

# Myall Lakes National Park

Little Broughton Island and Stormpetrel Nature Reserves

## Plan of Management

NSW National Parks and Wildlife Service

October 2002

**This plan of management was adopted  
by the Minister for the Environment on  
Tuesday 2nd October 2002.**

## **ACKNOWLEDGMENTS**

This Plan of Management was prepared by officers of Hunter Region. Northern Directorate Planning Unit and Head Office Planning Unit also provided assistance. The Waterways Authority of NSW contributed to the development of the boating section of this plan.

During preparation of the plan, the **Myall Lakes Plan of Management Consultative Group** gave considerable time and assistance in reviewing and providing comment on proposals.

Public participation in the planning process contributed greatly to the development of the Plan of Management. The exhibition of the Draft Plan of Management and the Revised Camping Strategy resulted in over 1200 members of the public or private organisations making a submission. A number of well attended public meetings were also held.

The **Hunter Regional Advisory Committee** is also thanked for its contribution to this plan.

NSW National Parks and Wildlife Service

**Crown Copyright 2002:** Use permitted with appropriate acknowledgment.

ISBN 0 7313 6964 5

## FOREWORD

Myall Lakes National Park is over 44,000 ha in size and is approximately 50 km north of Newcastle and 30 km south of Forster. The dominant feature of the park is its lake system which comprises 10,000 ha of waterways including Bombah Broadwater, Boolambayte Lake and Myall Lake. The park includes Broughton Island, located 3 km offshore, and extends west of the Pacific Highway to a point 30 km inland from the coastline. To the south, Yacaaba and Fame Cove on Port Stephens are also part of Myall Lakes National Park.

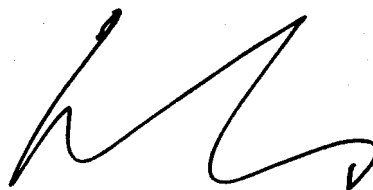
The Myall Coast Reserves include Little Broughton Island (36 ha) and two islands known as Inner Rock and North Rock which together form Stormpetrel Nature Reserve (8 ha). They are located about 3 km offshore near Broughton Island.

Because of the extensive waterways, dune systems and over 40 km of ocean beaches, Myall Lakes National Park is one of the most frequently visited national parks in northern New South Wales. The park is within a comparatively short distance of a number of population centres; it is the closest major coastal park offering a wide range of recreational opportunities north of Newcastle and is within a three-hour drive of Sydney.

Myall Lakes National Park contains the only remaining example of a large coastal brackish lake system on the New South Wales coast that has not been greatly modified by human activity (NSW NPWS 1984). It was established to conserve these features for scientific, educational and recreational purposes. The outstanding natural and cultural values of this lake system have been recognised internationally, with Myall Lakes National Park being listed as a Ramsar Wetland of International Importance.

This plan has been developed with extensive contributions from the community, park visitors and stakeholders. The plan places primary emphasis on the conservation of the natural and cultural values of Myall Lakes National Park and the Myall Coast Reserves. Provision of visitor opportunities that are compatible with and promote the understanding and enjoyment of these values is also a key goal. The plan outlines management directions for the park, desired outcomes and guidelines, and actions to achieve these outcomes.

This Plan of Management establishes the scheme of operations for Myall Lakes National Park, Little Broughton Island and Stormpetrel Nature Reserves. In accordance with section 75 of the *National Parks and Wildlife Act 1974*, this plan of management is hereby adopted.



BOB DEBUS

**Minister for the Environment**



## TABLE OF CONTENTS

Foreword.....	iii
---------------	-----

### **PART A: Management Context**

1. The Plan of Management .....	2
Purpose of the Plan of Management .....	2
Plan preparation.....	2
Community involvement .....	2
How to read this plan .....	4
More information.....	4
2. The Planning Area.....	6
Location and regional context.....	6
Park and nature reserve dedication .....	7
What is special about Myall Lakes National Park? .....	8
What is special about Myall Coast Reserves? .....	9
3. Legal and Policy Context .....	10
Legislative and policy framework.....	10
NPWS policies and strategies .....	11
International obligations.....	11
4. Management Strategies.....	12

### **PART B: Management Strategies**

1. Natural Heritage .....	16
1.1 Landforms, soils and scenic values .....	17
1.2 Terrestrial plants and animals.....	19
1.3 Aquatic plants and animals .....	23
1.4 Catchment management and water quality .....	25
1.5 Wetlands.....	30
2. Cultural Heritage .....	
2.1 Aboriginal heritage .....	34
2.2 Historic heritage .....	36
3. Park Protection .....	
3.1 Fire management .....	41
3.2 Introduced plants.....	43
3.3 Introduced animals .....	47
4. Visitor Use .....	
4.1 Recreation management .....	51
4.2 Camping.....	54
4.3 Day use.....	59
4.4 Bushwalking.....	61
4.5 Road network.....	63
4.6 Beach access.....	65
4.7 Cycling .....	69

4.8 Horseriding.....	70
4.9 Boating.....	71
4.10 Commercial tourism.....	76
4.11 Leasing.....	80
4.12 Information, interpretation and education.....	82
4.13 Research.....	85
5. Management Operations	
5.1 Management operations and alien land uses.....	89
5.2 Commercial fishing.....	91
5.3 Broughton Island huts.....	93
5.4 Tamboy huts.....	95
<b>PART C: Implementation</b>	
Summary of actions and guidelines.....	100
Implementation.....	101
References.....	129

## LIST OF TABLES

Table 1: Proposed camping areas.....	58
Table 2: Proposed picnic areas.....	60
Table 3: Proposed guidelines for commercial activities.....	79
Table 4: Summary of actions.....	101
Table 5: Summary of guidelines.....	112

## LIST OF FIGURES

Figure 1: Location of Myall Lakes National Park and Myall Coast Reserves.....	6
Figure 2: Catchment of Myall Lakes National Park.....	26
Figure 3: The waterways of Myall Lakes National Park.....	71
Figure 4: Broughton Island huts.....	93
Figure 5: Tamboy huts.....	96

## LIST OF MAPS

Map 1: Recreation management zones.....	121
Map 2: Recreational facilities.....	123
Map 3: Road network.....	125
Map 4: Boat management plan.....	127

## APPENDICES

Table A1: Threatened or endangered plant species found in the planning area ( <i>Threatened Species Conservation Act 1995</i> ) .....	132
Table A2: Vulnerable or endangered animal species found in the planning area ( <i>Threatened Species Conservation Act 1995</i> ) .....	132
Table A3: Significant pest species occurring in the planning area.....	133
Table A4: Vegetation communities .....	135
Table A5: Recreation management zones characteristics and criteria.....	137





# A

## Management Context



## 1. THE PLAN OF MANAGEMENT

### PURPOSE OF THE PLAN OF MANAGEMENT

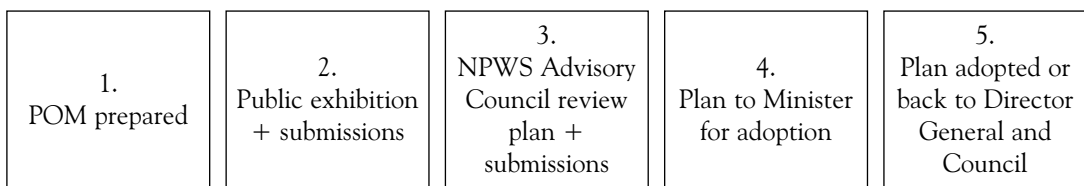
The *National Parks and Wildlife Act 1974* requires that a plan of management (POM or plan) be prepared by the NSW National Parks and Wildlife Service (NPWS) for each national park and nature reserve. A POM is a legal document that outlines how a national park or nature reserve will be managed in the years ahead. Once the Minister has adopted a plan, no operations may be undertaken within the national park or nature reserve except in accordance with the plan. This plan for Myall Lakes National Park (referred to as the park), replaces the 1984 Plan of Management.

This plan also includes two nature reserves near Broughton Island: Little Broughton Island Nature Reserve and Stormpetrel Nature Reserve. Broughton Island is part of Myall Lakes National Park.

**In this plan the nature reserves are referred to as the ‘Myall Coast Reserves’. The ‘planning area’ refers to Myall Lakes National Park and the Myall Coast Reserves. ‘former forestry areas’ refers to land gazetted as part of Myall Lakes National Park in 1999, previously managed by State Forests of NSW.**

### PLAN PREPARATION

Under the National Parks and Wildlife Act, there are five steps for the adoption of a POM as shown in the following diagram.



Although not a legal requirement, the NPWS also exhibits plans for nature reserves.

Because of the high level of community interest in planning for, and the management of, Myall Lakes National Park, the community has been extensively involved in preparing the new Plan of Management for the park.

### COMMUNITY INVOLVEMENT

The preparation of the plan commenced in October 1999 with a community workshop at Bulahdelah, which more than 100 people attended. At this workshop the community discussed what it valued about the park and what it felt were key management issues. The consultation program and this plan have been developed to address these issues. A detailed report on the workshop and consultation program is contained in Background Information: Revised POM for Myall Lakes National Park (NSW NPWS 2001a).

All people interested in the review were invited to register with the NPWS. Over 400

people registered their interest and subsequently received regular updates on the progress of plan preparation.

Due to the overwhelming interest in the preparation of the plan, the NPWS also established a community consultative group (referred to as the Myall Lakes Plan of Management Consultative Group). This group had 20 participants representing major interests in Myall Lakes National Park, including:

- tourism
- nature conservation
- historic heritage
- Aboriginal heritage
- park neighbours and general community
- scientific and research
- hut owners
- recreational fishers
- boating
- four-wheel-driving
- bushwalking/birdwatching
- camping
- commercial fishers
- commercial: on-park (leases, licences) and off-park

The role of the consultative group was to act as a link between the NPWS and the community. It provided feedback to the NPWS on solutions proposed to management issues and information on the preparation of the draft plan to the wider community. The group devoted considerable time to providing constructive comment on the proposals in the draft plan.

The NPWS then prepared a series of Issue Papers that were progressively discussed with the consultative group. The NPWS received over 100 submissions to the Issue Papers. A report on the submissions is contained in the background document (NSW NPWS 2001a). The NPWS has referenced the Issue Papers and the submissions, as well as feedback from the consultative group and from the NPWS internal consultative team, in the preparation of this plan.

A draft plan of management for Myall Lakes National Park, Little Broughton Island Nature Reserve and Stormpetrel Nature Reserves ('the planning area') was then placed on public exhibition from 21 September 2001 to 31 January 2002. Over 1150 public submissions were received indicating a broad interest in the planning process within the community.

The draft plan contained two sections, 4.2 Camping and 4.3 Picnic Areas, that were expected to be affected by the tree fall risk issue associated with Melaleuca (Broad Leaved Paperbark) trees. As a result, a Revised Camping Strategy was developed and put on public exhibition from 29 May 2002 to 26 June 2002. On this occasion, 55 submissions were received.

All of these submissions were then considered by NPWS in finalising the Plan of Management for submission to the NPWS Advisory Council and subsequently to the

Minister for the Environment for approval. A number of changes to the plan were made as a consequence of the submissions.

The extensive public interest and participation has contributed greatly to the planning process and the development of the Plan of Management.

## HOW TO READ THIS PLAN

Information in this plan is presented in three parts.

**Part A** provides the basis for management.

**Part B** focuses on five broad strategy areas:

1. conservation of natural heritage;
2. conservation of cultural heritage;
3. park protection;
4. visitor use; and
5. management operations and other land uses.

For each strategy area, the plan outlines:

- issues;
- background information;
- desired outcome; and
- guidelines and actions.

The guidelines and actions within each strategy are numbered for ease of reference only. This numbering does not indicate priorities.

