fence	PT 5	PT p4	Restricted access	Need to improve underneath access – widen for bikes.		
Summary Assessment A good stable management track through a bushland and urban setting. Some works required at road crossings and bridge entry and exit. Import East/West linkage.							

Manly Dam							
25. Allambie Heights Link							
Tennis court carpark trackhead	Gate and signage	AH 1	AH 1	2 m wide sandy firm track surface for 150 m	Wet spot at one location AH2	1	2
Steep section		AH 3 – AH4	AH 2	70 m of 20% slope rocky section	Track section requires gravel and drainage	2	4
<p>Summary Assessment</p> <p>This short link is mostly in good condition except for a short rocky section closer to the Manly loop track where it gets rough requiring some gravel and drainage works.</p>							
26. Engravings Track							
Bantry Bay management track (300 metres)	Gate	ET 1		Management track with numerous ponding in woodland setting		2	3
Aboriginal site	Fence and interpretation	ET 2		Management track gravel surface	Protection of site	1	2
Manly dam link		ET 3		Single track link	Crossing of Wakehurst Parkway		
Animal Crossing		ET 4					
Rocky section (200 m)		ET 5		Short steep sections of single track with rocky sections	Challenging for Mountain Bike		4
Harbour to Hawkesbury Trackhead	Trackhead shelter and signage	ET 6					
<p>Summary Assessment</p> <p>The Engravings track is an important link between Seaforth and the Warringah Frenchs Forest area. Much of the track is a management track with minor drainage problems. The track passes an important Aboriginal cultural heritage site that has some protection and interpretation. There are good views to the West and South at numerous locations. The track however narrows and goes through some</p>							

short steep sections with cliff sections making Mountain bike touring difficult. These sections could be upgraded at some cost. Recommend that bike riders are warned to slow down and carry bikes through these sections.

27.Manly Dam Circuit Loop							
School car park track head	Carpark	MC 1 – MC2	MC p1	Narrow informal single track .8 m wide across grassy area	Requires track head signage and surfacing of track across grass to management track	1	3
Muddy section		MC 2	MC p2	2m by 10m muddy, flooded section	Track erosion and drainage problems	2	4
Single track section through trees		MC 3	MC p3	40m section of 1 m wide sandy track			3
Bangaroo St	Signs	MC 4	MC p4	200m Grassy Road verge or road	No formal track		2
Warringah St Easement	Signs	MC 5	MC p5	300 m grassy track	Numerous minor erosion spots	1	3
Clontarf St track	Trackhead signs, rehab signs	MC 6	MC p6	100 m 1.2 m wide gravel track	Damage to signage		1
Parkland		MC 7 – MC8	MC p7 MC p8	40 m Grassy muddy no formal track	Erosion, poor drainage	3	3
Woodland	Drainage bars with ramp	MC 9	MC p9	Single track .8m through woodland, sandy, with drainage bars and track surfacing	Numerous minor erosion points. Dangerous corners	1	3
Woodland	Track boards	MC10	MC p10	Rehabilitated track			3
Rocky section		MC 11	MC p11	Steep rocky section of track	Dangerous steep section of track	2	4
Rocky track surface		MC 12	MC p12				2

Survey Marker	Survey Plinth	MC 13	MC p13	Sandy narrow track			3
Intersection with Management Track	Trackhead Signage, Fencing	MC 14	MC p14	2 m wide gravel management track	Some ponding on track	2	3
Steep section		MC 15		500m 3 m wide rocky management track at some sections are 20% slope. To stream crossing	Track erosion	2	4
Stream crossing		MC 16	MC p15				
Stream Crossing/Water fall		MC 17		Waterfall			
Forest section		MC 18		Wide management track, rocky and steep section (up to 30% 100 m). Forest setting	Steep sections dangerous and eroding	2	4
Allambie heights	Signage, track management	MC 19		Single track through low shrub	Narrow track poor line of sight – dangerous	1	2
Tamworth Place Parkland	2 bridges	MC 20, MC 21	MC p16 MC p17	Single track through park	Directional signage		
Cootamundra Drive		MC 22	MC p18	Track down Road edge	Directional signage	1	3
Easement	Signage	MC 23	MC p19	Single track behind housing Numerous eroded spots and rocky steep sections (20% slope)	Downhill section bikes travel fast over rocky sections	1	3
Bridge	12 metre bridge	MC 24	MC p20	Joins to road and carpark adjacent to Mermaid Pool	Steep section of track down to bridge		

### Summary Assessment

The circuit loop is a popular Mountain bike route around Manly dam. It is set in a natural bushland setting consisting of sandy ridge country including thick under-story vegetation and Eucalypt woodland vegetation. It is a mountain bike destination track with many users travelling from elsewhere in Sydney especially on Weekends. Up to 500 users per day have been estimated to use the track at peak demand times.

There have been considerable management resources spent on protecting and upgrading the track surface including drainage bars track surfacing and signage. The track is currently still degrading despite the management intervention. Further works are required and management strategies to reduce the increasing numbers of users such as providing similar opportunities elsewhere.

