

# **North Narrabeen Headland Reserve**

## **Plan of Management**

**Pittwater Council**

**Adopted 21 October 2002**

## Landuse-Planning Table

<b>Permissible Uses Exempt (these may be subject to approval under Part 5 of the EPA Act 1979)</b>	<b>Permissible Uses Requiring Development Consent</b>	<b>Prohibited Uses</b>
Bush regeneration, habitat restoration and weed control	Utility installations and similar	Extractive industries and agriculture
Fire hazard reduction activities	Buildings ancillary or incidental to the reserve	Sporting facilities
Ecological burns	Major public drainage works	Permanent private access across a reserve
Multi-use tracks other than motor vehicle	Major rock / soil stabilization works and earthworks	Commercial signage
Boardwalks and minor bridges	Major facilities (not buildings) being viewing platforms, bridges, educational facilities and the like	Dumping of refuse (including building materials, soil, fill, household wastes, etc.)
Temporary activities or developments requiring a lease or licence under the Local Government Act (1993)	Commercial Eco-tourism Activities	Vegetation removal not in accordance with Councils Tree Preservation and Management Order
Appropriate sustainable low impact recreation activities and facilities (other than buildings)	Vehicle access (emergency access, fire breaks and service trails).	Private alienation or encroachment
Minor public drainage and stormwater works		Introduction of exotic flora and fauna
Minor fences		Playground facilities
Compliance, directional, interpretive, identification and safety signs		Flood structures (damming and reduction of environmental flows)
Environmental education activities		Removal of habitat features such as soil, leaf litter, rocks, stones, pebbles and the like
Any use as permitted under Council's Tree Preservation and Management Order		Recreational motor sports (including 4 wheel driving, motorbike riding, etc.)
Minor rock works and earthworks associated with soil stabilization and erosion control		Domestic drainage outlets
Any activity as defined in Management Plans consistent with the core objectives and management objectives		Horse riding facilities
Feral animal control and eradication.		Unleashed dog exercise areas
Biodiversity recovery and enhancement		Water extraction
Non commercial Hang-gliding and Paragliding Activities		

<b>LANDUSE-PLANNING TABLE .....</b>	<b>2</b>
<b>1. INTRODUCTION.....</b>	<b>4</b>
<b>2. PLANNING CONTEXT .....</b>	<b>4</b>
2.1. ZONING .....	4
2.2. TENURE OF LAND.....	4
2.3. LEGAL CONTEXT .....	4
<i>Local Government Act, 1993 .....</i>	<i>4</i>
<i>Environmental Planning and Assessment Act.....</i>	<i>4</i>
<i>Coastal Protection Act.....</i>	<i>5</i>
<i>NSW Coastal Policy.....</i>	<i>5</i>
<i>Crown Lands Act .....</i>	<i>5</i>
<i>Threatened Species Conservation Act.....</i>	<i>6</i>
<i>Council's Land Management Goals, Policies and Plans.....</i>	<i>6</i>
<b>3. RESERVE DESCRIPTION .....</b>	<b>8</b>
3.1. BACKGROUND.....	8
3.2. LOCATION AND ACCESS .....	8
3.3. ADJOINING LAND USES.....	11
3.4. TOPOGRAPHY, SOILS, COASTAL PROCESSES AND GEOLOGY .....	11
3.5. VEGETATION.....	14
3.6. FAUNA .....	18
3.7. CULTURAL HERITAGE.....	18
3.8. RECREATION .....	18
3.9. STATEMENT OF SIGNIFICANCE .....	21
<b>4. MANAGEMENT .....</b>	<b>22</b>
4.1. CORE OBJECTIVES .....	22
4.2. MANAGEMENT ISSUES .....	24
4.2.1. Coastal Management.....	24
4.2.2. Vegetation Management.....	25
4.2.3. Fire.....	27
4.2.4. Drainage and Erosion .....	28
4.2.5. Fauna .....	29
4.2.6. Recreation and Access Management.....	30
4.2.7. Cultural Heritage Management.....	32
<b>5. REFERENCES.....</b>	<b>33</b>
<b>APPENDIX A: INDICATIVE SPECIES LIST FOR NORTH NARRABEEN HEADLAND ROCK PLATFORM.</b>	<b>34</b>
<b>APPENDIX B: INDICATIVE FAUNA SPECIES LIST NORTH NARRABEEN HEADLAND .....</b>	<b>36</b>
<b>APPENDIX C: INDICATIVE NATIVE FLORA SPECIES LIST FOR NORTH NARRABEEN HEADLAND.</b>	<b>38</b>
<b>(PLANTING GUIDE) .....</b>	<b>38</b>
<b>APPENDIX D: WEED SPECIES LIST.....</b>	<b>40</b>

## 1. Introduction

North Narrabeen Headland is located on the Northern Beaches of Sydney east of Peal Place and directly north of the entrance to Narrabeen Lagoon in the suburb of Warriewood. It is a prominent headland vegetated primarily with heath vegetation and grassland. The headland is a popular site for walking and sight seeing. This plan provides for a framework for the management of this reserve that meet the requirements of the core objectives.

The reserve contains a number of vegetation communities including Headland Open Scrub, Cliff-face Open Heath, and Coastal Scrub. These vegetation communities and the associated rock platform areas provide habitat for a number of threatened and significant fauna species. Turimetta beach is one of the less disturbed ocean beaches in the Pittwater area and is a popular spot with the locals for this reason.

With a history of grazing and moderate disturbance the headland today is mostly natural bushland having been the focus of re-vegetation and regeneration activities for a number of years. It is of significant aesthetic value for the northern beaches.

## 2. Planning Context

### 2.1. Zoning

The land assessed in this Plan of Management is zoned 6(a) Existing Recreation, under the Pittwater Local Environmental Plan, 1993.

Figure 3 shows the reserve boundaries and surrounding land. All land provided for under this plan is Council owned land zoned 6(a) Existing Recreation.

### 2.2. Tenure of Land

This plan of management provides for the management of the North Narrabeen Headland Reserve land taking Lot 2//211453 and much of Lot 3467//3000. This land is Council owned, having been transferred to Warringah Council from the Cumberland County Council in 1964. The reserve in the Tenure documents is known as Warriewood Headland Reserve. It is recommended that this be changed to North Narrabeen Headland Reserve.

### 2.3. Legal context

#### Local Government Act, 1993

Under Section 36 of this Act Councils are required to prepare a Draft Plan of Management for community land. This plan must identify the following

- the category of the land;
- the objectives and performance targets of the plan in respect to the land;
- the means by which the council proposes to achieve the plans objectives and performance targets;
- the manner in which the council proposes to assess its performance with respect to the plans objectives and performance targets, and may require the prior approval of the council to the carrying out of any specified activity on the land;

Under Section 36 (4) this reserve falls under the categorization of a **natural area** and under Section 36 (5) is further categorized as

- (a) bushland
- (b) escarpment
- (c) foreshore

Figure 1 shows the land applying to these categories.

The community land categories of Council's open space and recreation settings inventory differ from those of the Local Government Act, 1993. Under Council's inventory the areas covered in this plan comprise the following categories: Bushland and Hilltop/ Bluff/ Headland.

As a requirement of the Local Government Act, 1993, Councils must prepare a Plan of Management for public land which is classified as community land. Plans of Management may also be prepared for Crown Land under the Crown Land Act, 1988.

#### Environmental Planning and Assessment Act

#### State Environmental Planning Policy No 19



State Environmental Planning Policy No 19 – Bushland in Urban Areas was made to protect remnant bushland in urban areas within New South Wales. The Policy applies to land zoned or reserved as Public Open Space. Under the Policy Councils may prepare plans of management for bushland areas within such land. Circular No B13 of the former Department of Planning states that a management plan should :

- describe the bushland in light of the aims and objectives of the Policy;
- include measures to enable the recreational use of bushland, where appropriate;
- specify the intended methods of bushfire hazard reduction, measures to prevent bushland degradation and restore degraded areas.

The Department has also published management guidelines for urban bushland. The guidelines identify the need to prepare a resource inventory of the bushland area, to identify management objectives and strategies, and to derive an action plan for the bushland.

### **Coastal Protection Act**

The State Government provides guidance to Local Government on policies that should apply to management of the coastline through the Coastal Protection Act and NSW Coastal Policy. While this plan does not apply to Sydney it provides helpful guidelines for the management of coastal environments such as this. As the reserve adjoins coastal land these guidelines are relevant to management of the reserve. It covers areas of water (and the seabed and the subsoil beneath and the airspace above any such area) that are not within the local government area.

### **NSW Coastal Policy**

The Coastal Protection Act established the Coastal Council. This Council formulated the NSW Coastal Policy which has the following goals:

- natural environment protected, rehabilitated and improved
- coastal processes and hazards recognised and accommodated
- aesthetic qualities protected and enhanced
- cultural heritage protected and enhanced
- ecologically sustainable development and use of resources
- ecologically sustainable human settlement
- appropriate public access and use
- information to enable effective management
- integrated planning and management

Objectives are

- to protect conservation values, conserve biodiversity, improve water quality, manage environment in the public interest
- natural processes and hazards given a high priority, climate change recognised and considered
- areas of high aesthetic quality protected, development to complement surrounding environment, towns to reinforce identities
- cultural heritage items and landscapes managed and conserved, rights and needs of indigenous people recognised
- sustainable resource use facilitated, land use and management plans developed and “best practice” approaches developed
- minimise urban impact on environment, compact and contain urban development, rural residential development located to minimise impact; housing and lifestyle choice
- public access to be increased when environmentally sustainable and risks to human safety minimised
- data and information to be collected and co-ordinated; compatible databases to be developed; information to be made more accessible; education and awareness programs to be developed
- consistent and complimentary decision making; co-ordinated implementation of policy; local government management to be integrated; consider national coastal zone strategy

### **Crown Lands Act**

All of the adjoining foreshore land is Crown land and is subject to the Crown Lands Act, 1989. The act allows for plans of management and lists the following principles (section 11) that:

- Environmental protection principles be observed in relation to the management and administration of Crown land;
- The natural resources of Crown land (including water, soil, flora, fauna and scenic quality) be conserved wherever possible;
- The public use and enjoyment of appropriate Crown land be encouraged;
- Where appropriate, multiple use of Crown land be encouraged;
- Where appropriate, Crown land should be used and managed in such a way that both land and its resources are sustained in perpetuity; and
- Crown land be occupied, used, sold, leased, licensed or otherwise dealt with in the best interests of the State consistent with the above principles.

This plan however does not provide for the management of crown land areas.