**Part C** deals with plan implementation and review.

## MORE INFORMATION

The planning process leading to the development of this plan has involved the collection and use of a large amount of information. This includes:

- a comprehensive bibliography;
- a series of Issue and Options Papers containing detailed background information to proposals in this plan;
- newsletters; and
- reports on community workshops.

This information is presented in *Background Information: Revised POM for Myall Lakes National Park* (NSW NPWS, 2001a).

Studies of vegetation and Aboriginal and European heritage were also undertaken as part of the preparation of this plan and are available for viewing.

For more information on the plan contact the NPWS Hunter Region Office on (02) 4984 8200.

## 2. THE PLANNING AREA

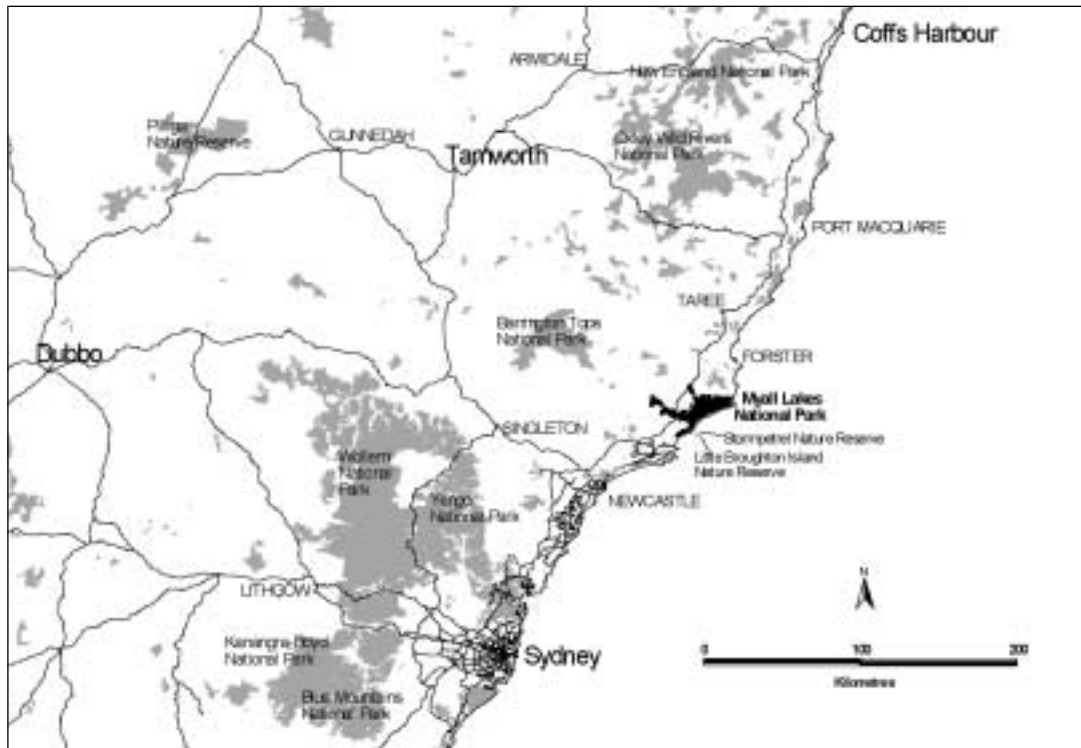


Figure 1: Location of Myall Lakes National Park and Myall Coast Reserves

### LOCATION AND REGIONAL CONTEXT

The planning area includes Myall Lakes National Park and the offshore Myall Coast Reserves (see figure 1).

Myall Lakes National Park is over 44,000 ha in size and is approximately 50 km north of Newcastle and 30 km south of Forster. The dominant feature of the park is the lake system which comprises 10,000 ha of waterways including the Bombah Broadwater, Boolambayte Lake and Myall Lake. The park includes Broughton Island, located 3 km offshore, and extends west of the Pacific Highway to a point 30 km inland from the coastline. To the south, Yacaaba and Fame Cove on Port Stephens are also part of Myall Lakes National Park.

The Myall Coast Reserves include Little Broughton Island (36 ha) and two islands known as Inner Rock and North Rock which together form Stormpetrel Nature Reserve (8 ha). They are located about 3 km offshore near Broughton Island.

Parts of the western boundary of Myall Lakes National Park abut land managed by State Forests of New South Wales, namely the Myall River and Bulahdelah State Forests. The Nerong State Forest shares a common boundary with the park on the southern side. Apart from some small holdings of crown land, the remaining park boundaries adjoin land with freehold titles. Much of the freehold land adjacent to the park has been modified through land clearing and agriculture. With the exception of the offshore islands, the Pacific Ocean delimits the eastern boundary.

Because of the extensive waterways, dune systems and over 40 km of ocean beaches, Myall Lakes National Park is one of the most frequently visited national parks in northern New South Wales. The Park is within a comparatively short distance of a number of population centres including Newcastle, Raymond Terrace, Bulahdelah, Tea Gardens, Hawks Nest, Foster–Tuncurry, Taree, Nelson Bay and Gloucester. It is the closest major coastal park offering a wide range of recreational opportunities north of Newcastle and is within a three-hour drive of Sydney.

Myall Lakes National Park and the Myall Coast Reserves are within the Great Lakes local government area.

### **PARK AND NATURE RESERVE DEDICATION**

Myall Lakes National Park contains the only remaining example of a large coastal brackish lake system on the New South Wales coast which has not been greatly modified by human activity (NSW NPWS 1984). It was established to conserve these features for scientific, educational and recreational purposes.

The story of the creation of the park is one of controversy, being described by Drake and Fleming (1988) as the ‘Battle for Myall Lakes’. This story is not only about divergent community interests but also about a shared commitment and passion for Myall Lakes. The commencement of mineral-sand-mining operations in the 1960s on the coastal side of the lower Myall River, coincided with increased public concern for the environment. The area subsequently became a major focal point for a struggle between conservation and mining interests over the next 15 years. This conflict became a catalyst for the establishment in 1965 of an interdepartmental government committee (the Sim Committee) to inquire into and advise on sand mining on the NSW north coast.

The 1967 report of that committee recommended that a national park be reserved on the eastern side of the lower lakes, while mining continue in the remainder of the area. In 1972, an area of 15,000 ha, including the area recommended by the Sim Committee, the entire bed of the lake system and Broughton Island, was gazetted as Myall Lakes National Park.

At this time, it was intended that the gazetted area would form the nucleus of a much larger national park which would more adequately protect the foreshores of the lakes and adjacent areas. This proposed larger area was indicated in the Local Environmental Plan of the Great Lakes Council (at that time known as the Interim Development Order No.2 for Great Lakes Shire – Amendment No. 7).

Between 1972 and 1984, over 15,000 ha of land, including a number of rural land holdings, were acquired and incorporated into the national park. In 1999, further additions were made to the park from former state forest lands to the north and south of Bulahdelah. These additions have made possible the inclusion of some of the upper catchment areas of the Myall River and some forest types not previously found in the park. There remains approximately 193 ha of land zoned 8(b) for future acquisition and incorporation into the park.

Little Broughton Island was gazetted as a nature reserve in 1961, and the islands forming the Stormpetrel Nature Reserve in 1976. The main objective for reservation of Little Broughton Island Nature Reserve was for the protection of breeding sea birds, in particular three species of Shearwaters. The objective for the reservation of Stormpetrel Nature Reserve was for habitat conservation for breeding sea birds.

## WHAT IS SPECIAL ABOUT MYALL LAKES NATIONAL PARK?

Myall Lakes National Park has outstanding values that led to the original gazettal of the park in 1972 and its subsequent extensions.

### Aboriginal cultural heritage

The area now covered by Myall Lakes National Park was occupied by the Worimi Aboriginal people whose territory extends south to Maitland and the Hunter River, to Forster–Tuncurry in the north, and as far west as Gloucester. Despite being dispossessed of their land during the early European settlement of the region, the Worimi have retained a deep-felt attachment to the land within and surrounding Myall Lakes National Park and are actively interested in the park's management. The landscapes of the park contain rich and varied evidence of pre-European occupation including scarred trees, open campsites, burial grounds, stone arrangements, middens, rock engravings and a fish trap. These landscapes, which also include important spiritual sites, form an important part of the spirituality and identity of local Aboriginal people.

### Natural heritage

The interconnected lakes of Myall Lakes National Park produce an unusual environment where fresh and brackish water mix. The system is the only one of its type in the Manning shelf bioregion.

The outstanding natural and cultural values of this lake system have been recognised internationally, with Myall Lakes National Park being listed under the Convention on Wetlands (Ramsar, Iran 1971). The sand dunes represent a hydrological system of wetlands (swamps, lakes) and subsurface aquifers linking estuary and marine ecosystems. The extensive lake system and surrounding catchment samples nearly one-third of known flora within the NSW North Coast. Of these, 41 flora and fauna species are listed as endangered or threatened under the *Threatened Species Conservation Act 1995*. The park not only has a diverse range and abundance of animal and plant species but also plays an important role in linking key fauna habitats to the north and west. Myall Lakes National Park is also at the southern and northern extremities of the distribution of many plant and animal species and their associated communities. Myall Lakes National Park also contains a number of migratory bird species protected under international agreement (JAMBA and CAMBA).

The landforms of the park have been described as a 'giant filing cabinet' (Fairley 1979), containing important information on climate change and sea level change. The two distinct coastal sand barrier systems that separate Myall Lake from the sea comprises one of the best preserved dual barriers on the NSW coast, extending from Hawks Nest towards Forster. These barriers developed at two different periods when huge volumes of sand were swept shorewards following major rises in sea level. The present day form of the lakes reflects the most recent drowning of the landscape six to eight thousand years ago when the sea level rose towards the end of the last ice age. Broughton Island, within Myall Lakes National Park, is one of the largest offshore islands along the NSW coast and is another legacy of the most recent rise in sea level.



### **Social values and historic heritage**

The park has high social value providing a broad range of educational, recreational and scientific opportunities. It also has commercial value to private operators and surrounding towns. There are many non-Aboriginal families that have been associated with the area since the early 1800s. Over 70 sites associated with past use have been identified in the park including graves, early sawmill sites, the fishing village at Tamboy, the remains of old farmhouses at Kataway Bay and Sunnyside, and the remains of punts and shipwrecks.

From the early days of the Mungo Brush regatta (commencing in 1909) and Legges Camp Guest House (established by the early 1920s), recreation and tourism have grown as increasingly important values of the area. There is a diverse range of recreational activities undertaken throughout the park including camping, picnicking, sailing, swimming, power boating, canoeing, walking, four-wheel-driving, fishing and birdwatching. Camping is particularly popular, with Myall Lakes National Park having more camping locations than any other coastal park in NSW. With the two most recent extensions of the park including areas previously managed by State Forests of NSW, scenic driving on old forestry roads has become an additional attraction.

### **Commercial values**

Because Myall Lakes National Park is a major tourist destination, the importance of the park to a number of towns in the region such as Tea Gardens, Hawks Nest and Bulahdelah has grown. The park is also of commercial value to fishers, charter boat, cruise and tour operators (particularly to Broughton Island) and houseboat operators. Commercial and recreational fishing occurs throughout much of the park's waterways; commercial prawning occurs mostly at Tamboy on the Myall River and mesh netting for fish occurs in the Lakes. The Port Stephens–Myall Lakes estuary has historically produced the second largest volume of estuary commercial fish in NSW.

### **Research values**

The park has been a major focus for research activities since the 1930s. Within the park, the University of New South Wales operates a research station which provides a base for various ecological and other studies being carried out in the region. A field study centre for the University of Newcastle is located adjacent to the park on Boolambayte Creek. Substantial levels of scientific study and investigation have been undertaken in the park over recent years, particularly relating to natural heritage values.