The track links into other area such as Allambie, Frenchs Forest, Seaforth and Manly.

Overall the track provides a good recreation experience for Mountain bike tourers and is a critical part of the Regional Strategic trails network.

### Proposed trails

#### 28. Burnt Bridge

This is a proposed track that links Manly Dam to Burnt Bridge multiple use trail. It starts from the existing fire trail above Condover Reserve and joins the Burnt Bridge overpass. This track requires planning to determine route, track type and assess environmental impacts. It is a important potential link between Forestville and Manly

#### 29. Corymbia Circuit

Bitumen section	Gate, Bitumen road, Concrete causeway	CC1 – CC2	CC p 1 -2	150 m, 2m wide bitumen road laneway past house, to Causeway	No signage		2
Sandy track	Powerlines	CC2 – CC4	CC p3 - 5	380m Flat 5 m wide cleared sandy track with mulch to a terminal point – No connection through to Oxford Falls Rd	Sandy in sections, minor ponding. Terminal track. Private property	1	3

This short section of trail is proposed to provide part of an alternative route from Belrose to Oxford Falls Rd. However there is about 200 metres of uncleared bushland between the terminus of the track at CC 4.



## **ATTACHMENT 2 PHOTOGRAPHIC RECORD OF TRACKS**

(Can be provided in CD format – please contact Warringah Council)

## ATTACHMENT 3

### SIGNAGE PRINCIPLES

#### General principles

- All trails should have at least basic track-head information.
- Interpretation panels should have approximately one-third text, one-third graphics or pictures and one-third as background space.
- Where possible use a variety of graphics such as maps and illustrations to add some visual complexity to attract attention.
- Interpretation signs which vary in shape and form from the traditional rectangular sign should be encouraged.
- The design of interpretation signs should include suitable background colours that blend into the natural environment.
- Interpretation signage should be multi-layered (using text, pictures, graphics and interactive elements) to suit a range of visitor learning styles including visual and literal.
- Signage guidelines for the visually impaired should be applied at high use locations wherever practical

#### Track head interpretation signage

Track-head interpretation signage should be limited to areas where people are likely to spend some time. These areas include information bays, playgrounds, car parks, and other visitor precincts.

Where possible, other hand-held interpretation material such as guides should reduce the amount of track-head interpretation material.

Track-head interpretation signage should have content unique to a specific track and not be applied to a number of locations.

Track-head interpretation material should be incorporated into track-head signage information rather than creating a separate sign. If a separate interpretation sign is preferred then it should be of a similar size and shape and located slightly away from the immediate track-head area. The track-head information sign should be located closest to the track.

Interpretation shelters should be developed only in areas where people are likely to spend some time such as at major car parks or popular visitor precincts. They may consist of multiple interpretation panels that are no more than 1200 by 800 mm each.

Management information within track-head interpretation signs should be confined to a small section of the sign and graphically separated from the interpretation material.

All track-head signs should be integrated within, and not visually dominate, the track-head precinct.

The maximum size of a track-head interpretation panel should be 1200 by 800 mm.

**On-track interpretation signage**

On-track interpretation should be located to blend in with the natural environment and be no larger than 450 by 600 mm and no more than 1200 mm from the ground.

Interpretation signage on developed tracks Class 1 or 2 should be separated by at least 100 metres. Multiple interpretation panels could be used at nodes along the track such as lookouts.

Interpretation panels should be separated by at least 500 metres on Class 3 tracks.

There should be only limited on-track interpretation signage on Class 4 tracks.

There should be no on-track interpretation signage on Class 5 tracks.

## ATTACHMENT 4

### LEAVE NO TRACE PRINCIPLES FOR MULTI-USE TRAILS USERS

Based on Leave No Trace Australia (2005)

#### LEAVE NO TRACE PRINCIPLE—*TRAVEL ON DURABLE SURFACES*

- Use durable surfaces wherever possible
- Stay on the marked trails
- Use trails appropriate to your experience and don't damage the trails
- Take care near creeks and waterways and protect these areas

#### LEAVE NO TRACE PRINCIPLE—*DISPOSE OF WASTE PROPERLY*

- Carry it in, carry it out
- Use only environment friendly soaps and sunscreens

#### LEAVE NO TRACE PRINCIPLE – *LEAVE WHAT YOU FIND*

- Protect the bush and don't "short cut" or make new trails.
- Protect cultural & historical resources
- Be careful not to introduce of non-native species
- Show proper awareness and respect of Indigenous & historically sensitive/significant sites

#### LEAVE NO TRACE PRINCIPLE– *RESPECT WILDLIFE*

- Don't take cats and dogs into the bush
- Observation from a distance and don't disturb
- Night time can be great for observing animals and be careful of animals on trails

#### LEAVE NO TRACE PRINCIPLE– *BE CONSIDERATE OF YOU HOSTS AND OTHER VISITORS*

- Respect other visitors and the quality of their experience
- Don't build cairns or other structures
- Yield to others on the trail (be considerate near horses)
- Take regular breaks and enjoy the bush
- Keep noise levels down to avoid disturbing animals and other users.