### **Threatened Species Conservation Act**

The objectives of the Threatened Species Conservation Act, 1995 are to:

- Conserve biological diversity and promote ecologically sustainable development
- Protect critical habitat of those threatened species, populations and ecological communities that are endangered
- Eliminate or manage certain processes that threatened the survival or evolutionary development of threatened species, populations and ecological communities
- Ensure that the impact of any action affecting threatened species, populations and ecological communities is properly assessed; and
- Encourage conservation of threatened species, populations and ecological communities by the adoption of measures involving co-operative arrangement.

In assessing any development within the reserve requiring consent, Council must decide (based on the eight factors in Section 5A of the Environmental Planning and Assessment Act) whether the proposed development will have a significant effect on threatened species, populations or communities listed in the Act. It also provides for the protection of species, populations, communities and habitats that are listed as threatened, endangered or vulnerable under the Act.

For Council land that is declared "critical habitat or included in a "recovery plan" or in a "threat abatement plan" there are special provisions for plans of management. At present there are no declared critical habitats, recovery plans or threat abatement plans that apply to this land.

### **Council's Land Management Goals, Policies and Plans**

Council's current management goals and strategies relating to parks and reserves are contained within Council's Management Plan 1999-2003 and Council's Landscape Management Policy, 1993. These documents have been used to guide the outcomes of this Plan. Council's Management Plan vision is to be leaders in the provision of local government services, to strive to conserve, protect and enhance the natural and built environment of Pittwater and to improve the quality of life for our community and for future generations.'

Council's Urban Bushland Management Plan, adopted in 1996, applies to the bushland areas of the Reserve. This plan sets out Council's management goals for natural vegetation, and headlands which are key elements of the Reserve. The Coastal Flora and Fauna Study (1997) refers to the vegetation types and fauna species which exist in the reserve.

Council is currently preparing a Coastal Management Strategy to update the existing Strategy, which was prepared by Warringah Council in 1985. The updated strategy will address in detail coastal management issues for the Pittwater area as a whole.

The residential areas in the vicinity of the Reserve are addressed in the Warriewood-Turimetta Beach Locality Plan. This plan covers the aims and objectives for further developments within the area.

Most of the area covered by North Narrabeen Headland Reserve fall within the definition of bushland under the State Environmental Planning Policy 19 – Bushland in Urban Areas. This State policy sets aims and objectives to conserve and where necessary, regenerate the vegetation, its fauna and any cultural heritage items (such as any Aboriginal sites), to encourage appropriate and sympathetic use by the public. As is the case with all areas of Pittwater, the Tree Preservation and Management Order applies to all areas of bushland and open space covered in this Plan.

Figure 1. Community Land Categorisation



### **3. Reserve Description**

#### **3.1. Background**

This draft Plan of Management is for North Narrabeen Headland Reserve. The land, while including much of the headland, does not include the beach and rock platform areas.

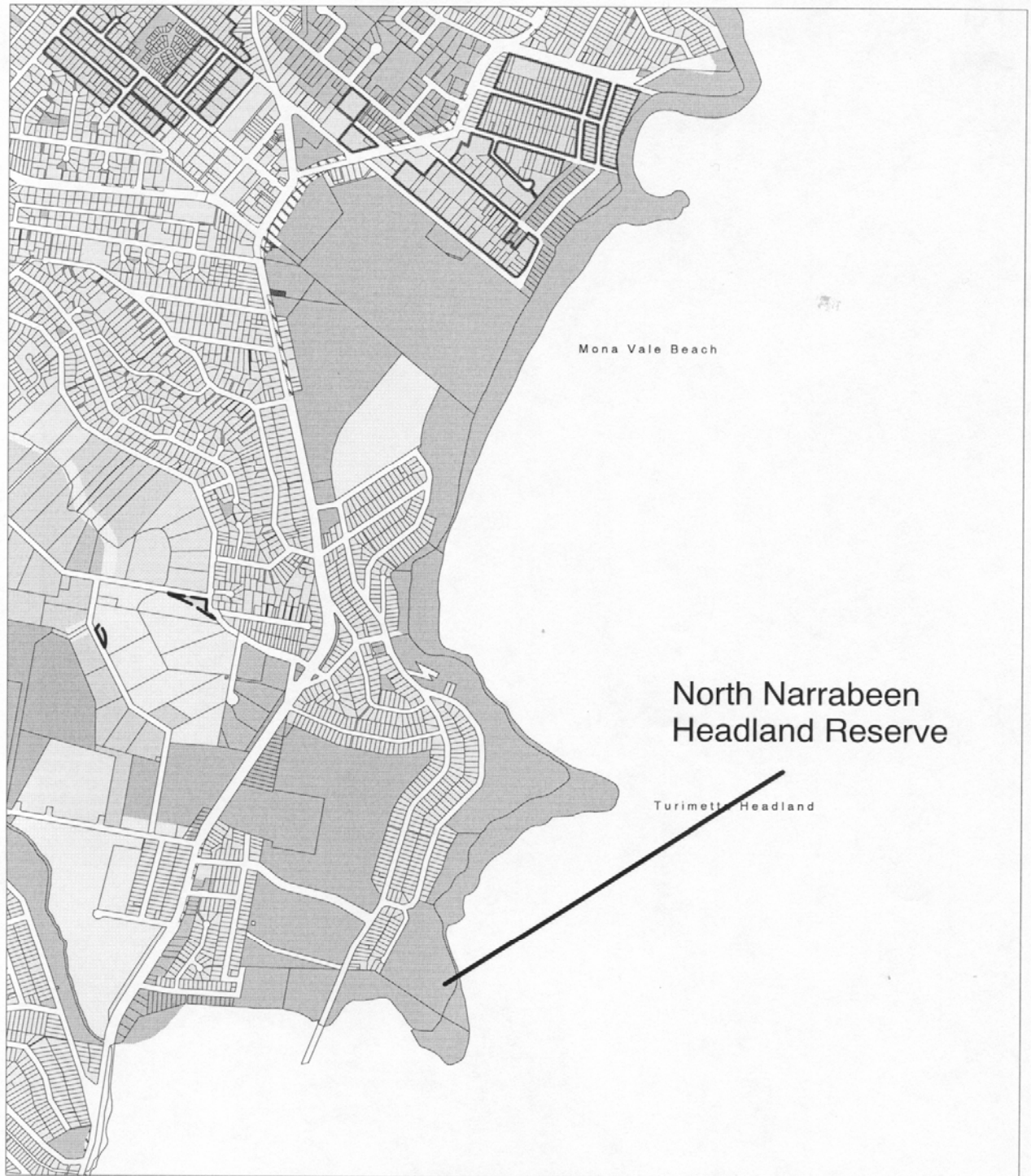
This draft Plan of Management provides a framework for the management of the Reserve and describes the management objectives, performance targets, actions and performance assessments to be used in the implementation of this Plan. This document will ensure that the natural and environmentally sensitive areas are conserved and managed, and that the scenic and recreational values of the Reserve are fully realised, consistent with their environmental value.

#### **3.2. Location and access**

The Reserve is situated on the coast and is bounded to the west by Narrabeen Park Parade, to the North by Turimetta Beach Reserve and to the south by the Narrabeen Lagoon outlet. The site only includes those areas above the high water mark and not the rock platforms or the beach. Access to the site can be gained at any point from Narrabeen Park Parade but is primarily accessed through the Coastal walkway.

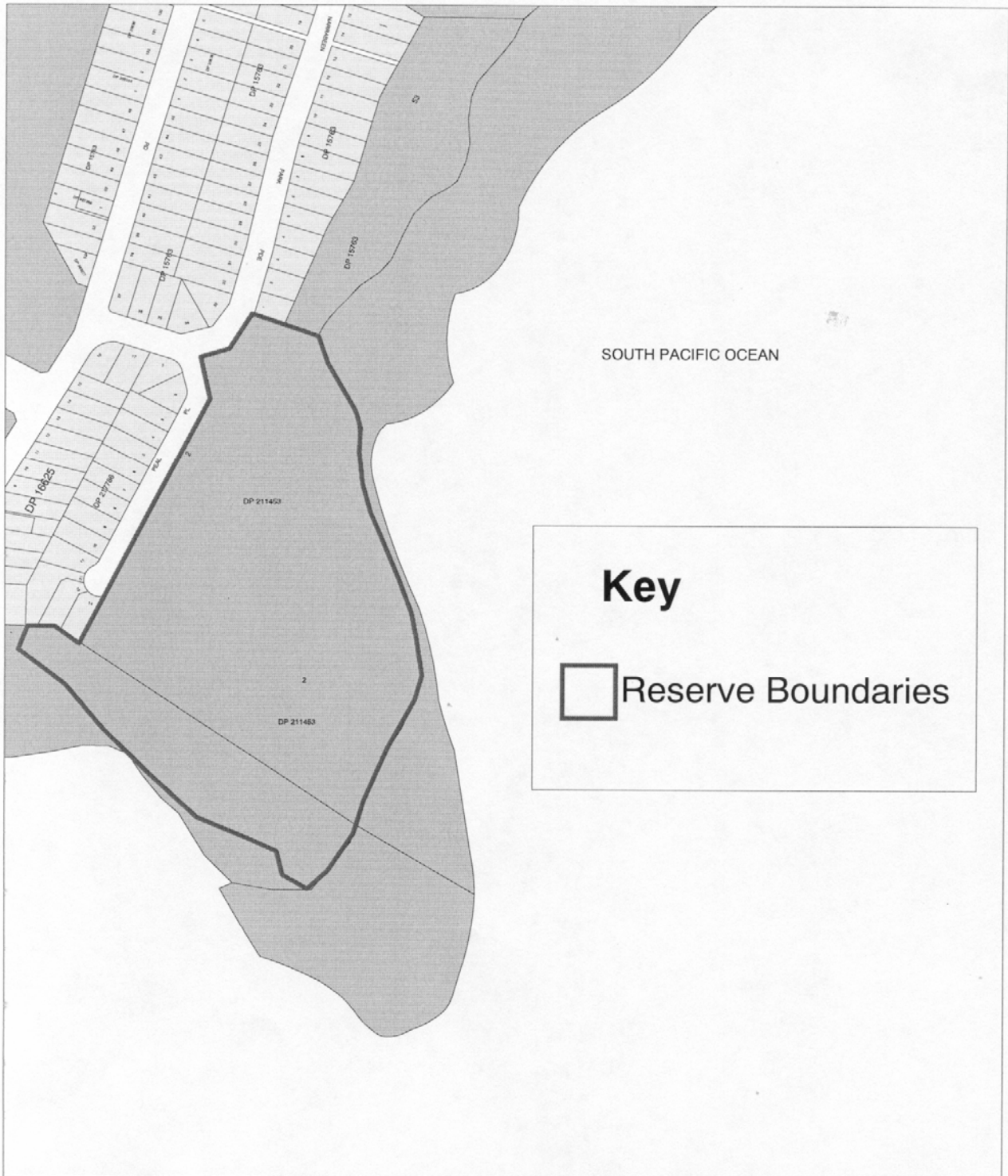
Figure 2 shows the location of the reserve in the local area and figure 3 shows the areas covered by this Plan of Management and the Reserve boundaries in relation to the surrounding locality and adjoining land uses.