### **WHAT IS SPECIAL ABOUT MYALL COAST RESERVES?**

Little Broughton Island and Stormpetrel have been included in the State's system of nature reserves in recognition of their particular importance to various species of sea birds. Three species of protected shearwaters breed in large numbers on Little Broughton Island, with this location recognised as the most northern breeding site for the Short-Tailed Shearwater. Many other species of seabirds have been recorded nesting on this island. The islands of the Stormpetrel Nature Reserve, including Inner Rock and North Rock, also provide important breeding habitat for sea birds, especially for ground nesting or burrowing species. Two protected species, the Wedge-Tailed Shearwater and the White-Bellied Sea Eagle have been recorded here.

### 3. LEGAL AND POLICY CONTEXT

#### LEGISLATIVE AND POLICY FRAMEWORK

Myall Lakes National Park and the Myall Coast Reserves must be managed in accordance with the following legislative and policy framework. The specific guidelines and actions proposed in this plan have been established in accordance with this framework.

#### National parks & nature reserves

Under the National Parks and Wildlife Act, national parks in NSW are managed in accordance with the following general objectives:

- protection and preservation of natural landform values, including significant geological and geomorphological features;
- conservation of native flora and fauna, including maintenance of biodiversity, populations of threatened species and critical habitat;
- maintenance of natural processes;
- preservation of catchment values and protection of water quality;
- preservation of Aboriginal sites in consultation with the Aboriginal community;
- conservation of historic features;
- protection of scenic values;
- provision of opportunities for appropriate use, understanding and enjoyment by the public; and
- encouragement of scientific and educational inquiry into environmental features and processes, cultural features and visitor use patterns.

Nature reserves are refuge areas of special scientific interest where natural environments, phenomena and wildlife can be studied without human interference. They are also managed in accordance with the general management objectives for national parks with the exception of the provision of outdoor recreational opportunities, which is not a primary objective of nature reserves.

In managing populations of threatened species and critical habitat, the NPWS also has responsibilities under the Threatened Species Conservation Act. This includes preparing and implementing recovery plans for threatened species, populations and ecological communities, in addition to developing and implementing threat abatement plans to manage key threatening processes and identifying/declaring critical habitat.

The NPWS is required to undertake environmental assessment for all proposed management activities on the NPWS estate in accordance with the *Environmental Planning and Assessment Act 1979*. The level of environmental assessment ranges from the more detailed 'environmental impact statement' and 'species impact statement' to a more concise 'review of environmental factors.' These assessments typically involve consultation with scientific personnel and the community.

Other legislation requiring consideration includes the following:

- *Catchment Management Act 1989*

- *Environment Protection and Biodiversity Conservation Act 1999*
- *Fisheries Management Act 1994*
- *Heritage Act 1997*
- *Local Government Act 1993*
- *Noxious Weeds Act 1993*
- *Protection of the Environment Operations Act 1997*
- *Rural Fires Act 1997*
- *Water Management Act 2000*

The Environment Protection and Biodiversity Conservation Act includes guidelines for managing wetlands of international importance and for the assessment and approval of actions that may impact on the ecological values of a Ramsar site. These guidelines have been addressed in this plan.

### **NPWS POLICIES AND STRATEGIES**

The *NPWS Field Management Policies* (NSW NPWS 1988) is a compilation of policies arising from the legislative requirements, the corporate goals of the NPWS and internationally accepted principles of park management. The policies relate to natural and cultural heritage conservation, as well as research, visitor and commercial use. The field management policies evolved in response to changes in scientific understanding and the economic, social and political environment of NSW.

The *NPWS Corporate Plan 2000–2003* establishes the corporate direction and priorities of the NPWS and is linked to the *Visions for the New Millennium* (NSW NPWS 1999). The development of this plan has been informed by these strategic documents.

### **INTERNATIONAL OBLIGATIONS**

#### **Ramsar Convention**

In June 1999, Myall Lakes National Park was listed as a Ramsar Wetland of International Importance. The Ramsar Convention on Wetlands of International Importance is a multi-lateral convention which provides for the wise use and conservation of all wetlands. The principal expectation is that listed sites will be managed to protect the ecological character for which they were recognised. Any action that results in deterioration of these values is considered to be in violation of the convention. The Ramsar site covers all of Myall Lakes National Park.

#### **JAMBA and CAMBA**

Australia is party to international agreements relating to migratory birds. These agreements are:

- The agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA); and
- The agreement between the Peoples Republic of China and the Government of Australia for the Protection of Migratory Birds and their Environment (CAMBA).

The agreements with Japan and China lists eleven JAMBA and nine CAMBA species found in Myall Lakes National Park and Myall Coast Reserves.

#### **4. MANAGEMENT STRATEGIES**

This plan places primary emphasis on the conservation of the natural and cultural values of Myall Lakes National Park and the Myall Coast Reserves. Provision of visitor opportunities that are compatible with and promote the understanding and enjoyment of these values is also a key goal. These goals may be achieved through the following management strategies:

- recognition and protection of the Ramsar wetland values through managing fire, migratory species, introduced species, catchments, threatened species habitat and populations and visitor use, in cooperation with other responsible agencies;
- protection and enhancement of scenic values through the management of the visual impact of infrastructure, park facility design and location, and the rehabilitation of disturbed sites;
- recognition and protection of Aboriginal cultural heritage through the identification and protection of cultural resources and the development of long-term conservation and management outcomes for places and landscapes;
- recognition and protection of historic heritage through identification, interpretation and protection of historic resources;
- protection of water catchment values in cooperation with other agencies and neighbours through the planning and implementation of catchment protection and rehabilitation activities and through the management of vegetation, fire, roads, trails and tracks, waterway activities and visitor areas including waste disposal;
- protection of significant vegetation communities and threatened plant and animal species through managing fire, introduced plants and animals and visitor use/access;
- encouragement of the protection of habitat on adjoining lands through education strategies and cooperative arrangements with neighbours and adjoining councils;
- pest-species management through strategic planning, control and research programs in cooperation with other agencies and neighbours;
- fire management to protect life, property and biodiversity through fire planning and control programs in cooperation with other agencies and neighbours;
- provision of sustainable public vehicle access to identified visitor destinations through identifying the public road network, setting maintenance standards, implementing road and parking improvements, and cooperative arrangements with adjoining councils;
- management of picnic and camping areas in a sustainable and complementary way through designating locations, settings and capacities for each area, providing infrastructure and services, and integrated planning with other agencies and businesses providing adjoining recreation opportunities;
- management of waterway activities, in cooperation with the Waterways Authority of NSW and NSW Fisheries, through the identification of suitable boating and fishing

activities, waterway infrastructure and services, and the implementation of codes of conduct and cooperative arrangements with recreational groups;

- provision of opportunities for bushwalking and cycling, through identifying routes and management standards, and implementing codes of conduct and cooperative arrangements with recreational groups;
- encouragement of commercial tourism opportunities that are sustainable and compatible with park values through licensing appropriate activities, promoting best practices and cooperative planning and management in partnership with tourism agencies;
- integration and promotion of interpretive and educational opportunities through strategic planning, signage, publications and programs to assist visitor understanding and enjoyment;
- knowledge improvement of natural and cultural heritage, corresponding threats and the evaluation of management programs through research and monitoring programs;
- management of pre-existing non-park uses through licensing, cooperative arrangements and appropriate site management; and
- an adaptive approach to management that focuses on desired outcomes and utilises ongoing monitoring and evaluation to assess effectiveness in achieving such outcomes, and to review guidelines and actions where appropriate.



# B

## Management Strategies



*Management Strategy 1*

**Natural Heritage**





## 1.1 LANDFORMS, SOILS AND SCENIC VALUES

### BACKGROUND

The geology, landforms and associated soils are the basic features of the park and, together with climatic influences, are the major determinants of the pattern and distribution of plants and animals.

The dominant feature of Myall Lakes National Park is the lake system. The three interconnected lakes, Bombah Broadwater, Boolambayte Lake and Myall Lake, occupy an ancient river basin bounded by high sand dunes on the coast and much older flatter dunes in the west. These dune systems, described as the outer barrier and inner barrier, represent two separate periods of deposition. The inner barrier, which extends parallel to the coast, was laid down before the last glacial period, about 60,000 years ago.

During the last ice age, there was a marked drop in sea levels. After the sea stabilised at its present level about 6,000 years ago, the outer, higher barrier was formed. Some of the highest dunes clad in mature forests are only 2,000 years old. The outer barrier has been severely reworked by storms and its parallel orientation to the coast is largely lost in a maze of dunes some of which have moved well inland and covered parts of the inner barrier. Less than 100 years ago, slight changes in stability occurred and a new system of actively migrating sand dunes or 'blow outs' resulted.

The dominant underlying geological structure is a fold in the earth's surface known as the Myall Syncline (downfold) within which the main rock types were formed over 275 million years ago (Carboniferous period). The main rock types are sedimentary rocks (sandstones, siltstones and mudstones) with some volcanic rocks under the surface varying in composition from rhyolite to basalt. Erosion of bedrock at times of lower sea levels left a complex of rocky hills and ridges. With the rise in sea level during the Holocene, some rock outcrops became isolated from the mainland, producing a series of offshore islands, including those within the planning area.

A belt of limestone presents itself as outcrops on the northern and southern shores of Myall Lake. Another feature of Myall Lake, the northern and largest lake within the system, is a scattering of twelve islands. They are of a diverse size, substrate and vegetation.

On the western side of the lake system are a series of alluvial (river) plains separated by ridges comprising sandstones and volcanics. To the west and north the ridges grade into a series of hills, the highest being Gorong (496 m) in the south-western part of the park.

Broughton Island and the Myall Coast Reserves have rock types associated with the Carboniferous period that are both volcanic (toscanite, dacite, andesite and ignimbrite) and sedimentary (agglomerate, conglomerate, sandstone and siltstone).

The main substrate (foundation) in the park, especially along the eastern and southern sides of the lake system, is the more recent Quaternary sands. On the eastern side of Myall and Boolambayte lakes, in the vicinity of the old mining road, is a swampy area referred to locally as the The Moors. This formed as the result of a localised topographic variation within the interbarrier depression.

Potential acid sulphate soils are created in ancient estuaries when organic matter is buried in a water-logged environment and are consequently present throughout the low-lying estuarine and creek flat areas. They only become acidic when soils are drained or

become exposed to the air. The extent of identified acid sulphate soils within the park has been mapped at 1:25 000 (DLWC 1997). The occurrence of actual and potential acid sulphate soil within the park is an important factor in relation to possible future disturbances of the soils.

The landforms, soils and geology combine to form a variety of attractive and distinctive scenery. On the seaward side of the lakes, the visitor can enjoy spectacular panoramic views of the wild ocean against long stretches of smooth white beaches backed by high frontal dunes. Some of these dunes are sculpted by the winds and are constantly changing. The beauty of the lakes are renowned: a shimmering sheet of blue-green set against a rugged backdrop of green wooded mountains to the west. Offshore, Broughton Island and the Myall Coast Reserves provide a completely different set of views back to the mainland.

## ISSUES

---

- The scenic qualities of Myall Lakes National Park, including the visual catchment need to be maintained.
- Erosion is a naturally occurring process. However, recreational and other use of waterways, lake foreshores, roads, walking tracks, beach dunes, management trails and fires within and adjoining the park have resulted in accelerated levels of erosion, particularly on lake foreshores.
- The soil of both coastal and sedimentary origin present constraints on use. The majority of the lake foreshores consist of infertile and highly erodible soils.
- The use of vehicles and trail bikes both on and off management trails between the coast and Myall Lake and within the Nerong–Renwick area has contributed to erosion.
- Dune instability threatens key ecological habitats and infrastructure.
- High sediment loads and associated nutrients in the Myall River after storm events have been identified as a contributor to the blue-green algae problem in the lakes. Erosion from a myriad of vehicular trails and walking tracks may contribute to this problem.
- There is a lack of knowledge about limestone ecosystems within the park.

## DESIRED OUTCOME

---

Management of Myall Lakes National Park and the Myall Coast Reserves to minimise disturbance or modification of landforms and soils with particular attention to areas that illustrate landform processes.

## GUIDELINES AND ACTIONS

---

- 1.1.1 Design, situate and maintain all new facilities to harmonise with surroundings and to be visually unobtrusive.
- 1.1.2 Liaise with Great Lakes Council regarding any proposed developments that may

impact on the scenic values and the visual catchment of the park. Formally request the council to refer such proposals to the NPWS for comment. In cooperation with Great Lakes Council, work through planning instruments to protect the visual catchment for the park.

- 1.1.3 Maintain a network of public roads and management trails (see also action 4.5.2). Close and rehabilitate disturbed areas and illegal access not required for public use or management (see also action 4.5.3).
- 1.1.4 Manage recreational and other uses to minimise erosion, changes in soil structure and degradation of catchment values (see also section 1.4 Catchment management and water quality guidelines, and actions 4.1.2, 4.1.3, 4.2.3, 4.2.6, 4.2.8 and 4.2.12).
- 1.1.5 Prohibit the extraction of sand, clay, rock, and gravel from the planning area, except for essential management work where no practical or prudent alternative is available and where the NPWS considers, through its environmental assessment process, that the environmental impacts are acceptable.
- 1.1.6 Minimise erosion arising from prescribed burns and wildfires in fire planning and management programs (see also section 3.1: Fire management).
- 1.1.7 Develop and commence implementation of a dune stabilisation strategy to facilitate restoration and/or stabilisation of key 'sand blow' erosion sites.
- 1.1.8 Design and maintain beach access points to minimise wind erosion and subsequent dune and vegetation damage (see also action 4.6.6).
- 1.1.9 Monitor limestone ecosystems with a view to implementing protection measures if necessary.

## 1.2 TERRESTRIAL PLANTS AND ANIMALS

*See appendices, tables A1, A2 and A4*

### BACKGROUND

Biodiversity refers to the variety of lifeforms, the ecological processes and the different flora, fauna and micro-organisms that interact to support and sustain the balance of nature. Myall Lakes National Park's biodiversity is rich. The park not only has a diverse range and abundance of animal and plant species, but also plays an important role in linking key fauna habitats to the north and west. Myall Lakes National Park is also at the southern and northern extremity of the distribution of many plant and animal species, and their associated communities.

The vegetation types that probably most characterise the Myall Lakes NP are the dry open forests and heathlands that dominate the extensive sand mass that makes up much of the park. Over one-fifth (8,186 ha) of the vegetation within the park consists of dry open forest/woodland. This community dominates the northern part of the park but extends as far south as Hawks Nest. Good examples occur on the western side of Mungo Brush road, south of Mungo Brush. This community occurs on well-drained Quaternary sands and sed-

iments generally on flats and lower slopes, however, may extend onto low-lying crests where deep sands exist. The main canopy species include Smooth-barked Apple (*Angophora costata*), and /or Blackbutt (*Eucalyptus pilularis*) and Old Man Banksia (*Banksia serrata*) while the understorey consists mainly of shrubby heath species.

Another closely associated community is the Banksia shrubland/heathland/woodland community, locally known as ‘the Moors’. This community occurs mainly on flats on a variety of sandy soils which often have complex peat layers and clay lenses. The complex soil profile and subtle differences in the level of the water table within the sand mass may determine the occurrence of either wet or dry heath and the many sub-communities that occur within them. An example of this community can be seen on the western side of the Myall River and to the west of the old sand mining road. At least 135 different plant species have been found to occur in this community with the main indicator species being Wallum Banksia (*Banksia aemula*), Coastal Banksia (*Banksia integrifolia*), Old Man Banksia (*Banksia oblongifolia*) and several *Leptospermum* species. Closely associated with these heath communities are sedgeland which occur on areas that are generally semi-permanently inundated.

Fringing the eastern edge of the sand mass is a narrow ribbon of vegetation referred to as the ‘Dune Complex’. This includes a number of different community types that are either so small or otherwise are so integrated with other community types that it is preferable to deal with them as a single unit. The Dune Complex is often disturbed as a result of tidal, wind and storm action. Components include sandy grassland, herbfield, open scrub, closed scrub and occasionally low closed forest (littoral rainforest). Similarly, fringing the lake system there is ribbon-like swamp forest community consisting of Broad-leaved Paperbark (*Melaleuca quinquenervia*) and Swamp Oak (*Casuarina glauca*).

A large area of the park (10,223 ha) consists of dry open forest dominated by Spotted Gum (*Corymbia maculata*). This includes two communities, one being the Spotted Gum-Tallowwood/Grey Gum type and the other, the Spotted Gum-Smooth-barked Apple type. These communities are found in a variety of landforms from coastal dune areas to upland locations and on some lake margins (Shelly Beach and Tickerabbit) on sedimentary, acid volcanic rock types and Quaternary sands.

Adjacent to Myall Lake (One Horse Sands) — but also on the Bombah Broadwater around Myall Shores and in the western part of the park — there is a grassy open forest community in which Smooth-barked Apple (*Angophora costata*) and Tallowwood (*Eucalyptus microcorys*) are a major component. There is also a shrubby woodland/tall heathland dominated by banksia and Smooth-barked Apple. This small community of about 192 hectares mainly occurs to the south of Seal Rocks.

Four different communities which contain Tallowwood (*Eucalyptus microcorys*) as a major component are found mostly on the western side of the lake system. Important locations are at O’Sullivan’s Gap and at the site of The Grandis. These communities occur mainly on sedimentary soils and to a lesser extent on acid volcanics and Quaternary sediments. Some parts of these communities have been heavily logged in the past. These communities particularly include the Tallowwood/Flooded Gum and Tallowwood-Turpentine types which form spectacular tall, moist, open forests. In the Tallowwood/Flooded Gum type, Flooded Gum (*Eucalyptus grandis*) may typically dominate the stand. The understorey of these forests generally consist of rainforest species which, given sufficient time without fire, may suppress

further eucalypt recruitment with a consequent potential for expansion of rainforest.

There is a community dominated by Ironbark and Grey Gum that occurs on flats but ranges to upper slopes mainly in the west of the park. The principal indicator species are Grey Ironbark (*Eucalyptus siderophloia*), Small-fruited Grey Gum (*Eucalyptus propinqua*) and Tallowwood (*Eucalyptus microcorys*).

The amount of rainforest occurring within the park is quite restricted, probably as a result of fairly frequent and intense fire activity. The major rainforest community occurs at Mungo Brush and is only 67 hectares in size. This community is dominated by Cabbage Palm (*Livistona australis*). Associated species — of which there are at least 65 — include Shining-leaved Stringing Tree (*Dendrocnide photinophylla*), Scentless Rosewood (*Dysoxylum fraserianam*), Broad-leaved Paperbark (*Melaleuca quinquenervia*) and Yellow Tulip (*Drypetes lasiogyne*). This community has a high average percentage of introduced species (18.5%) compared to other communities within the park. Due to the edge-effect this particular community is under considerable pressure from weed invasion.

Broughton Island, which lies about three kilometres to the east of the mainland, is covered mainly by Kangaroo Grass (*Themeda australis*), Blady Grass (*Imperata cylindrica* var. *major*) and Bracken Fern (*Pteridium esculentum*), with a few scattered Paperbark (*Melaleuca* spp.) and exotics such as the Cockspur Coral Tree (*Erythrina crista-galli*). Tree Broom-heath (*Monotoca elliptica*) also grows in clumps on the western end of the island. According to Hunter (2000), Broughton Island suffers from an ‘unnatural high fire frequency’ which has significantly reduced species richness and has also encouraged the spread of a number of weed taxa.

Yacaaba Headland is located about seven kilometres to the south of the main section of Myall Lakes National Park. The headland has a diverse range of vegetation communities, some of which are not represented throughout the remainder of Myall Lakes National Park or the Myall Coast Reserves. These communities consist of dry/open forest woodland occurring on the Quaternary sands to the north and west. Exposed coastal scrub (*Acacia binervia*, *Melaleuca armillaris*) dominates the sea cliffs and ridges. Three separate rainforest pockets, containing a different species composition and structure reflecting their different locations, range from littoral, dry and subtropical rainforest.

The diverse range of vegetation communities also supports a diverse range and abundance of animals. Over 352 species of animals have been recorded. This includes 280 bird, 41 mammal, 15 amphibian and 16 reptile species. Extensive small terrestrial mammal studies have been carried out in Myall Lakes National Park, particularly in relation to fire (Fox 1982; Fox 1983; Fox & McKay 1981; Higgs & Fox 1993). The park is considered to have a high diversity of small terrestrial mammal species such as native mice and rats, antechinus and melomys.

Of the fauna species, 24 are listed as vulnerable and five are classified as endangered under the Threatened Species Conservation Act. The park provides habitat for the endangered Black-Necked Stork (*Ephippiorhynchus asiaticus*) and Little Tern (*Sterna albifrons*). Vulnerable species include the Masked Owl (*Tyto novaehollandiae*), Powerful Owl (*Ninox strenua*) and Wompoo Fruit Dove (*Ptilinopus magnificus*). Other endangered fauna species include the Green and Golden Bell Frog (*Litoria urea*), of which there is a significant community on Broughton Island. Vulnerable mammals, amphibians and reptiles include the

Little Bent-Wing Bat (*Miniopterus australis*), Spotted-Tailed Quoll (*Dasyurus maculatus*), Koala (*Phascolarctos cinereus*), Eastern Chestnut Mouse (*Pseudomys gracilicaudatus*), Wallum Froglet (*Crinia tinnula*) and the Stephens Banded Snake (*Hoplocephalus stephensii*).

Table A1 in the appendices lists the endangered or vulnerable plant and animal species, while Table A2 lists the endangered and vulnerable fauna species known to occur in the park. There are no endangered or vulnerable plant and animal species known to occur on the Myall Coast Reserves.

Under the Threatened Species Conservation Act, the NPWS prepares recovery plans which aim to recover and prevent the extinction of animals and plants that are listed as threatened under the Act. A draft recovery plan has been prepared for one species (Little Tern) and plans are in preparation for three other species.

Migratory bird species protected under JAMBA and CAMBA agreements regularly visit and utilise a variety of habitats across Myall Lakes National Park. An estimated 25 JAMBA/CAMBA species have been recorded or have a high probability of occurrence within the park based on the presence of suitable habitat.

## ISSUES

---

- The fauna record is incomplete. Knowledge of some classes of fauna, especially reptiles (herpetofauna), is very limited. Current state of knowledge does not allow a realistic assessment to be made of the long-term viability of all plant and animal species and communities within the park.
- The long-term protection of some of the park's plant and animal species may be at risk due to the effects of human disturbance within and outside of the park. It is not known for example, whether 4WD beach driving activity is impacting on the threatened plant species, *Chamaesyce psammogeton*, found in the dune system.
- The Myall Lakes vegetation study (Hunter 2000) identified the following as key general threats to plant communities:
  - inappropriate use of 4WD vehicles within woodland and heathland communities, particularly on the beach dune system;
  - competition from pest plant and animal species;
  - impact of camping, including boating, on foreshore swamp and forest communities particularly on the Broadwater, and in some open forests on lake margins;
  - inappropriate fire regimes; and
  - disturbances from past logging activities, sand mining and pine plantations.
- Some plant communities near the beach dune system are threatened by suffocation from sand drift.
- The feeding of wildlife, either inadvertently or deliberately, by park visitors has resulted in potential conflicts between visitor safety and enjoyment and wildlife protection.