**Figure 2. Reserve Location**



North Narrabeen Headland Reserve Plan of Management		
Map: Reserve Location	Date: April, 2001	

**Figure 3. Reserve Boundaries.**



North Narrabeen Headland Plan of Management		
Map: Reserve Area Map	Date: April, 2001	

### **3.3. Adjoining Land Uses**

The Reserve is situated along the coastal fringe and is bounded to the west by residential land. The North Narrabeen carpark area (the southern extent of this plan) is bounded to the south by the Narrabeen Lagoon, which is recognised as the natural boundary between Pittwater and Warringah local government areas. This adjoining area is classified by Warringah Council as 6(a). To the north, Turimetta Beach Reserve (the northern boundary of this plan) is also zoned 6 (a).

Other nearby land uses include a restaurant at the entrance of the carpark at North Narrabeen and Lakeside Caravan Park directly west of Narrabeen Head. The reserve is popular not only with local residents but also holiday makers utilising the nearby caravan park as their base. The rock platform also contains an ocean pool.

Other land uses include a restaurant at the entrance of the car park at North Narrabeen and Lakeside Caravan Park directly west of Narrabeen Head. It can be surmised that the reserve is popular with not only local residents but also holiday makers utilising the nearby caravan park as their base,.

Residential land exists to the west of the reserve and adjoins the reserve. The land to the east of the reserve encompassing the rock platforms and beach areas is Crown land and its management is not provided for under the plan. The housing in the area is predominantly pre 1960's, when many of the dwellings were used on a holiday and weekend basis. Today, most of the houses are used as permanent residences.

### **3.4. Topography, Soils, Coastal Processes and Geology**

North Narrabeen Headland forms a significant element in the landscape having been formed by erosion and weathering of Narrabeen Sandstone by coastal processes, predominantly wave action. It is comprised of rocks of the Bald Hill Claystone and Newport Formations, the uppermost sub-groups of the Narrabeen Group. Bald Hill Claystone is a distinctive red-brown claystone forming the rock platform and lower section of the cliff. The remainder of the headland is comprised of the Newport Formation's shale, siltstones and fine to medium grained sandstones (Coffey & Partners, 1987).

Soils of Narrabeen headland were formed, according to Chapman & Murphy, (1989) by weathering of the Newport formation. As a result yellow podsols are the predominant soil type. Weathering of the Newport Formation has resulted in formation of yellow podsol soils of the Watagan landscape.

#### **Rock Platforms**

Although not Largely part of the reserve, the adjacent rock platform is significantly influenced by activities and process that occur within the reserve.

The Pittwater Council area has the highest number of rock platforms of any metropolitan Local Government area. A wide range of life forms have been recorded and observed over time by both Council's Natural Resource Unit and also the University of Sydney's Marine Biology Section. An indicative species list for the rock platforms is given in Appendix A.



Figure 4. Soils map

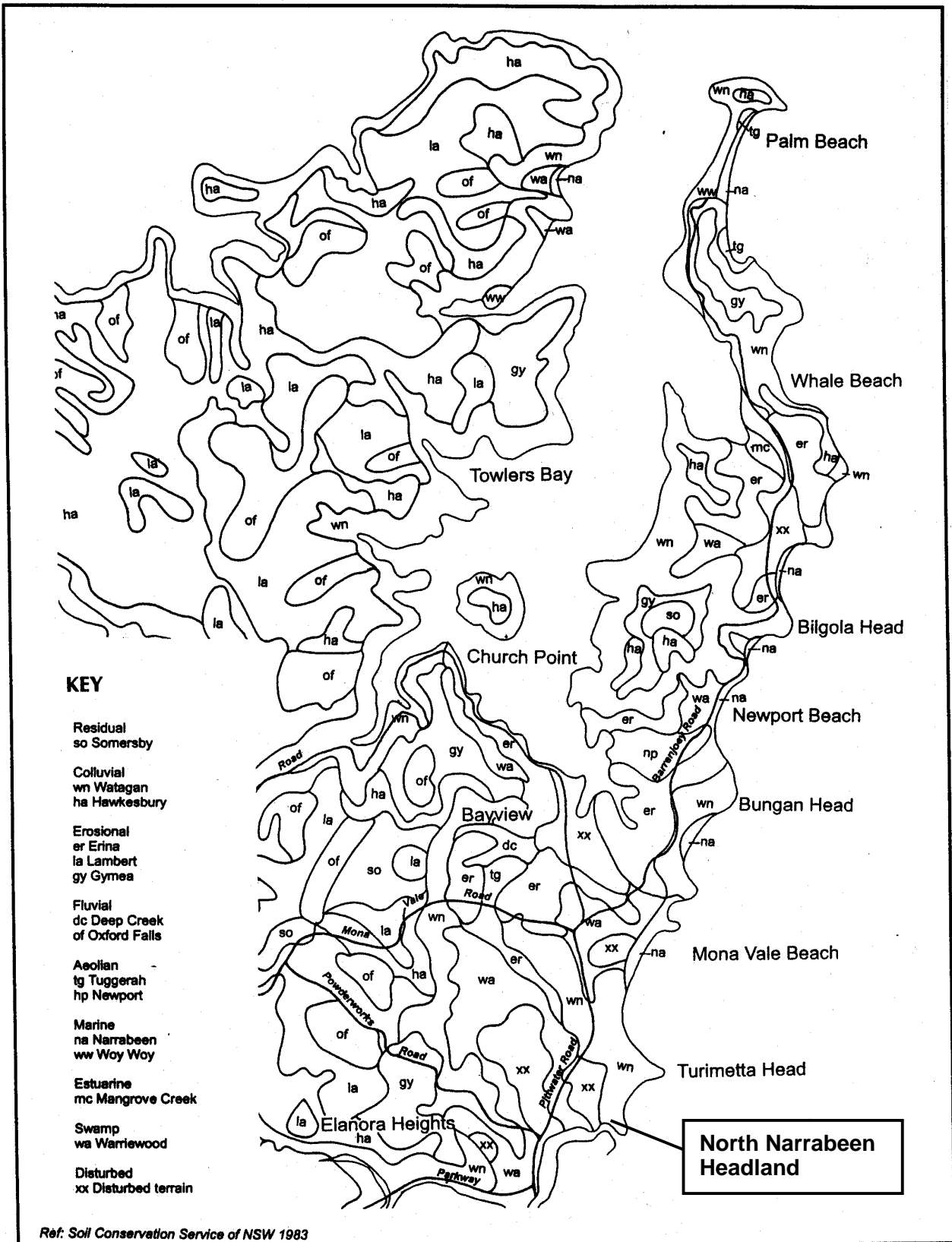
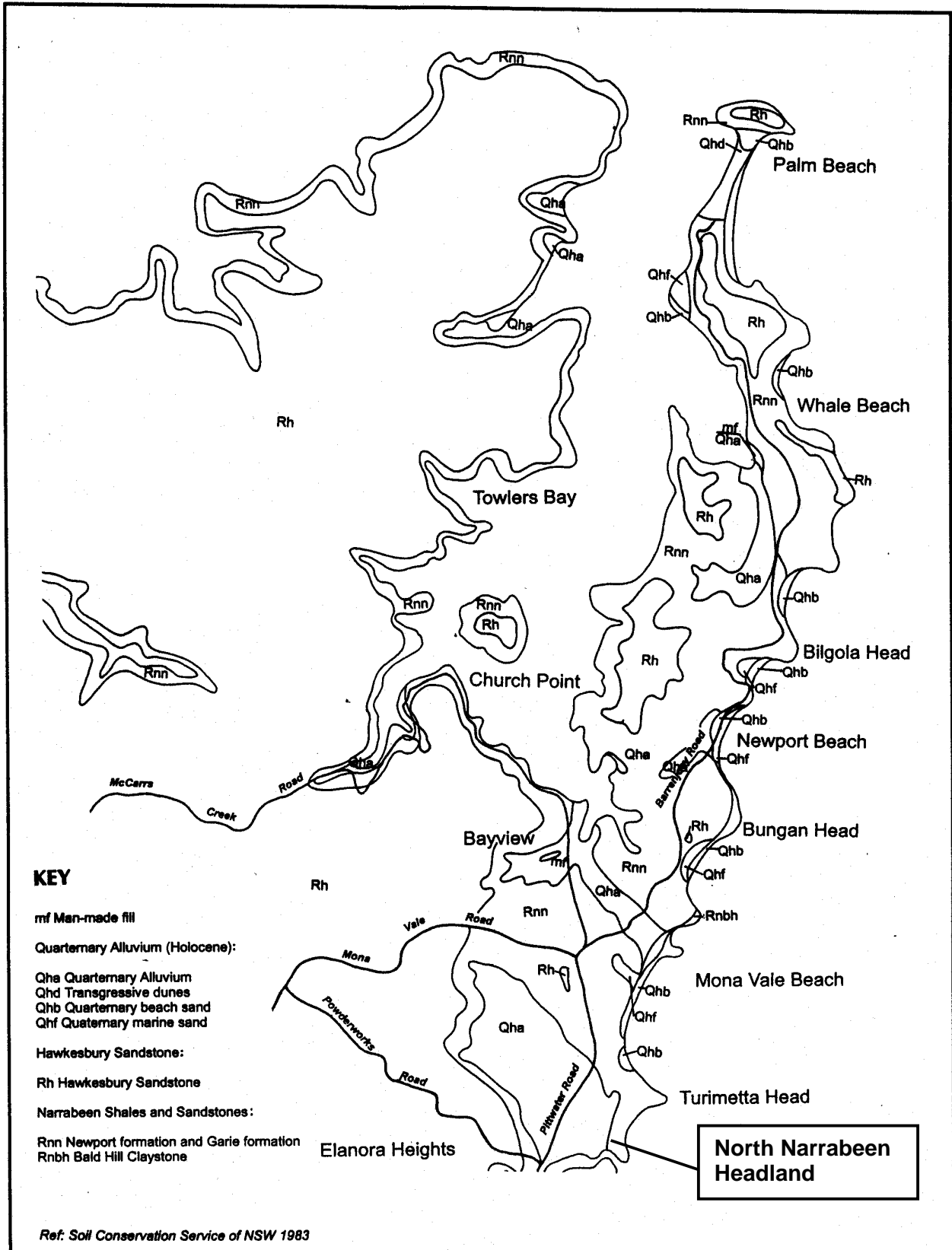




Figure 5. Geology map



### 3.5. Vegetation

Species lists, vegetation description and maps have been collated from a range of sources varying in age and reliability. They have not been accurately ground truthed as part of this process. Therefore they should be considered indicative only of the vegetation in the reserve. They are intended only to provide a record and description of the reserve's vegetation.