## DESIRED OUTCOME

---

Development of an improved knowledge base about the type, abundance and threats to native plants and animals within the planning area, to assist with ensuring a secure prospect of survival for all terrestrial plant and animal species native to the planning area.

## GUIDELINES AND ACTIONS

---

- 1.2.1 Undertake systematic fauna surveys within the planning area with priority given to reptile surveys, migratory species under JAMBA and CAMBA, and surveys in former forestry areas.
- 1.2.2 Give priority to research into the impact and management of threatening processes (for example, fire and invasion from exotic species) on native plants and animals (see also sections 3.1: Fire management, 3.2: Introduced plants and 3.3: Introduced animals).
- 1.2.3 Maintain fauna habitat through the control of introduced species, recreation-related impacts and appropriate fire management regimes (see also strategies 3 and 4).
- 1.2.4 Rehabilitate disturbed areas and illegal access tracks not required for public use or management (see also actions 4.5.3 and 4.5.4).
- 1.2.5 Use species indigenous to the park in planting and bush regeneration programs, except for grasses in high visitor use areas, provided that they are proven to cause no environmental degradation to the park through growth patterns and spread.
- 1.2.6 Implement recovery plans as prepared under the Threatened Species Conservation Act for species, communities and populations listed as endangered or vulnerable.
- 1.2.7 Encourage the retention and, where possible, improvement of wildlife corridors linking the park to other large naturally vegetated tracks of land.
- 1.2.8 Promote the understanding and protection of native plants and animals through interpretation programs (see strategy 4.12).
- 1.2.9 Continue the implementation of signage and information strategies to discourage visitors from feeding wildlife.

## 1.3 AQUATIC PLANTS AND ANIMALS

### BACKGROUND

The conservation and preservation of aquatic vegetation communities is essential for maintaining ecological balance within the park. Aquatic flora provides extremely important habitat for invertebrates, fish, frogs, birds and mammals in providing food, shelter, and spawning and nesting sites. This is particularly true for migratory bird species, protected under JAMBA and CAMBA agreements, which regularly visit and utilise a variety of habitats across Myall Lakes National Park.

Both NSW Fisheries and the NPWS have responsibilities for managing aquatic vegetation and fauna. The NPWS manages the lakebeds, which are gazetted as part of Myall Lakes National Park. Under the National Parks and Wildlife Act, the NPWS is responsible for managing protected native plants and animals within the lake and surrounding area. The NPWS is also responsible for the protection and care of amphibians, mammals and reptiles as well as waterbirds and waders.

NSW Fisheries administers the *Fisheries Management Act 1994*. The objectives of this act include the conservation of fish stocks and key fish habitats, threatened species, populations and ecological communities of fish and marine vegetation. Marine vegetation is defined as any species of plant that at any time in its life must inhabit water (other than fresh water). The term 'fish' under the Act includes aquatic invertebrates and other organisms not explicitly covered by the National Parks and Wildlife Act.

The extent of aquatic flora distribution and diversity throughout the lake system is not well known. However, the salinity regime influences the diversity and abundance of species. In the muddy sand substrates of Bombah Broadwater, Boolambayte Lake and Myall Lake, there is a mosaic of vegetation communities. These range from areas of sand which contain little or no aquatic vegetation and areas that contain dense vegetation in which the emergent seagrass *Ruppia* and aquatic species of *Myriophyllum* and *Vallisneria* as well as saltmarsh (*Triglochin* spp.) dominate, depending on salinity levels (Atkinson *et al.* 1981).

Shoreline vegetation is extremely important to the ecology of the lakes, providing food and shelter for many fish and other organisms as well as stabilising the banks, stopping erosion and subsequent siltation, and contributing organic matter to the system. Along the shoreline of the lakes is a rich diversity of plants that respond to the wetting and drying cycles of the lakes and subsequent salinity fluctuations. The shoreline of the wetlands is dominated by the emergent vegetation Broad-Leaved Cumbungi (*Typha* spp.), Common Reedgrass (*Phragmites australis*), Sedge (*Cladium procerum*), Leptocarpus (*Leptocarpus tenax*) and Scirpus (*Scirpus litoralis*) (Timms 1982).

Crustaceans, molluscs and polychaete worms in the Myall Lakes system are important food sources for many aquatic and terrestrial animals. The Myall Lakes support a diverse range of waterbirds and are a refuge for birds during drought years. On certain parts of the lakes, an abundance of waterbirds is regularly seen. At least 55 waterbird species have been recorded within the park, four of which are listed under the Threatened Species Conservation Act. Many waterbirds feed on aquatic invertebrates at lake margins or in intertidal areas.

The lake system is also an important breeding area for many fish and crustaceans (Wallis 1986). Commercial fish catches in the lake include sea mullet, eel, bream, luderick, silver biddy and whiting. School prawns dominate the crustacean catch and the blue swimmer and mudcrabs are also important. Eleven frog species from two families and five genera were recorded at the Broadwater and near Neranie in 1986 and 1999 respectively. These locations have a direct association with the lake system (Llewellyn & Courtice 1999; Markwell & Knight 1986). Swamp edge habitat is extremely important to frogs because it is a moist habitat and provides suitable shelter and/or refuges and food.



## ISSUES

---

- Little is known of the existing aquatic flora and fauna communities within the Myall Lakes system, particularly their temporal and spatial distribution and their role in maintaining the health of the aquatic environment.
- The impacts of boating activities, especially the impacts of anchors and moorings on aquatic plants and animals, are not known.
- Plants which are susceptible to the impacts of boat wash, turbidity and turbulence are likely to be eliminated or reduced in heavy use areas (Kuss *et al.* 1990). Unfortunately, there is no data on the susceptibility of aquatic vegetation species found in Myall Lakes. It is likely that seagrass is very sensitive and phragmites is more tolerant. Initial assessment also indicates that freshwater macrophytes are susceptible to anchor damage.
- There is a threat from aquatic weed and organisms (for example, the weeds salvinia and parrots feather) being introduced via catchment flows during flood events or other means.

## DESIRED OUTCOME

---

Management programs to secure the survival of all aquatic plant and animal species native to the planning area in collaboration with other agencies.

## GUIDELINES AND ACTIONS

---

- 1.3.1 Support and encourage any initiatives by NSW Fisheries to manage aquatic fauna and habitat within the waters of Myall Lakes National Park.
- 1.3.2 Encourage further research and monitoring of the aquatic flora and fauna communities by external institutions and agencies to facilitate an understanding of their role in the healthy functioning of the aquatic environment, so as to assess threats and methods of reducing threats.
- 1.3.3 Monitor catchment characteristics in conjunction with relevant agencies. Implement catchment management policies and programs to control water quality (see section 1.4: Catchment management and water quality).

## 1.4 CATCHMENT MANAGEMENT AND WATER QUALITY

### BACKGROUND

The Myall Lakes catchment covers an area of 780 km<sup>2</sup>, with the combined lake system covering between 100 and 150 km<sup>2</sup>, depending on water level. Over one-third of the Myall Lakes catchment is within Myall Lakes National Park.

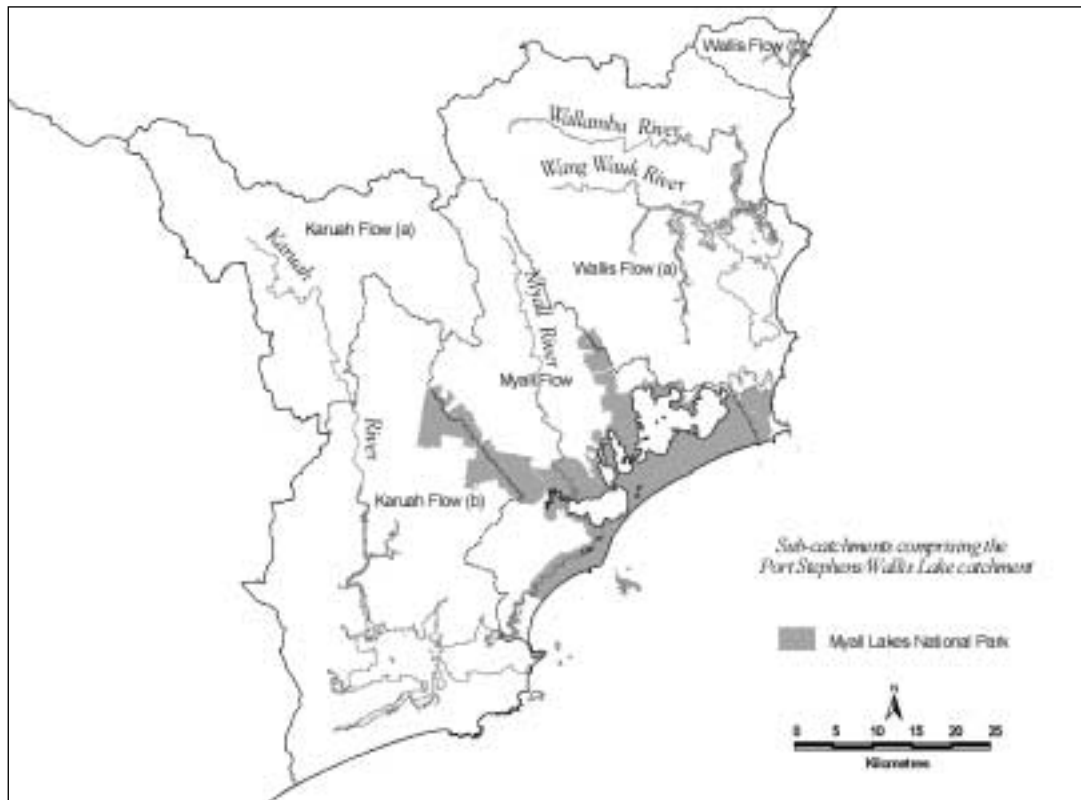


Figure 2: Catchment of Myall Lakes National Park

The Myall and Crawford rivers and Boolambayte Creek provide the major inputs of freshwater into the Myall Lakes system. Other inputs are from rainfall and groundwater. The Myall Lakes system can be described as a ‘large retention basin’ capturing flows from the Myall River and then slowly releasing these flows into the Port Stephens estuary. Dissipation of water from the lakes to the ocean is slow due in part to the constricted entrance channel in the lower Myall River. It is estimated that it would take approximately 750–800 days to flush the entire volume of the Myall Lakes system (DPWS 1999).

The Myall Lakes are a series of fresh, saline and brackish water bodies of differing depths and associated vegetation types. They have a shallow and roughly uniform water depth (2.4–3.7 m), with a maximum depth of 8 m in the Myall River and 11 m in the Violet Hill passage. Water level fluctuations are associated with rainfall rather than tidal influences. The mean water levels of the lakes are higher than the ocean, reflecting the constricted entrance channel in the lower Myall River and comparatively slow dissipation of freshwater from the lakes to the ocean.

The Broadwater displays the greatest variation in salinity because of tidal and freshwater inflows (DPWS 1999). Freshwater inflows via the Myall River, Boolambayte Creek and the swamps on the eastern shore following heavy rainfall dramatically reduce the salinity levels of the Broadwater, Boolambayte Lake and the lower Myall River, while in dry periods the salinity increases (Johnson 1976).

The majority of the Myall Lakes catchment is naturally vegetated and is predominantly found in state forests and the national park. In cleared areas along the floodplains of the

Myall River, land is used primarily for grazing, with some broiler chicken sheds and dairy farming. Other activities within the cleared areas, especially at Bulahdelah, include residential, commercial and industrial developments, roads and recreational facilities. Part of the village of Bungwahl, located on the northern shores of the Myall Lake, is also in the catchment. In some of the hillier areas, State Forests of NSW continues to undertake timber harvesting.

Several indicators of water quality have been measured over time in the Myall Lakes system. These indicators include dissolved oxygen, nutrients (nitrogen and phosphorus), and chlorophylla. Nutrients and dissolved oxygen are essential for growth of aquatic ecosystems. However, if present in excessive quantities, nutrients can stimulate excessive aquatic plant and algal growth. Changes in the concentration of dissolved oxygen can be attributed to temperature, salinity, respiration, decomposition of organic matter and turbidity and may have wide-ranging impacts on aquatic communities.

The Myall Lakes system has a diverse phytoplankton community, which is little understood. As least twelve species of blue-green algae have been recorded throughout the lake system, some of these species have been recorded at prolific levels, which are termed 'algal blooms'. Since April 1999, a number of blue-green algae species have reached 'bloom' levels in the lake system with *Anabaena circinalis* and *Microcystis* species proliferating in the Broadwater Lake. In 2000 and early 2001, different species dominated the lakes. *Chroococcus* and *Merismopedia* reached bloom levels throughout the entire lake system. These numbers had substantially declined by June 2001.

Recent water testing has indicated that high levels of phosphorus and nitrogen are transported from the catchment into the rivers and lakes following rainfall. Sources of these nutrients have been increased through changes in landuse, for example, agriculture and urbanisation (RACC 2000). The blue-green algae blooms which have been observed in the lake system since 1999 are indications of nutrient enrichment (DLWC 1999).

Activities such as land clearing and the overuse of fertilisers within the catchment can impact on the water quality of the Myall Lakes system. The *Catchment Management Act 1989* provides a framework to identify and minimise such impacts and to aim for, amongst other matters, cleaner water, less soil erosion, improved vegetation cover, the maintenance of ecological processes, and a balanced and healthier environment.

The formation of catchment management boards is an important means of achieving identified catchment management aims. The NPWS has been actively involved in the Manning, Karuah and Great Lakes catchment management committees and will continue its participation through the (newly formed) Lower North Coast Catchment Management Board. The NPWS is also an active participant in the Port Stephens and Myall Lakes Estuary Management Committee and the Smiths Lake Estuary Management Committee, which have prepared respective estuary management plans. The Port Stephens–Myall Lakes Estuary Management Plan (Umwelt Australia 2000) relates to all of the waterways within Myall Lakes National Park including the Myall River. The Smith Lakes Estuary Management Plan (Webb *et al.* 2001) relates to Smiths Lake, of which the southern foreshore is within the park. The recommendations in this plan of management are consistent with and often expand on the recommendations in the estuary management plans.

Under the *Protection of the Environment Operations Act 1997*, the surface waters of Myall

Lakes have been classified ‘P’ (protected waters), while the groundwaters have been classified ‘U’ (underground protected waters), which is the highest level of protection afforded under the Act. These classifications have implications for the quality of water permitted to discharge into the system.

The *Water Management Act 2000* recognises the need for specific measures to protect or restore flows to meet environmental needs and to provide water for groundwater-dependent ecosystems. It also promotes proper consideration of cumulative impacts of decisions. Specific provisions aimed at achieving these environmental outcomes are incorporated within the Act. This includes the formulation of water management plans and the classification of water sources with respect to the extent of their risk, extent of stress and conservation value.

## ISSUES

---

- Blue-green algae blooms have been officially recorded within the lakes system since 1999 (anecdotal evidence suggests that algae blooms have occurred in the lake system before 1999). While the ecological impacts of these blooms on the lake system is not understood, occurrence of blooms has substantial implications for recreational and commercial activities on the lake system.
- Land uses across the catchment have contributed to blue-green algae blooms in Myall Lakes. The NPWS has little direct control over inputs into the lake system as a result of land use within the catchment, and resulting impact on water quality. The NPWS is therefore dependent on a cooperative catchment-based approach to management.
- Nutrient form and concentration within the water column is one of the major factors contributing to the formation of algae blooms. However, other factors also contribute to the formation and species composition of algae blooms including salinity, water temperature and mixing within the lake.
- Heavy recreational use of the lake by houseboats and lakeside campers has the potential to add nutrients to the water (DPWS 1999).
- There is potential for groundwater contamination at disused sullage disposal sites.
- The bed of the Myall River is not part of the park.

## DESIRED OUTCOME

---

Implementation of policies, programs and procedures to ensure that the quality of waters entering, and within, the park are within the limits necessary to maintain natural processes, biodiversity, ecological integrity and visitor safety.

## GUIDELINES AND ACTIONS

---

- 1.4.1 Undertake research into the nutrient dynamics and ecological processes of the lake system in collaboration with relevant agencies and research institutions, to increase understanding of nutrient issues.
- 1.4.2 Ensure best-practice nutrient management within the park and work with the community to reduce nutrient inputs across the catchment.
- 1.4.3 Encourage park visitor behaviour that minimises nutrient input to the lake system, through the design and implementation of appropriate services for public-use areas in the park and the display and promotion of relevant information.
- 1.4.4 Develop guidelines and information strategies to reduce disposal of grey water from onshore into the lake system and to reduce the introduction of products such as chemicals and soaps into the water from both land and water-based activities.
- 1.4.5 Maintain programs for the ongoing monitoring of ground and lake water quality in collaboration with relevant government agencies and the community.
- 1.4.6 Monitor blue-green algae populations within the lake system, in collaboration with relevant agencies, to provide information that may assist in developing appropriate responses. Informing park visitors when a health risk exists in regards to blue green algae blooms through the erection of relevant signage.
- 1.4.7 Support the principles of catchment and estuary management and liaise with local government, other authorities and the community to maintain and improve the water quality of the Myall Lakes system and associated catchment.
- 1.4.8 Actively contribute to the implementation of the Port Stephens–Myall Lakes Estuary Management Plan (Umwelt Australia 2000) and the Smith Lakes Estuary Management Plan (Webb, McKeown & Associates 2001) as they relate to the land and waterways within Myall Lakes National Park.
- 1.4.9 Actively support the development and implementation of the Myall River Catchment Management Plan and the Lower North Coast Catchment Blueprint.
- 1.4.10 Actively contribute to the development and implementation of the relevant water management plan for the catchment (which will be developed under the *Water Management Act 2000*).
- 1.4.11 Support proposals by the Waterways Authority of NSW to designate the Myall Lakes system a ‘no discharge zone’ for treated and untreated sewage from all vessels (see also section 4.9: Waterways).
- 1.4.12 Investigate options for adding the bed of the Myall River, where it adjoins the park, to Myall Lakes National Park.
- 1.4.13 Investigate and develop appropriate strategies to address the potential for groundwater contamination at disused sullage sites.

## 1.5 WETLANDS

### BACKGROUND

#### **The Ramsar Convention and ‘wise use’**

The Ramsar Convention is an international treaty which was adopted in February 1971 in the Iranian city of Ramsar. Australia was one of the first signatories to the Convention. Wetlands listed under the Ramsar Convention represent some of the best examples of the world’s wetlands in terms of their ecological and hydrological functions, as well as their biodiversity, social and economic values. Consequently, they need to be managed carefully, balancing resource use with conservation so that their ecological processes remain intact and they can continue to provide benefits to present and future generations. This constitutes the Ramsar Convention’s ‘wise use’ provisions, which all member countries are obliged to implement.

#### **The significance of the Myall Lakes wetlands**

The wetlands of Myall Lakes National Park were listed as a Ramsar site in June 1999. They constitute one of only nine Ramsar sites in NSW and over 50 Australia-wide. To be listed as a Wetland of International Importance, a wetland must meet at least one or more internationally-accepted criteria. At the time of listing, Myall Lakes wetlands met the following Ramsar nomination criteria:

**Criterion 1 (1a and c):** Represent a particularly good example of brackish barrier lagoon systems which occur in the North Coast biogeographic region because of the extensive area they cover and their near-natural condition. They also play an important ecological role in the functioning of this major coastal system.

**Criterion 2 (2a):** Support a diverse range of native flora and fauna including an appreciable number of threatened species and ecological communities which are listed under state and national threatened species legislation.

**Criterion 3 (3b):** Regularly support over 20,000 waterbirds, including migratory species covered under international agreements (China–Australia and Japan–Australia migratory bird agreements).

#### **Wetland types occurring in the park**

The Ramsar Convention defines wetlands fairly broadly as:

. . . areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water . . . incorporating riparian and coastal zones adjacent to the wetlands, islands or bodies of marine water deeper than six metres at low tide lying within the wetlands . . .

Within Myall Lakes National Park, the convention recognises seven wetland types:

- rocky marine shores including off-shore islands and seacliffs;
- sand shores including sand bars, spits and dune systems;
- estuarine waters;
- intertidal marshes including tidal brackish and freshwater marshes;
- coastal brackish lagoons which connect to the sea; and
- coastal freshwater lagoons.

These wetland types support a variety of habitats including:

- the submerged and emergent aquatic communities of the open-water lakes and their fringing reed swamps and forests;
- swamp forest and wet heath scattered throughout the dunes where the water table is close to the surface;
- wet heath forest on uneven, poorly drained low-lying sand ridges;
- sedge swamps on areas of open water within the dunes; and
- thickets on rocky headlands facing the sea (Myerscough & Carolin 1985).

### **The EPBC Act and the management of Myall Lakes wetlands**

In July 1999, the Commonwealth Government introduced the Environment Protection and Biodiversity Conservation (EPBC) Act which replaces a number of Commonwealth environmental laws and focuses on matters of national environmental significance (NES). Ramsar wetlands are one of six NES matters; others include migratory species and nationally listed threatened species and communities. Actions with the potential to have a significant impact on an NES matter can trigger Commonwealth assessment and approval processes. In the case of Ramsar sites, this includes actions within the catchment of the wetland which may have a detrimental impact on its ecological character.

Once a wetland is Ramsar listed, the Commonwealth must use its best endeavours to ensure the preparation of a Management Plan, in cooperation with the relevant state and/or territory. The management plan should be consistent with Australia's obligations under the Ramsar Convention and the Australian Ramsar Management Principles. These principles are set out in the regulations to the Environment Protection and Biodiversity Conservation Act and cover matters relevant to the preparation and review of management plans, the environmental assessment of actions that may affect the site, and community consultation processes. The Myall Lakes National Park Plan of Management has attempted to address these principles in seeking to balance recreational uses with the conservation needs of these important wetlands and to collaboratively manage the site in the context of its broader catchment.

## **ISSUES**

---

- Management should be based on an integrated catchment approach in order to protect the values of the wetlands.

- There needs to be provision for continued monitoring and reporting of the ecological character of the wetlands.
- Any ongoing restoration or rehabilitation works required to maintain the ecological character of the wetlands needs to be identified.
- Aboriginal and other community involvement in the ongoing management of the wetlands should be considered and facilitated.
- The values for which the wetlands were Ramsar listed requires promotion.

## **DESIRED OUTCOME**

---

Part fulfilment of Australia's international obligations under the Ramsar Convention by providing an integrated management framework for the 'wise use' and conservation of the Myall Lakes wetlands.

## **GUIDELINES AND ACTIONS**

---

- 1.5.1 Adopt an integrated catchment management approach (see section 1.4: Catchment management and water quality).
- 1.5.2 Monitor the ecological character of the wetlands to determine extent of restoration or required rehabilitation works.
- 1.5.3 Pursue external avenues of funding (for example, through government and private grants) to assist with works identified in accordance with action 1.5.2.
- 1.5.4 Consult with and actively involve local Aboriginal groups, including the Karuah and Forster Local Aboriginal Land Councils, and other community groups in wetlands management (see also action 2.1.1).
- 1.5.5 Encourage community understanding and appreciation of the natural values of the wetlands (see also action 4.12.1).