The distribution of vegetation types within the Reserve is related to geology and soil type, aspect, clearing, fire history and disturbance history. The level of weed infestation is relatively low. This is largely due to bush regeneration work undertaken by Council's Reserves Unit and local volunteers. The good condition of the native vegetation makes an important contribution to the overall scenic quality of the Reserve.

The Coastal Flora and Fauna Study (Burcher & Lembit, 1997) defines areas of vegetation and classifies them into broad plant communities. Four broad vegetation types exist within the reserve, these being Headland Open Scrub, Coastal Scrub, Cliff Face Open Heath and *Themeda* grassland. All three vegetation types have been identified as having a limited distribution with the Pittwater Council area. The distribution of vegetation types at North Narrabeen Headland is indicated in Figure 6.

The Reserve also supports an area of *Themeda* Grassland, this vegetation type is considered rare in the Sydney Metropolitan Area. According to Adam *et al.* (1989) this type of grassland generally occurs on the most fertile headland soil and its existence possibly reflects the long history of disturbance. Local residents have indicated that this area was a car parking area and a picnic ground during the 1960s, supporting this idea.

This grassland is surprisingly diverse considering its history of disturbance. It is dominated by *Themeda australis* (Kangaroo Grass) with other species including *Microleana stipoides* (Weeping Veldt Grass) *Dichelachne micrantha* (Plume Grass), the shrub *Pimelia linifolia* (Slender Rice Flower), the herbs and groundcovers *Thysanotus tuberosus* (Fringed Lily), *Tricoryne elatior*, *Dichondra repens* (Kidney Weed), *Viola hederacea* (Native Violet) and *Hydrocotyle peduncularis*. Predatory birds such as the Australian (Nankeen) Kestrel (*Falco cenchroides*) have been seen using the area as a hunting ground.

A stand of Coastal Closed-Heath occurs to the south of the Reserve, on the southern side of the road access to the rock baths.

A Tree Preservation and Management Order exists for all areas of Pittwater, for trees (unless stated as undesirable) over three metres and any area of bushland. Each of the plant communities are identified from definitions in the Urban Bushland Inventory and Action Plan (volume 2, April 1997).

#### **Coastal Clay-Heath Community: Headland Open Scrub (PC10)**

This vegetation type consists of an open scrub formation dominated by Scrub She-Oak (*Casuarina distyla*) and Coastal Teatree (*Leptospermum laevigatum*). Shrub height is generally between 2 and 3 metres. Associated shrub species include Coastal Rosemary (*Westringia fruticosa*), Rusty Petals (*Lasiopetalum ferrugineum*) and Coastal Wattle (*Acacia sophorae*).

There is a ground layer of medium to high density dominated by grasses and sedges. Ground layer species include Kangaroo Grass (*Themeda australis*) *Ptilothrix deustum*, *Xanthosia tridentata*, Spiny Mat Rush (*Lomandra longifolia*) and *Dianella caerulea* var. *producta*.

#### **Themeda Grassland:**

Areas with a history of natural disturbance and clay soil, support small communities of grassland. These areas are generally dominated by Kangaroo Grass (*Themeda triandra*), but also contain patches of *Microleana stipoides* (Weeping Veldt grass) and a variety of groundcovers and creepers. Exotic grasses *Paspalum dilatatum*, Kikuyu (*Pennisetum clandestinum*), Couch (*Cynodon dactylon*) and the herbaceous species, Common Plantain (*Plantago lanceolata*) and flat weed (*Hypochaeris radiata*) are currently invading this community.

#### **Cliff- Face Open Heath (PC13)**

Cliff-faces along the coast support an open-heath community dominated by Coastal Rosemary and Coast Wattle. This community is often associated with Narrabeen group sediments. Associated native shrub species include Scrub She-Oak (*Allocasuarina distyla*), Coastal tea Tree (*Leptospermum laevigatum*), Hop Goodenia (*Goodenia ovata*) and Sweet Pittosporum (*Pittosporum undulatum*). Ground layer species include Kangaroo Grass (*Themeda australis*) and Spiny Mat Rush.

Within the Reserve this community occurs along the escarpment from Turimetta Head southwards.

**Coastal Clay Heath Community: Coastal Scrub (PC11)**

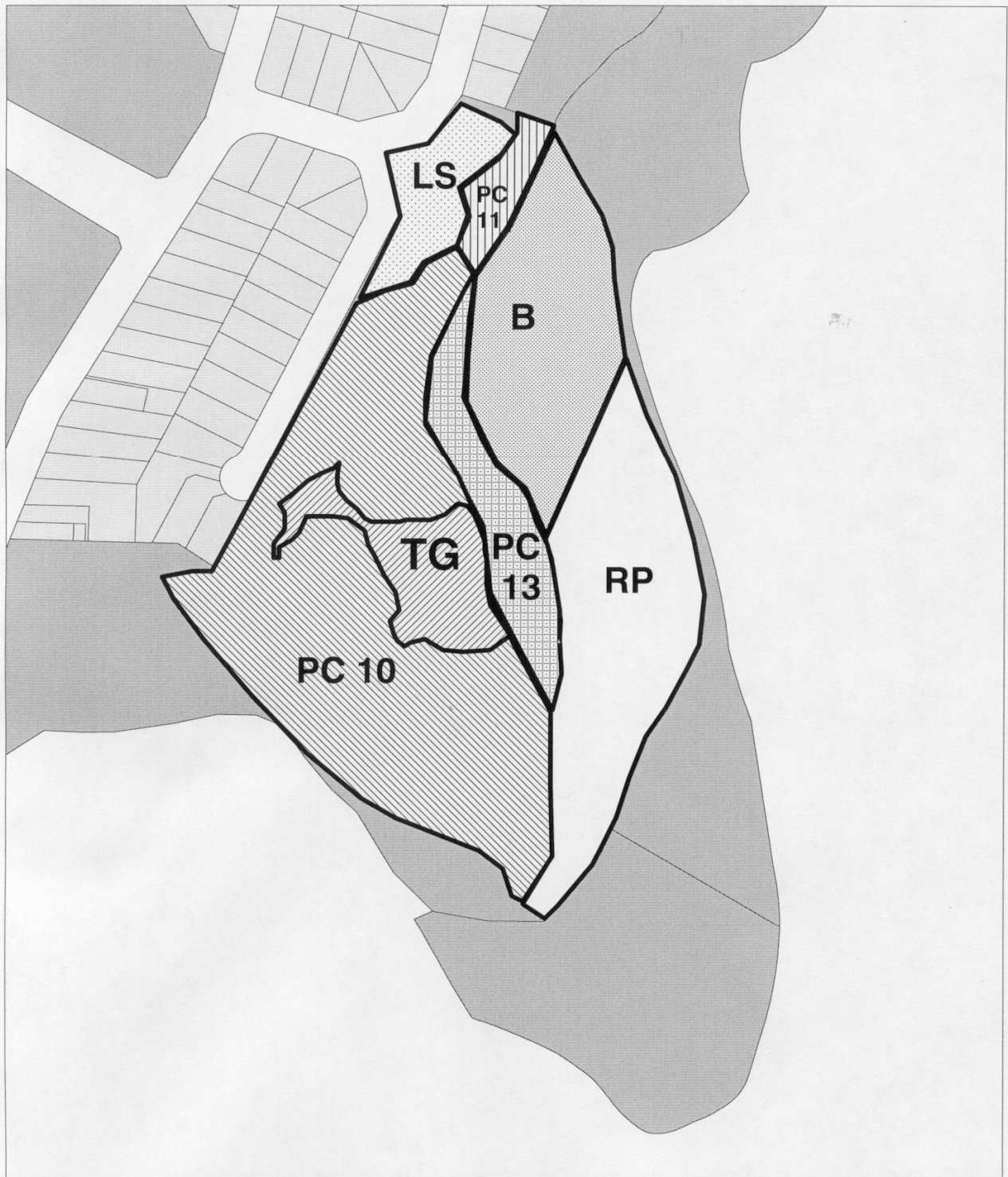
Shale soils associated with the headland supports an open scrub dominated by Coast Banksia (*Banksia integrifolia*), Coast Rosemary, *Casuarina glauca* and Coastal Tea Tree. There is a ground layer of medium density, with a range of grasses vines and grass like plants. These include Kangaroo Grass, Sea Rush (*Juncus kraussii*), Dusky Coral Pea (*Kennedia rubicunda*), *Dianella revoluta*, Spiny Mat Rush, Scented Marsdenia (*Marsdenia suaveolens*) and Old Man's Beard (*Clematis aristata*).

Exotic weeds are evident in pockets throughout the reserve, particularly in disturbed areas or those affected by nutrient charged runoff. Weed species include Mirror Plant (*Coprosma repens*), Gazania (*Gazania rigens*), Madeira Vine (*Anredera cordifolia*), Blackberry (*Rubus ulmifolius*), Fern Asparagus (*Protasparagus aethiopicus*), Lantana (*Lantana camara*), Bitou Bush (*Chrysanthemoides monilifera*), Kurnell Curse (*Hydrocotyle bonariensis*), African Olive (*olea europea* ssb. *Africana*) and Mother of Millions (*Kalanchoe tubiflora*).

This community occurs in smaller patches through the Reserve, generally in more situations more sheltered from coastal winds than Coastal Clay Heath.

Figures 6 and 7 show the distribution of the vegetation communities and weed densities in the reserve. Appendix C and D contain a flora species list and weed list for the reserve.