## *Management Strategy 2*

# Cultural Heritage



## 2.1 ABORIGINAL HERITAGE

### BACKGROUND

The area now covered by Myall Lakes National Park was occupied by the Worimi people whose territory extends south to Maitland and the Hunter River, north to Forster–Tuncurry, and as far west as Gloucester. The occupation of the Myall Lakes area by the Worimi has left rich and varied evidence including scarred trees, open campsites, burial grounds, stone arrangements, middens, rock engravings and a fish trap. The Worimi lived a traditional fisher–hunter–gatherer lifestyle. They utilised many of the area’s natural resources, including the freshwater lakes, stone outcrops, the ocean and the native flora and fauna. The Worimi also altered their natural environment through the use of fire.

In the early years of European settlement, little effort was made to record information about the language and traditions of Aboriginal people, so comparatively little is known about Worimi tradition and culture. The first known contact that the Worimi had with Europeans was in 1790 when five convicts escaped from the Second Fleet. They were ‘adopted’ by Aboriginal people in the Hawks Nest area, who thought that they were the spirits of ancestors who had returned, and lived with them until recaptured by Captain William Broughton in 1795. From this time on, progressive impacts on the Aboriginal traditional way of living were substantial. These began with contact with cedar getters in 1816, the Australian Agricultural Company in 1826 and the arrival of settlers in 1831.

Despite being dispossessed of their land during the early European settlement of the region, the Worimi have retained a deep-felt attachment to the lands within, and surrounding, Myall Lakes National Park and have an active interest in park management. The park in general, as well as specific sites within it, are important to the Worimi and many natural features throughout the park may also be of spiritual or historic significance to Aboriginal people. Although only a small proportion of the park has been surveyed for Aboriginal sites, more than 61 are recorded in the NPWS Aboriginal Sites Register. Many more sites are likely to be found after systematic surveys are undertaken. A large proportion of these sites are middens, showing the extensive use of the coast by Aboriginal people as both a food source and meeting place.

Archaeological sites and the landscape are important to Aboriginal communities as they are a testament to their culture’s great antiquity. Aboriginal people may also have traditional spiritual links with an area and hold knowledge about the landscape that is important for nature conservation. While the NPWS presently has legal responsibility for the protection of Aboriginal sites, the NPWS recognises that Aboriginal people are the traditional owners and interpreters of their heritage, and that this culture is inseparable from the land and water. The NPWS aims to work in partnership with Aboriginal communities in the management and interpretation of landscapes within the planning area.

The Karuah Local Aboriginal Land Council (LALC) is responsible for administering the larger part of the planning area. Some of the northern sections come under the authority of the Forster Local Aboriginal Land Council. This includes those lands to the north and immediate west of Myall Lake, as well as the section north of a line running from near Yagon to the eastern shore of Myall Lake.

## ISSUES

---

- Local Aboriginal communities have expressed considerable interest in actively participating in site management (for example, in the development and implementation of management recommendations for 4WD beach-driving activity to ensure that impacts on cultural heritage values are minimised).
- The only systematic survey conducted for Aboriginal sites or assessments of the importance of landscape relates to the coastal beaches and dunes. Therefore, many sites and features outside of the coastal area are likely to be unrecorded. This has implications for our knowledge of traditional use of the area and potential impacts on sites from current recreational-use patterns.
- There is a lack of knowledge of Aboriginal use of the planning area post-European contact and settlement.
- There are a number of current recreational activities within the park known to impact on Aboriginal cultural heritage values (for example, 4WD use is damaging the Aboriginal midden site at Dark Point).
- Extensive recreational use is made of the coast where the majority of recorded sites are located. However, there are minimal site protection works and/or site interpretation to facilitate community understanding of the importance of sites and of site protection. There is also increasing demand from park visitors for access to and interpretation of Aboriginal sites.

## DESIRED OUTCOME

---

Protection, maintenance and appropriate presentation of Aboriginal heritage values as a result of recognition, respect and documentation of Aboriginal culture and sites.

## GUIDELINES AND ACTIONS

---

- 2.1.1 Consult with and encourage the involvement of local Aboriginal groups, including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified), in all aspects of landscape management, particularly of Aboriginal sites, within the planning area.
- 2.1.2 Maintain and further develop a cooperative and joint management approach of Dark Point between the Karuah Local Aboriginal Land Council and the NPWS.
- 2.1.3 Progressively survey the planning area, as resources permit, to locate and record Aboriginal sites with priority given to areas most threatened with human impact or natural deterioration. Include any recorded sites on the NPWS Aboriginal Sites Register.
- 2.1.4 Protect identified Aboriginal sites from disturbance or damage by human activities in liaison with local Aboriginal groups including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified), with priority given to areas most

threatened with human impact or natural deterioration.

- 2.1.5 Undertake an archaeological and historical assessment of works in areas with potential to impact on Aboriginal sites and values.
- 2.1.6 Only publicise the location of and/or interpret Aboriginal sites where:
- agreement of local Aboriginal groups including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified), has been obtained;
  - a conservation study has been prepared, in liaison with local Aboriginal groups including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified), and any management works necessary to protect the site from damage has been implemented; and
  - the site has been interpreted to promote public knowledge and appreciation of Aboriginal culture.
- 2.1.7 Where possible encourage local Aboriginal people to interpret their culture, including sites, to park visitors.
- 2.1.8 Monitor the impacts of visitation to sites open to park visitors in accordance with action 2.1.7 and regulate use if necessary to avoid adverse impacts.
- 2.1.9 Undertake research into Aboriginal use of the planning area post-European contact.
- 2.1.10 Encourage research activities supported by local Aboriginal groups including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified). Give priority to research that provides the basis to identify and manage sites.

## 2.2 HISTORIC HERITAGE

### BACKGROUND

The area that is now Myall Lakes National Park played an important role in early European settlement of the area. There remains rich and varied evidence of the past use of the Myall Lakes area by Europeans including graves, early sawmill sites, the fishing village at Tambooy, the remains of old farmhouses at Kataway Bay and Sunnyside, shipwrecks and artefacts. These remains and the history surrounding the park tell the story of the early cedar getters, the Australian Agricultural Company, boat-building, timber-getting, fishing, mining, farming and tourism. There are also historic records and stories of a changing way of life where often there was hardship, even in daily life, with tasks such as obtaining basic provisions presenting a challenge.

Captain James Cook was the first European known to observe the Myall Lakes coastline in 1770. However, it wasn't until 1790 that the first inadvertent exploration of the coast by Europeans occurred. Five escaped convicts from Rose Hill on the Parramatta River (Garland & Wheeler 1982) wrecked their stolen sailing vessel on the north shore of Port Stephens on 29 September 1790. Exploitation of cedar began soon after and continued for a number of years until no more cedar remained. The timber cutters remained in the region to mill hard-

wood and in the 1860s the need for rail timber (sleepers, bridges and carriages) increased. Timber mills operated at various times at Bulahdelah, Boolambayte Creek, Hawks Nest, Myall River, Bungwahl, Neranie and Mayers Point. Large-scale milling continued in the area until 1973 (Clements 1988).

From the mid 1800s the substantial timber trade on the lakes used 'droghers' or barges. Originally the vessels were propelled by poles but later ones were paddle-wheelers. Parts of the historic tramline, which ran from Wootton down to Mayers Point and where logs were sawn into hitches and transported over water to Newcastle and Sydney, still remains. There was also a tramline connecting Neranie to Smiths Lake.

In 1825 the Australian Agricultural (AA) Company acquired a large holding of land, but surrendered it 12 years later due to its unsuitability for agriculture. The only portion retained was a small section between the upper and lower Myall River. Following the AA Company's surrender of the Myall Lakes area, a slow influx of permanent settlers began and over the years the rate of settlement increased (Garland & Wheeler 1982). Boat-building to service the timber industry began in earnest from 1840, and along with timber-getting, was the main occupation. Settlements began at Bungwahl, Neranie, Mayers Point, Nerong and Bulahdelah. By 1846, leases were offered at Boolambayte, Violet Hill, Bombah Point and on the northern side of Myall Lake. In 1851 further lots, on the eastern side of Myall Lake and also west of Bulahdelah, were offered for lease. By 1860, there were a 'great number of small farms in different parts of the lakes' (Australian Home Companion 1859). Pioneering European families in the area included names such as the Brambles, Mayers, Johnsons, Palmers, Crolls, Engel and Legges.

The fishing industry began in earnest in the Seal Rocks–Myall Lakes area around the mid-1870s; ice was used for transporting the catch, which was shipped in boxes. Prawning became increasingly popular as the population increased from the 1920s onwards and with the establishment of the Tamboy fishing village.

Heavy minerals, such as rutile, were in great demand from the 1940s on and mining applications were granted in the region as early as 1956 (Clements 1988). Exploration for heavy mineral sands, particularly rutile and zircon, began in 1957. Mineral Deposits Pty Ltd began mining the outer dune barrier of Myall Lakes in 1966. Two companies, Northern Rivers Rutile Pty Ltd and Mineral Deposits Pty Ltd, were given permission to mine the inner barrier of Myall Lakes north of Tea Gardens in 1986. Providing access for mining operations also increased accessibility to the lake and dune systems by creating a good access road to the eastern section of the lakes. The start of mining also coincided with increased public concern for the environment, and the mining at Myall Lakes became a major focal point for the struggle between conservation and mining interests for the next 15 years.

Due to public opposition to sand mining along the NSW coast, the Sim Committee was established in 1965 to provide recommendations regarding sand mining and conservation. In 1968 the committee recommended the establishment of a national park between the Broadwater and Kataway Bay, to the east of the lake system. Myall Lakes National Park, including the bed of the lakes, was approved by NSW Cabinet in 1970 and gazetted in 1972. This was the first area on the New South Wales coast outside of Sydney to be established as national park (Recher 1971).

Gazettal of additions to the park has continued for many years. Recent acquisitions of

former state forest lands to the north and south of Bulahdelah have made possible the inclusion of some of the upper catchment areas of the Myall River and different forest types. The park is now over 44,000 ha in size.

## ISSUES

---

- There are more than 70 known historic sites within the planning area, including five houses. Many of these sites have not been assessed for heritage significance and values, existing site condition and threats to the security of the site.
- There is a need to develop long-term management strategies for park heritage assets.
- Conservation plans have been prepared for the maritime archaeology of the shipwrecks of *SS Fiona* and the submarine *K-IX* (NSW Heritage Office 1999, 2000) in the Myall Lakes–Tea Gardens area, and a conservation policy for the former Neranie Village site (Longdin 1999). These plans make a number of recommendations which have not yet been implemented in relation to interpretation and site conservation.
- There is considerable interest amongst local communities in participating in heritage site management, interpretation and site protection. There is currently no interpretation of historic heritage within the park.

## DESIRED OUTCOME

---

Protection, maintenance and appropriate presentation of historic heritage values together with the active involvement of the local community in historic heritage protection and presentation.