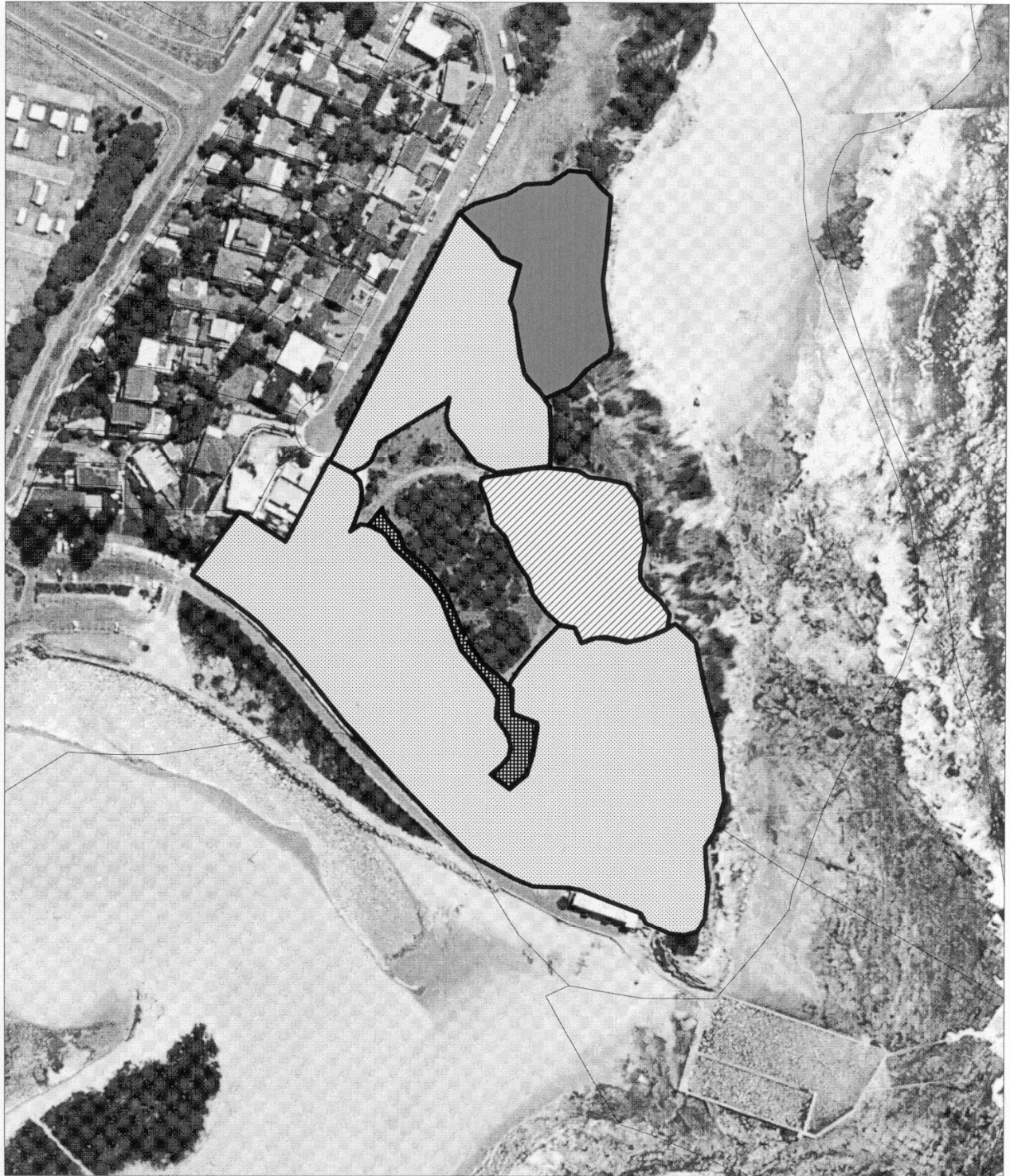
**Figure 6. Vegetation Map.**



North Narrabeen Headland Plan of Management		TG = Themeda Grassland LS = Landscaped RP= Rock Platform B = Beach PC10 = Headland open Sc. PC11 = Coastal Scrub PC13 = Cliffface Open Heath
Map: Vegetation	Date: April, 2001	



Figure 7. Weeds map.

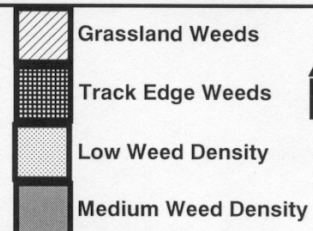


**North Narrabeen Headland Plan of Management**

**Map: Weeds Map**

(Unzoned areas are relatively weed free)

Date: July, 2001





### 3.6. Fauna

Endemic vegetation along the coast acts as valuable habitat for a variety of bird life in the area. In particular, the winter-flowering *Banksia integrifolia* and *Banksia ericifolia* attract large numbers of migratory and nomadic honey eaters and lorikeets. Insectivorous birds such as the White-browed Scrub Wren are also afforded protection by the thick vegetation cover of the headland. The small Raptors, the Black Shouldered Kite (*Elanus notatus*) and the Australian Kestrel (*Falco cenchroides*) are often found in this area and larger raptors such as the White-bellied Sea-eagle and the threatened Osprey and are also occasionally observed locally. The regionally significant Peregrine Falcon (*Falco peregrinus*) is also likely to prey on the large number of Feral Pigeons (*Columba livia*) which shelter in the cliff near Warriewood Blowhole. The threatened Sooty Oystercatcher (*Haematopus fuliginosus*) and the regionally significant Reef Egret (*Egretta sacra*) have been detected on other rock platforms and foreshores elsewhere in the Pittwater LGA (Smith & Smith, 1998) and to the south at nearby Long Reef. They could also be expected to occur at North Narrabeen Headland.

Introduced animals, most notably Rabbits (*Oryctolagus cuniculus*), Feral Pigeons and Starlings (*Sturnus vulgaris*) are evident on North Narrabeen Headland. In particular, rabbits need to be controlled, so that their presence does not continue to destroy the vegetation and fauna habitats of the area and accelerate erosion of the headland. Appendix B contains a fauna species list for the reserve. Domestic cats have been sighted on the headland.

### 3.7. Cultural Heritage

Prior to European settlement, the Guringai Tribe inhabited the local foreshores and headlands. This area would have provided an abundance of both shellfish and fish as well as bush foods, including fruits, nuts, seeds, leaves, roots, bulbs, honey, nectar and insect grubs. No other site are recorded or likely to be present due to the geology of the headland. The surrounding area has a number of shelter caves, art sites, axe groves and middens having been subject to a relatively high density of Aboriginal people prior to European settlement.

During the early 1900s, settlement from Manly to Palm Beach was scattered due largely to transport difficulties. Narrabeen was, to most, the “end of the line” as the tram terminated at this point and further transport north was difficult because of the lagoon. Only when the Ocean Street Bridge was opened in 1928 did Pittwater become more accessible. Prior to the completion of the Ocean Street Bridge, the area suffered during a seven year drought which saw the lagoon dry up completely. Motor enthusiasts would visit the lagoon area on weekends during this time to watch speedcars and motorbikes race on the dry lagoon bed. In 1909, the first man to hang glide in the Southern Hemisphere did so from Narrabeen Headland. It is believed that a local resident George Taylor foot launched a glider, controlled by weight lift.

It is believed that Turimetta and North Narrabeen Headlands were grazed at some point, but most likely during the 1930's, as photos from this time depict open grasslands with little resemblance to the heath-like communities which exist today. Other photos depict the current *Themeda* grassland as a car park for picnickers.

During the past 50 years the area has steadily grown in population, with most development in the area consisting of single and double storey dwelling houses on moderate sized lots, many with expansive views of the ocean and the natural coastline.

The lookout point, known as ‘Bumpers Lookout’ was named after a local policeman Bumper Farrell, who lived in the area.

From 1987 onwards, the Headland was formally linked to adjacent open space areas with the implementation of the Bicentennial Coastal Walkway, which links Dee Why to Palm Beach. The Walkway extends from the southern to the northern boundary of this Plan.

### 3.8. Recreation

#### Bicentennial Coastal Walkway

The Bicentennial Walkway was established in 1988, and is an integral part of the overall pedestrian use of the headland reserve. The establishment of the Coastal Walkway (which links the northern beaches of both Warringah and Pittwater) recognised the need to enable recreational users to access the headlands with a series of walks, and to provide a link with beaches and foreshores. The Walkway provides excellent opportunities for scenic viewing, walks through examples of coastal vegetation and access to the headlands and rock platform. In keeping with its original intent, the Coastal Walkway is to

be retained in as natural a state as practicable, maintained in a safe manner, with coastal vegetation being well maintained and regenerated where required.

In places the route of the walk is unclear and can be somewhat confusing to first time users. To address this problem, both Warringah and Pittwater Councils have jointly released a map series which illustrates the various routes along the entire length of the Walkway. The walkway is generally constructed of mulched path areas which not only has proved to be a sympathetic material visually but also as one which is easily maintained. The walk has many lookout points which afford impressive views. It also gives access to historical areas of interest and informal open grassed areas which are very popular for picnics and informal gatherings.

From the south, this section of the Coastal Walkway begins at Narrabeen Lagoon carpark. Narrabeen Headland signifies the gateway of the Coastal Walkway to the northern beaches. The main entrance exists to the north of the carpark, consisting of a timber staircase which zigzags up the southern face to "Bumpers Lookout". Mulched paths continue the walk westwards to Peal Place. The main link of the Coastal Walkway through the reserve is shown in Figure 8.

Access for patrons with disabilities is not provided for the entire length of the walkway, although paths have been provided to certain vantage points which comply with Australian Standard 1428.

The vegetation varies throughout the Headland and the views are spectacular. From within vegetated areas, users experience enclosed spaces which open out into grassy open areas with Turimetta Beach below to the north and Narrabeen Lagoon to the south.


The Coastal Walkway continues down Peal Place, where the user can either chose to go down to Turimetta Beach or along Narrabeen Park Parade to Turimetta Headland. By walking around the Headlands and then the beach and back to the Headland again, users can experience the whole range of vegetation communities within the area.

Access for people with disabilities is provided from Narrabeen Park Parade across to the picnic area, otherwise known as "Battleground Picnic Area".

Formal walking tracks area identified in figure 8. All other tracks in the reserve should be removed.

**Figure .8. Tracks in the reserve.**



North Narrabeen Headland Plan of Management		
Map: Tracks	Date: May, 2001	



### **3.9. Statement of Significance**

The Reserve has significance as an example of the urban bushland in Sydney, which is one of few major cities in the world with substantial areas of natural bushland.

Urban bushland areas throughout the Sydney region are significant because:

- they contribute to the landscape quality of the city;
- they provide habitat for plants and animals, which would otherwise become regionally extinct;
- they provide a corridor for the movement of migratory and nomadic animals, particularly birds, through the urban area;
- they provide an educational resource and the first contact point with nature for many urban residents;
- they enable urban residents to undertake recreational pursuits in a bushland setting; and
- they are important for scientific studies, providing a record of the original landscape and vegetation and the changes wrought by urban development;

North Narrabeen Headland Reserve has particular significance because it:

- Provides a unique landscape formation that plays a significant role in the aesthetic landscape of Sydney's Northern Beaches;
- Includes three vegetation types that have been identified as having a limited distribution within the Pittwater Council area;
- Supports a populations of the regionally significant plant species and communities including *Themeda* Grasslands; and
- Provides habitat for two threatened fauna species, Osprey and Sooty Oystercatcher, and the regionally significant Reef Egret and Peregrine Falcon.

## 4. Management

### 4.1. Core Objectives

Amendments to the Local Government Act have required that new objectives be met in relation to community land. Community lands that comprises the reserve is categorised as “natural” areas and then further categorised as “bushland” and “escarpment”, each of which has its own set of core objectives which are set out below.

The core objectives for management of community land categorised as a **natural area** are (Section 36 E):

- (a) to conserve biodiversity and maintain ecosystem function in respect of the land, or the feature or habitat in respect of which the land is categorised as a natural area, and*
- (b) to maintain the land, or that feature of habitat, in its natural state and setting, and*
- (c) to provide for the restoration and regeneration of the land, and*
- (d) to provide for community use of and access to the land in such a manner as will minimise and mitigate any disturbance caused by human intrusion, and*
- (e) to assist in and facilitate the implementation of any provisions restricting the use and management of the land that area set out in a recovery plan or threat abatement plan under the Threatened Species Conservation Act 1995 or the Fisheries Management Act 1994.*

The core objectives for management of community land further categorised as **bushland** (Section 36J) are:

- (a) to ensure the ongoing ecological viability of the land by protecting the ecological biodiversity and habitat values of the land, the flora and fauna (including invertebrates, fungi and micro-organisms) of the land and other ecological value of the land, and*
- (b) to protect the aesthetic, heritage, recreational, educational and scientific values of the land, and*
- (c) to promote the management of the land in a manner that protects and enhances the quality of the land and facilitates public enjoyment of the land, and to implement measures directed to minimising or mitigating any disturbance caused by human intrusion, and*
- (d) to restore degraded bushland, and*
- (e) to protect existing landforms such as natural drainage lines, watercourses and foreshores, and*
- (f) to retain bushland in parcels of a size and configuration that will enable the existing plant and animal communities to survive in the long term, and*
- (g) to protect bushland as a natural stabilizer of the soil surface.*

The core objectives for management of community land further categorised as an **escarpment** (Section 36L) are:

- (a) to protect any important geological, geomorphological or scenic features of the escarpment, and*
- (b) to facilitate safe community use and enjoyment of the escarpment.*

The core objectives for management of community land further categorised as **foreshore** (36N) are:

- (a) to maintain the foreshore as a transition area between the aquatic and the terrestrial environment, and to protect and enhance all functions associated with the foreshores role as a transition area, and*
- (b) to facilitate the ecologically sustainable use of the foreshore, and to mitigate impact on the foreshore by community use.*

In accordance with the core objectives set out above, Council's broad management goals as stated in Section 1.5 of this Plan, and through identification of the functions, use and key issues relating to North Narrabeen Headland, the following additional local objectives have been established to:

- Protect and enhance the natural environment and scenic landscape qualities of the reserve;
- Prevent weed invasion and control weed species occurring in the reserve;
- Consolidate the areas of bushland which have and will continue to regenerate, through the use of approved bush regeneration techniques;
- Continue the maintenance and where necessary the upgrading of the Coastal Walkway;
- Identify areas of bushland which are in need of regeneration and subsequently set an action plan for this process;
- Continue to provide opportunities for low impact recreational, scientific and educational use of the reserve;
- Achieve a balance between the needs of recreational users and the sustainability and specific demands placed on the natural coastal environment;
- Identify inaccessible areas for safety reasons and where appropriate erect appropriate signage and fencing; and
- Rename to reserve from Warriewood Headland Reserve to North Narrabeen Headland Reserve.

## 4.2. Management Issues

### 4.2.1. Coastal Management

Council is preparing a Coastal Management Strategy, which will involve a major review of the Warringah Shire Coastal Management Strategy (1985). The study will encompass both public and private land, and be concerned with all matters relating to the coastal zone. Coastal areas such as North Narrabeen Headland will be integral parts of the eventual management strategy.

The Coastal Management Strategy will be an umbrella document with broad policies, addressing coastal processes and hazards, coastal ecology and management. The Plans of Management for coastal community land will direct policy and management of the coastal reserves, to meet the requirements of the Local Government Act.

This Plan of Management may require amendment following the more detailed investigations of the Coastal Management Strategy.

#### Protection of Intertidal Areas

While the intertidal areas are not provided for under this plan the Local residents have brought to Council's attention concern over the removal of intertidal invertebrates. In the case of the rock platform at North Narrabeen Head it was declared an aquatic reserve on 25 February 2002. This provides for the protection of the area from mean high water mark to 100 metres seaward of the mean low water mark.

Elsewhere in Pittwater, Newport residents have instigated an 'early warning system', regarding breaches of the Fisheries Management Act, whereby the residents inform Council's rangers if anyone is seen collecting intertidal invertebrates from the platforms. It is hoped that this "custodial" behavior will be adopted by local residents, thus assisting Council and NSW Fisheries in the protection of these fragile habitats.

Pittwater Council has undertaken a community awareness program "Project Aware – On the Rocks!". Community volunteers are trained in this program in ecology, awareness and conservation of rock platform habitats and component species and threats to their survival. In association with the IPA monitoring program, students, staff and volunteers organised by Council under Project Aware – On the Rocks undertake summer and winter surveys of anglers and foragers using the rock platforms. The aim of this survey is to quantify user behavior, identify user groups and canvass and increase their understanding of user impacts. Given the ecological importance and sensitivity of the rock platforms at North Narrabeen Headland, disposing of treated sewage and stormwater in their vicinity is undesirable and at conflict with other strategies aimed at conserving the rock platforms' biota.

#### Objectives:

- To minimise impacts on the rock platforms, beaches and aquatic environment from the reserve and associated activities.
- To educate the community on coastal processes and impacts on these areas.

#### Performance targets:

- A reduction in impacts on the rock platforms, beaches and aquatic environment from the reserve and associated activities.
- To increase awareness of coastal environments and impacts associated with community use.

#### Actions:

- Investigate and implement strategies to minimise impacts such as drainage, pollution and access.
- To continue the support of Project AWARE on the Rocks and enforce prohibited uses of the area.

#### Performance assessment:

- Assess sediment, nutrients, pollutant quantities and recreation activity impacts on the rock platforms, beaches and aquatic environments adjoining the reserve.
- Periodic survey of rock platform condition and community understanding and attitudes to be considered every five years.

#### **4.2.2. Vegetation Management**

The main vegetation management issues at North Narrabeen Headland are the regeneration of bushland, fire management, tree vandalism and impacts associated with the Coastal Walkway.

Bush regeneration along the Headland has been very successful and the bushland is generally in good condition. The continued work of Council's Bush Regeneration team and local volunteers has made a significant contribution. Records from Warringah Council from the late 80's show that the regeneration of this area has been successful, as the density and distribution of weed species has retreated in the past decade. The philosophy behind the management of the regenerated areas is to maintain and consolidate smaller and contiguous parcels of land with similar characteristics, rather than gradually expanding out to include the entire system.

Reserves that exist adjacent to residential areas can become dumping grounds for household waste and, in some instances, construction waste. Waste materials disposed of in the Reserve are not only visually an eyesore but can be dangerous for pedestrians utilising the area, particularly where large pieces of material are involved. Refuse can also bring with it new weed propagules and create a fire hazard. The plant communities of the Headland are significant and must be protected against additional invasive species.

The majority of weeds are either bird spread perennial weeds or annual weeds occurring on track edges. Bush regeneration should continue to protect core areas from invasive weeds. Management should also seek to remove significant seed sources in the vicinity such as the grove of African Olive at Narrabeen Caravan Park. Tracks should be maintained through mowing and spraying of annual weeds.

Tree vandalism has become an issue in the headland reserves. In particular the vegetation surrounding the southern access stairs below Peal Place has been vandalized probably with the purpose of improving views from the residence/s. Council has resolved this issue with the residents although monitoring of these issues is required. Unauthorized camping has also been an issue in the reserve, with vegetation clearing being undertaken by the campers to accommodate this.

##### **Objectives:**

- To conserve and enhance the diversity and structure of native vegetation in the reserve.
- To control, contain or eradicate introduced flora species in the reserve.
- To increase awareness of the public in relation to the flora of the reserve.

##### **Performance targets:**

- Reduction in diversity and distribution of invasive weeds in the reserve.
- Management of drainage, nutrient sources, pollution sources and propagule sources that contribute to the degradation of bushland vegetation.
- Reduction in cases of dumping, clearing and vandalism as a result of community awareness programs.
- Increase community awareness and involvement in the conservation of the bushland in the reserve.
- Increased community awareness of the illegal nature and detrimental impacts of disposing of rubbish and clearing of vegetation;
- Decreased incidence of disposal of waste on the headland

##### **Action:**

- Initiate new volunteer bush regeneration groups in the area
- Investigate community education programs aimed at the benefits of bush regeneration, the problems of vegetation clearing and dumping.
- Provide educational and interpretive signs as part of the Bicentennial Coastal Walkway
- Increase tree vandalism surveillance and fines.
- Continue to protect *Themeda* grassland through fencing and track rationalisation.

**Performance assessment**

- Monitor intensity and distribution of weeds for comparison and assessment of regeneration programs.
- Monitor distribution of *Themeda* grassland in the reserve.
- Compare community involvement in bushcare and community groups.
- Monitor attitudes of neighbors through response to information days, written complaints and compliments.
- Compare number of cases of tree vandalism, illegal clearing and dumping to assess success of education and enforcement programs.
- Formal survey of attitudes and understanding to be considered every five years.

#### 4.2.3. Fire

Fire management in urban bushland needs to ensure that the threat of fire to life or property is minimised whilst protecting the natural features of the bushland. Fires have occurred as a natural disturbance to bushland in the Sydney region for tens of thousands of years. Many of the plant species found in Sydney's bushland areas have characteristics that enable them to regenerate after wildfires. Changes to the fire regime (the frequency, intensity and season of fires) can have a severe effect on some species to the point where they become locally extinct under an inappropriate fire regime. For instance, on coastal headlands, the rare plant *Rulingia hermaniifolia* has been detected shortly after fires but then declines due to overshadowing by taller shrubby species.

The fires however have proved to be a positive catalyst in the regeneration of the Headland and fire has been used on occasions as part of the bush regeneration strategy, with increased seeding of Kangaroo Grass being observed in the season following fire.

Unplanned fires have been a common phenomenon along the walkway, with arsonists hindering fire management and planning. Narrabeen Headland has not been exempt as in March 2001 a small patch was burnt in the south-eastern corner of the walkway. Management should seek to keep an active presence on the headland. Where this is not feasible or practical management should seek to maintain trails to give fire agencies easy access to extinguish unexpected fires as soon as practical or safe.

Pittwater Council has a service level agreement with the Warringah/Pittwater Rural Fire Service to undertake risk assessment and management of bushfire risk on Council land.

##### **Objectives:**

- To maintain biodiversity and vegetation structure through implementation of appropriate fire regimes.
- To minimise danger to the public from wildfire.
- To reduce the incidence and impact of arson.

##### **Performance targets:**

- Effective fire management strategies are in place.

##### **Actions:**

- To assist the Rural Fire Service (RFS) in investigating and implementing an appropriate fire regime with consideration to biodiversity and community safety.
- To undertake community awareness programs explaining ecological burning.
- To contract the RFS to undertake community awareness programs explaining fire risk.

##### **Performance assessments:**

- Periodic reviews of fuel loads and biodiversity to ascertain effectiveness of fire management.
- Monitor attitudes of neighbours through response to education programs, written complaints and compliments.
- Formal survey of attitudes and understanding will be considered every 5 years.

#### **4.2.4. Drainage and Erosion**

There are no significant drainage lines in the reserve however threats of erosion and landslip are a result of coastal processes and recreation. The Headland is bounded on the northeast to southeast sides by the coastal cliff lines that are battered by the ocean waves and wind. This has the result of a slowly receding cliff line that breaks away mostly in a series of minor landslips that go unnoticed. Clearing of cliff top vegetation and walking tracks close to cliff edge accelerates this process. One walking track has been recently diverted to reduce erosion effects and increase user safety. Fire, recreation and feral animals can have a significant impact on erosion and these issues should be managed to minimise these impacts.

##### **Objectives:**

- To preserve the natural landform through the preservation of natural vegetation and landscape processes.
- To minimise processes that accelerate erosion.

##### **Performance targets:**

- The reduction of human impacts that accelerate erosion.

##### **Actions:**

- To assess the rate of cliff line retreat and the effects of fire, recreation, feral animals and management actions on this rate.
- The identification of erosion problem areas and implementation of strategies to reduce rates to near natural levels.

##### **Performance assessments:**

- To assess effects of management activities in reducing erosion and effects of drainage on the reserve.



#### **4.2.5. Fauna**

Rabbits are present on the Headland and burrows are evident in several areas. It is believed that domestic rabbits were at one point disposed of in this area and have since bred. Although numbers are unknown, the breeding capability of rabbits is widely known and as such they cannot go unchecked.

The headland provides habitat for a range of fauna species including many small birds that gain protection in the dense vegetation. Two threatened and two locally significant species have been recorded on or from the headland. These were the Osprey (threatened), Sooty Oystercatcher (threatened), Reef Egret (locally significant) and the Perigrine Falcon (locally significant). Special consideration should be given to the protection of these species.

##### **Objectives:**

- To monitor and improve the habitat and resource values of the site for native species, particularly for those that are threatened or significant.
- To promote awareness of native fauna and activities that threaten these species, population and their habitat.
- To conserve populations of Osprey (threatened), Sooty Oystercatcher (threatened), Reef Egret (locally significant) and the Perigrine Falcon (locally significant).
- To control or eradicate introduced fauna in the reserve.

##### **Performance targets:**

- Increase in the abundance, diversity and distribution of habitats and resources for native fauna species.
- Increase in awareness of and reduction in threatening processes such as cats, foxes and habitat disturbance in the reserve.
- Reduction in the abundance and distribution of introduced fauna in the reserve such as cats, foxes, dogs, and rabbits.

##### **Actions:**

- Implement regeneration and revegetation programs with a focus on fauna habitat and resource trees and plants.
- Conduct a neighbour education program about native fauna and the threats cats and dogs pose on native fauna if not contained.
- Implement a program of introduced fauna control or eradication.

##### **Performance assessments:**

- Monitor the numbers and distribution of introduced fauna species to assess effectiveness and need for control and eradication programs.
- Monitor attitudes of neighbors through response to education programs, written complaints and compliments.
- Formal survey of attitudes and understanding will be considered every 5 years.

#### **4.2.6. Recreation and Access Management**

Recreation in the reserve is primarily restricted to walking and sight seeing. The coastal walkway, which includes a number of lookout areas, is the primary access into the reserve. Access to the rock platform is from Turimetta Beach to the north and from the North Narrabeen pool to the south. The majority of the visitors to the reserve are exercise walkers and sightseers.

##### **Dog Discipline**

Dogs are not prohibited on the Coastal Walkway, but must be controlled by a lead. Section 13 (parts 1 and 2) of the Companion Animals Act state:

“(1) a dog that is in a public place must be under the effective control of some competent person by means of an adequate chain, cord or leash.

(2) If this section is contravened, the owner of the dog is guilty of an offence.”

Council is to provide more information to local residents and visitors regarding the location of unleashed dog areas in Pittwater.

##### **Reserve Bookings**

Different sections of the Headland can be booked through Council's Reserves Section for purposes such as group picnics, special events, weddings and filming (commercials, feature films and photography). These bookings attract fees and are subject to special conditions.

##### **Coastal Walkway**

There is a requirement for maintenance of the Walkway through the Reserve to ensure the track continues to be attractive to users. The management of the walking tracks must take into account environmental impacts and safety of the reserve users and users of the rock platform.

##### **Cliff Face Management/ Risk Management**

The reserve is designated as having slip potential. Warning signs placed both along the headland and on rock platforms below have been erected to attract the attention of users as to the potential risks involved with rock falls. During 1992, Longmac and Associates carried out a geotechnical assessment of stability conditions at Narrabeen Headland. They found that rockfall hazard exists for people entering areas at or adjacent to the steep slopes of the reserve.

There are several informal tracks leading up to the Headland via the amenities building. These paths are generally used by locals familiar with the terrain and are not considered safe by Council. The areas have been fenced off, but it appears that this has not deterred users. It is proposed that these tracks are not formalised due to the area not being safe. Additional paths can lead to disturbance of vegetation, which in turn can lead to increased runoff and erosion. The formalised access provided is considered appropriate and adequate for members of the public.

##### **Objectives:**

- To provide for appropriate, low impact, sustainable recreation activities on the headland reserve.
- The ensure safety of the reserve users from risk associated with the reserve.
- To provide appropriate interpretive signage in the reserve (directive, environmental and prohibitive).
- To prohibit the inappropriate access, use and vandalism of the reserve.

##### **Performance targets:**

- The provision for appropriate recreational activities in the reserve.
- The maintenance and upgrade of tracks and facilities in the reserve.
- The provision of appropriate signage.
- No inappropriate use or access to the reserve.
- Dog owners keep dogs on leads at all times.

##### **Actions:**

- Implementation of a construction and maintenance program for track and facilities in the reserve.
- Rationalisation of tracks through rehabilitation of inappropriate tracks through brush matting and signage.
- Identify inappropriate uses and implement strategies to cease those activities.
- Review and development of appropriate signage in the reserve.

**Performance assessments:**

- A walk through assessment of impacts of recreation is to be undertaken periodically and management activities prescribed and funding allocated.
- Monitor attitudes of neighbours through response to education programs, written complaints and compliments.
- Formal survey of attitudes and understanding will be considered every 5 years.

#### **4.2.7. Cultural Heritage Management**

The site is not known to have been the site of significant cultural activities largely due to its geology, with most of the sites in the region being located on Hawkesbury Sandstone. However the area was extensively used for harvesting of marine food and temporary habitation.

**Objectives:**

- To survey and record European and Aboriginal heritage of the headland and surrounds.
- To conserve the cultural heritage values of the headland.

**Performance targets:**

- The collation and survey of cultural heritage values and sites related to the North Narrabeen headland.
- The protection from further degradation of heritage values.

**Actions:**

- To research and collate all available historical information on North Narrabeen Headland
- To undertake cultural heritage survey where information incomplete.
- To prescribe management actions aimed at the conservation of the cultural values of the headland.

**Performance assessments:**

- Complete documentation of heritage values is recorded.
- Identification and protection of heritage values.

## **5. References**

Burcher, P. & Lembit, R. (1997) *Coastal Flora & Fauna Study*. Report prepared for Pittwater Council.

Chapman, G.A. & Murphy, G.L. (1989) *Soil Landscapes of the Sydney 1:100 000 Sheet*. Soil Conservation Service of NSW.

Coffey & Partners (1987) *Coastal Headlands in Warringah Shire*. Report to Warringah Shire Council.

Longmac & Associates (1998) *Geotechnical Stability Assessment - Turimetta Headland Walking Track*. Report prepared for Pittwater Council.

## Appendix A: Indicative Species List for North Narrabeen Headland Rock Platform.

### Foliose Green

Cladophora sp.  
Chaetomorpha  
Enteromorpha intestinalis  
Ulva lactuca  
Green Laurencia

### Foliose Brown

Colpomenia sinosa  
Dictyota dichotoma  
Dilphus marginatus  
Ectocarpus sp.  
Padina sp.  
Petalonia fascia  
Petrospongium rugosum  
Sargassum sp.  
Zonaria crenata  
Brown filamentous  
Brown sticks

### Foliose Red

Amphiroa anceps  
Ceramium sp.  
Champia sp.  
Corallina officianalis  
Gigartina sp.  
Gracilaria sp.  
Griffithsia monilis  
Hypnea sp.  
Laurencia sp.  
Martensia fragilis  
Peysonnelia capensis  
Polysiphonia  
Porphyra columbina  
Pterocladia capillacea  
Rhodymenia australis  
Wrangelia plumosa  
Long Red Tubular  
Red Glob  
Red Parsley  
Red Pointy  
Red Sausage  
Green Encrusting  
Codium lucasii  
Brown Encrusting  
Ralfsia verrucosa

### Red Encrusting

Hildenbrandia rubra  
Nongeniculate red coralline  
Orange encrusting

### Blue Green

Aphanothece australis  
Oscillatoria erythraea  
Unidentified Blue Green

### Barnacles

Austromegabalanus nigres  
Austrobalanus imperator  
Catomerus polymerus

Chamaesipho tasmanica  
Chthamalus antennatus  
Tesseropora rosea  
Tetraclitella purpursacens

### Bivalves

Saccostrea commercialis

### Polychaetes

Galeolaria caespitosa  
Hydroides sp.  
Spirorbids

### Sponges

Haliclona sp.  
Unidentified sponges

### Ascidians

Botrylloides sp.  
Didemnum moseleyi  
Pyrura stolonifera  
Orange ascidian  
Purple ascidian  
Solitary ascidian

### Bryozoans

Encrusting bryozoan  
Bugula sp.

### Anemones

Actinia tenebrosa  
Anthothoe albocinata  
Cnidopus verater  
Oulactis muscosa

### Chitons

Onithochiton quercinus  
Plaxiphora albida  
Unidentified juvenile chitons

### Gastropods

Austrocochlea porcata  
Bembicium nanum  
Cantharidella picturata  
Littornia acutispira  
Littornia unifasciata  
Nerita atramentosa  
Turbo undulatus  
Columbellids

### Limpets

Amblychilepas nigrita  
Cellana tramos tramoserica  
Montfortula rugosa  
Notoacmaea flammea  
Patella peroni  
Patelloida alticostata  
Patelloida latistrigata  
Patelloida mufria  
Siphonaria denticulata

Siphonaria virgulata  
Small Brown Siphonaria

**Whelks**

Agnewia tritoniformes  
Morula marginalba  
Thais orbita

**Opisthobranchs**

Aplysia sp.  
Unidentified nudibranch

**Echinoderms**

Heliocidaris erythrogramma

**Sea Stars**

Patriella calcar  
Patriella exigua

**Ophiuroides**

Unidentified Brittle Stars

**Appendix B: Indicative Fauna Species List North Narrabeen Headland****Key****Bold Italic** - threatened species; **Bold** - regionally significant species

Common Name	Scientific Name
<b>Birds</b>	
<b>Reef Egret</b>	<b><i>Egretta sacra</i></b>
<b>Osprey</b>	<b><i>Pandion haliaetus</i></b>
Black-shouldered Kite	<i>Elanus notatus</i>
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>
Whistling Kite	<i>Haliastur sphenurus</i>
Australian Kestrel	<i>Falco cenchroides</i>
<b>Peregrine Falcon</b>	<b><i>Falco peregrinus</i></b>
<b>Sooty Oystercatcher</b>	<b><i>Haematopus fuliginosus</i></b>
Feral Pigeon*	<i>Columba livia</i>
Spotted Turtle-dove	<i>Streptopelia chinensis</i>
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>
Galah	<i>Cacatua roseicapilla</i>
Eastern Rosella	<i>Platycercus eximius</i>
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>
Common Koel	<i>Eudynamys scolopacea</i>
Spine-tailed Swift	<i>Hirundapus caudacutus</i>
Welcome Swallow	<i>Hirundo neoxena</i>
Richard's Pipit	<i>Anthus novaeseelandiae</i>
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>
Willie Wagtail	<i>Rhipidura leucophrys</i>
Eastern Whipbird	<i>Psophodes olivaceus</i>
Superb Fairy-wren	<i>Malurus cyaneus</i>
White-browed Scrubwren	<i>Sericornis frontalis</i>
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>
Red Wattlebird	<i>Anthochaera carunculatus</i>
Little Wattlebird	<i>Anthochaera chrysoptera</i>
Yellow-faced Honeyeater	<i>Lichenostomus chrysops</i>
Scarlet Honeyeater	<i>Myzomela sanguinolenta</i>
Noisy Miner	<i>Manorina melanocephala</i>
White-naped Honeyeater	<i>Melithreptus lunatus</i>
White-cheeked Honeyeater	<i>Phylidonyris nigra</i>
New Holland Honeyeater	<i>Phylidonyris novaehollandiae</i>
Silvereye	<i>Zosterops lateralis</i>
Red-browed Finch	<i>Emblema temporalis</i>
Common Mynah	<i>Acridotheres tristis</i>
Common Starling	<i>Sturnus vulgaris</i>
Australian Magpie Lark	<i>Grallina cyanoleuca</i>
Grey Butcherbird	<i>Cracticus torquatus</i>
Australian Magpie	<i>Gymnorhina tibicen</i>
Pied Currawong	<i>Strepera graculina</i>
Australian Raven	<i>Corvus coronoides</i>
Common Myna*	<i>Acridotheres tristis</i>
Common Starling*	<i>Sturnus vulgaris</i>
<b>Mammals</b>	
Black Rat*	<i>Rattus rattus</i>
Chocolate Wattled bat	<i>Chalinolobus morio</i>
Gould's Wattled Bat	<i>Chalinolobus gouldii</i>
Rabbit*	<i>Oryctolagus cuniculus</i>
<b>Reptiles</b>	
Golden-crowned Snake	<i>Cacophis squamulosus</i>
Eastern Water Skink	<i>Eulamprus quoyii</i>



Common Name	Scientific Name
Copper-tailed Skink	<i>Ctenotus taeniolatus</i>
Grass Skink	<i>Lampropholis delicata</i>
Garden Skink	<i>Lampropholis guichenoti</i>
Weasel Skink	<i>Saproscincus mustelina</i>

## APPENDIX C: Indicative Native Flora Species list for North Narrabeen Headland (Planting Guide)

### Ferns

#### **Adiantaceae**

*Adiantum aethiopicum*

#### **Blechnaceae**

*Blechnum cartilagineum*

#### **Cyatheaceae**

*Calochlaena dubia*

#### **Dennstaedtiaceae**

*Hypolepis mueleri*

*Pteridium esculentum*

#### **Lindsaeaceae**

*Lindsaea linearis*

### Flowering Plants – Dicotyledons

#### **Acanthaceae**

*Bruoniella pumilio*

*Pseuderantherum variabile*

#### **Apiaceae**

*Actinotus helianthi*

*Centella asiatica*

*Hydrocotyle. acutiloba*

*Xanthosia tridentata*

#### **Apocynaceae**

*Parsonsia straminea*

#### **Asclepiadaceae**

*Marsdenia flavescens*

#### **Asteraceae**

*Brachycome angustifolia*

*Bracteanthera bracteata*

#### **Bigoniaceae**

*Pandorea pandorana*

#### **Cassythaceae**

*Cassytha paniculata*

#### **Casurinaceae**

*Allocasuarina distyla*

*Caurarina glauca*

#### **Convolvulaceae**

*Dichondra repens*

*Polymeria calycina*

#### **Crassulaceae**

*Bryophyllum delagouense*

#### **Dilleniaceae**

*Hibbertia empetrifolia*

*H. pedunculata*

*H. scandens*

#### **Epacridaceae**

*Astroloma humusifusum*

*Epacris sp.*

*Leucopogon parviflorus*

#### **Euphorbiaceae**

*Breynia oblongifolia*

*Glochidion ferdinandi*

*Micranthemum ericoides*

*Omalanthus populifolius*

#### **Fabaceae**

*Glycine clandestina*

*Hardenbergia violacea*

*Kennedia rubicunda*

*Jacksonia scoparia*

*Mirbelia rubifolia*

*Platylobium formosum*

*Pultenaea daphnoides*

*Viminaria juncea (prostrate form)*

#### **Goodeniaceae**

*Goodenia hederacea*

*G. ovata*

#### **Haloragaceae**

*Gonocarpus teucrioides*

#### **Lamiaceae**

*Westringia fruticosa*

#### **Lobeliaceae**

*Lobelia alata*

*Pratia purpurescens*

#### **Mimosaceae**

*Acacia brownii*

*A. myrtifolia (coastal form/prostrate)*

*longifolia var. sophorae*

*suaveolens*

#### **Myrtaceae**

*Eucalyptus or Angophora spp*

*Kunzea ambigua*

*Leptospermum laevigatum*

*Melaleuca ericifolia*

*M. nodosa*

#### **Oxalidaceae**

*Oxalis corniculata*

#### **Pittosporaceae**

*Billardiera scandens*

*Pittosporum undulatum*

*P. revolutum*

#### **Proteaceae**

*Banksia integrifolia*  
*Banksia oblongifolia*  
*Hakea gibbosa*  
*H. salicifolia*  
*H. teretifolia*

*Lomandra longifolia*  
*L. multiflora*  
*L. obliqua*  
*L. glauca??*  
*Xanthorrhoea sp*

**Ranunculaceae**

*Clematis sp.*

**Rhamnaceae**

*Pomaderris species B*

**Rubiaceae**

*Opercularia aspera*

**Rutaceae**

*Eriostemon buxifolius* spp *buxifolius*

**Santalaceae**

*Exocarpus cupressiformis*

**Sterculiaceae**

*Lasiopetalum ferrugieum*

**Thymelaeaceae**

*Pimelia linifolia*  
*Wikstroemia indica*

**Violaceae**

*Viola hederacea*

Flowering plants – Monocotyledons

**Cyperaceae**

*Gahnia spp*  
*Isolepis nodosa*  
*Baumea juncea*  
*Ptilanthelium deustum*

**Iridacea**

*Patersonia sericea*

**Liliaceae**

*Caesia vitata*  
*Dianella caerulea*  
*Tricoryne elatior*  
*Thysanotus tuberosus*

**Poaceae**

*Danthnia tenuior*  
*Dichelachne micrantha*  
*Echinopogon caespitosus*  
*Eragrostis brownii*  
*Microlaena stipoides*  
*Oplismenus sp.*  
*Stipa sp.*  
*Themeda triandra*

**Restoniaceae**

*Restio gracilis*

**Xanthorrhoeaceae**

## APPENDIX D: Weed Species List

### Flowering Plants – Dicotyledons

#### **Apiaceae**

\**Hydrocotyle bonariensis*

#### **Asteraceae**

\**Ageratina adenophora*  
\**Ambrosia* spp  
\**Bidens pilosa*  
\**Chrysanthemoides monilifera*  
\**Conyza albida*  
\**Coreopsis lanceolata*  
\**Erechthites valerianifolia*  
\**Hypochaeris radicata*  
\**Sonchus oleraceus*

#### **Caesalpiniaceae**

\**Senna pendula* var. *glabra*

#### **Caprifoliaceae**

\**Lonicera japonica*

#### **Convolvulaceae**

\**Ipomea cairica*  
\**I. Indica*

#### **Crassulaceae**

\**Bryophyllum delagouense*

#### **Fabaceae**

\**Psoralea pinnata*  
\**Medicago polymorpha*

#### **Malvaceae**

*Lagunaria patersonii*

#### **Mimosaceae**

*Acacia saligna*

#### **Oleaceae**

\**Olea europea* ssp. *africana*

#### **Plantaginaceae**

\**Plantago lanceolata*

#### **Rosaceae**

\**Raphiolepis indica*

#### **Solanaceae**

\**Solanum nigrum*

#### **Verbenaceae**

\**Lantana camara*  
\**Verbena bonariensis*

### Flowering plants – Monocotyledons

#### **Alliaceae**

\**Agapanthus orientalis*

#### **Cannaceae**

\**Canna indica*

#### **Cyperaceae**

\**Cyperus eragrostis*

#### **Asparagaceae**

\**Protasparagus densiflorus*

#### **Poaceae**

\**Cynodon dactylon*  
\**Paspalum dilatatum*  
\**P. quadrifarium*  
\**Pennisetum clandestinum*