## GUIDELINES AND ACTIONS

---

- 2.2.1 Prioritise cultural heritage places and landscapes for further investigation and, in order of identified priority, assess the heritage significance and values of sites, historic themes or routes, conditions, threats to site protection and potential conservation actions.
- 2.2.2 Based on the assessment undertaken in accordance with action 2.2.1, develop long-term conservation and management outcomes for significant places and landscapes under threat. Management options may include removal, passive management and periodic monitoring, stabilisation, adaptive re-use, cultural tourism, restoration, interpretation or other use.
- 2.2.3 Record structures and other places assessed as having minimal cultural heritage significance and no management value and determine appropriate management action, which may include retention, or removal and regeneration of sites.
- 2.2.4 Interpret a range of historic themes which tell the story of the park and reserves at a number of representative and readily accessible historic places. Emphasise the fol-

lowing important historic themes in any interpretation:

- forestry, including logging, railway, timber mills, old growth areas and vegetation;
- fishing, with emphasis on the Tamboy fishing village;
- maritime archaeology, including boat-building and shipwrecks;
- human settlement, for example, Neranie, Broughton Island, Mungo Brush, Carters;
- early recreation, for example, Mungo Regatta, Legges Camp Guesthouse;
- use of Broughton Island; and
- sand mining, and the opposition to it.

2.2.5 Incorporate the interpretation of maritime heritage of the Myall Lakes system into the proposed 'boating code of conduct' to be developed jointly by the NPWS and Waterways Authority of NSW (see action 4.9.4).

2.2.6 Undertake a site survey and historic impact assessment of management activities with the potential to damage historic places. Modify or relocate management activities to protect sites of cultural significance.

2.2.7 Comply with the International Council on Monuments and Sites (ICOMOS) Charter for the conservation of places of cultural significance (the Burra Charter), in the management of historic places in Myall Lakes National Park.

2.2.8 Record historic sites on the NPWS Historic Sites Register. Consult the database when undertaking management, recreational and site-planning activities.

2.2.9 Encourage the community, particularly those with ancestral ties, to become actively involved in the management and interpretation of historic sites. This may be achieved by encouraging and facilitating the establishment of a historical interest group.

## *Management Strategy 3*

# Park Protection





### 3.1 FIRE MANAGEMENT

#### BACKGROUND

Fire, originating from both natural and human sources, has a considerable effect on the cultural, natural and recreational values of Myall Lakes National Park. Fire, especially fire frequency and intensity, is a major determinant of the distribution, diversity and abundance of plants and animals in the park. It also affects nutrient cycles, erosion patterns and hydrological regimes as well as water quality.

The pre-European fire history of Myall Lakes National Park is not well known. Traditional fire practices of Aboriginal people in NSW have not been well researched and are, therefore, poorly understood. It is known that the Worimi's intermittent firing of the landscape increased the prevalence of grasses such as Blady Grass, Kangaroo Grass, Threawn Grass (or Kerosene Grass) and Plains Grass (*Austrostip aristiglumis*) (Hunter 2000).

Fire records for Myall Lakes National Park have been maintained on a fire history database since 1968. However, records prior to 1984 are limited. A total of 193 wildfires were recorded in Myall Lakes National Park between 1968 and 1998. Approximately 53% of these fires occur between late winter–early spring (August–October). This is associated with the driest time of the year and strong westerly winds. Broughton Island has had three recorded fires, in 1985, 1992 and 1994, each covering most of the island. There are no recorded fires in the Myall Coast Reserves.

It is believed the majority of wildfires in the park are linked to arson (NPWS Fire Records). Arson is estimated to be involved in more than half of the cases of unknown causes of fire. Only two fires have been attributed to lightning strikes. There is an average of 6.4 fires per annual fire season in the park, with an average area of 1,691 ha burnt each fire season.

Before 1972, prescribed burns were undertaken by landholders (particularly graziers) living in the area and fishers wishing to gain clearer access to the beach. Since 1972, there have been 32 burns conducted under controlled conditions, totalling approximately 1,200 ha. The majority of these have been strategic, primarily aimed at protecting assets and camping areas within and surrounding the park. In the 1980s, strip burning was routinely conducted late in the afternoon during autumn under favourable weather conditions.

The NPWS has statutory obligations under the *Rural Fires Act 1997*, to protect life and property on its lands and to prevent fire from leaving its property. High fire frequency is now listed as a key threatening process under the Threatened Species Conservation Act. Consequently, through its fire management policies, the NPWS must not only protect human life, it must also ensure the protection of the natural and cultural values within land managed by the NPWS.

The NPWS is currently preparing a fire management plan for Myall Lakes National Park and the Myall Coast Reserves. This will identify bushfire threats and requirements for the conservation of native plants and animals and cultural values, and provide the basis for management strategies and burning prescriptions. The fire management plan will also

include operational guidelines, such as maps with vehicle water points, fire trails and heli-pads. The plan will also establish community protection measures in areas of identified fire threat to life or property. Other relevant plans to be considered include the Great Lakes Bush Fire Risk Management Plan, which has recently been developed and approved by the Bush Fire Coordinating Committee.

Cooperative fire management involving the community is critical to the achievement of both life and property protection, as well as natural heritage management objectives in the area. An important part of this is NPWS's participation in the Great Lakes Bush Fire Management Committee which aims to coordinate fire management and fire control on a district basis.

## ISSUES

---

- Myall Lakes National Park contains significant natural, cultural, educational, scientific and recreational values, which may be threatened by fire.
- The park has a history of inappropriate fire regimes in certain areas (for example, the area to the east of Myall Lake). Inappropriate bush fire regimes and fire management practices could threaten the diversity of plant and animal communities.
- There is insufficient information about the effects of fire on either plant or animal communities or individual species and, in particular, the response to fire of rare and threatened plants in Myall Lakes National Park.
- The fire management plan for Myall Lakes National Park and Myall Coast Reserves requires completion.

## DESIRED OUTCOME

---

Management of fire to achieve ongoing protection of life and property within and adjacent to the planning area and the long-term conservation of natural plant and animal communities and cultural values.

## GUIDELINES AND ACTIONS

---

3.1.1 In accordance with the Rural Fires Act, National Parks and Wildlife Act and the Threatened Species Conservation Act, the primary objectives for fire management are to:

- protect identified Aboriginal cultural heritage places and landscapes;
- protect life and property;
- maintain a diverse range of fire-age classes in heath and forest communities;
- prevent a single fire event burning the area known as The Moors;
- carry out selected ecological burns on the outer sand dunes;

- protect nominated sensitive areas which have remained unburnt for long periods from fires, including littoral rainforests within the park;
  - protect known habitat areas of threatened plant species from fire until research on their fire ecology is undertaken; and
  - protect fire-prone rainforest and mesophyll vegetation in areas west of Bulahdelah.
- 3.1.2 Continue participation in the Great Lakes Bush Fire Management Committee. Consult with the Bush Fire Management Committee, volunteer Rural Fire Service brigades, park neighbours and other stakeholders, to assess bush fire threats to assets and to prioritise fuel-management treatments.
- 3.1.3 Complete and exhibit the fire management plan for Myall Lakes National Park and Myall Coast Reserves by 2003 and, following its adoption, commence implementation.
- 3.1.4 Maintain fire history data for the park and adjacent areas and incorporate this information into fire-management planning.
- 3.1.5 Encourage research into fire behaviour in the local area and the effects of fire on plant and animal communities and biodiversity, in particular, on rare and threatened plants and animals. Incorporate results into fire management programs.
- 3.1.6 Encourage councils and private developers to incorporate boundary firebreaks and other fuel-reduction measures in any development adjacent to, or in proximity of, the park.

## 3.2 INTRODUCED PLANTS

*See appendices, table A3*

### BACKGROUND

Introduced plant species (weeds) are plants that are not native to an area. Introduced plant species can impact on the conservation of local native species, recreational amenity and on neighbouring lands. Table A3 in the appendix shows significant introduced plant species that occur in Myall Lakes National Park.

The NPWS Hunter Region Pest Management Strategy (2001–2004) provides the strategic direction for pest-management activities within NPWS managed lands. The strategy establishes high, medium and low priorities for introduced plant and animal (pest) species management programs on a regional basis. Considerations in determining priorities for each pest species include:

- national or state emergency control programs;
- listing of the pest species as a key threatening process under the Threatened Species Conservation Act;

- whether the community has identified the pest species as a high priority for action (this includes pests declared under the *Noxious Weeds Act 1993*); and
- threats posed to the conservation, cultural heritage or recreational values of an area.

The strategy also identifies broad management actions for individual species and incorporates actions identified in the Mid North Coast Regional Weeds Strategy. The NPWS has a representative on the Mid North Coast Noxious Weeds Committee.

Past land-use practices in Myall Lakes National Park, such as sand mining and agriculture, have caused disturbance to natural vegetation communities. In the west of the park, clearing, grazing and altered fire regimes have provided conditions ideal for the establishment of Lantana (*Lantana camara*). Other weeds and exotic species were introduced to improve grazing or were planted in gardens and have since invaded bushland.

**Bitou Bush** was used for sand stabilisation by the former NSW Soil Conservation Service along the NSW coastline. Major Bitou Bush infestations now occur, particularly on open mobile sand dunes, on the edges of walking/vehicular tracks, and amongst inner dune systems. Bitou Bush is a threat to all coastal ecosystems. It has been declared a noxious weed, is listed as a weed of national significance and as a key threatening process under the Threatened Species Conservation Act. The NPWS commenced bitou bush control programs in 1994. Bitou bush mapping showing the extent of infestation in the park was undertaken in 1998 and control priorities were established from this information. High priority areas include any isolated infestations which are establishing along road edges or disturbed areas, such as Seal Rocks Road, Broughton Island, Mungo Brush Road and isolated or scattered infestations within vegetation communities in the park. Control programs include herbicide spraying, biological control agent releases (Tip Moth, Seed Fly, Boneseed Beetle and Tortoise Beetle) and physical removal.

**Salvinia** (*Salvinia molesta*) is a small, hardy, free-floating aquatic fern, highly invasive and capable of explosive rates of growth which enable it to rapidly form dense floating mats. Salvinia was first recorded 4.5 km outside Myall Lakes National Park in Boolambayte Creek and has since moved downstream into the park. In 1998 the NPWS and Great Lakes Council initiated a salvinia control program. The program involved the preparation of a control strategy and the use of integrated techniques including physical removal, herbicide application, release of biological control agents and the erection of containment fences. In August 1999, the NPWS developed a draft salvinia community strategy to promote community awareness and facilitate community involvement in the management of Salvinia. This program has been successful in reducing the distribution and abundance of the aquatic weed Salvinia and raising community awareness.

**Lantana** is another common weed occurring throughout the Park and is largely restricted to areas of previous disturbance. Lantana has established in a variety of vegetation communities including dry and wet sclerophyll forest and rainforest. Lantana is common in many of the recreational areas including Violet Hill, Johnsons Hill, Neranie, Shelly Beach and previously cleared areas along road edges in the western sections of the park. Lantana control programs have been undertaken since 1995 with the major aims of improving the amenity of recreational areas, maintaining access along management trails and treating isolated infestations. Three biological control agents have recently been released, including a

beetle, a stem-mining insect and rust fungus.

The **rainforest area** around Mungo Brush has previously been disturbed through land clearing. In this area there is a variety of garden escapes which pose a threat to the rainforest community. Rehabilitation programs were undertaken in the late 1970s, but follow-up was restricted to the areas adjoining the camping areas. In order to protect two threatened plant species, *Syzygium paniculatum* and *Senna acclinis*, a rehabilitation plan has been prepared and a program was commenced in 1999 to regenerate the disturbed area. This program has also incorporated weed control in the Mungo Brush camping area and along the Tamboy Track. Weed species being treated include Cassia (*Senna pendula*), Cape Ivy (*Delairea odorata*) and Mist Flower.

**Other weeds** which are emerging as new problems include Cassia (*Senna pendula*) along Seal Rocks Road and the Mungo Track near Tamboy and Asparagus Ferns (*Protasparagus* spp.) at Korsmans Landing and adjoining Myall Shores at Bombah Point. Some of these weeds are direct escapes from past dwelling sites. A variety of introduced plants are also present at former dwelling sites in the park (for example, Boolambayte Lake and at Kataway). Aquatic weeds other than Salvinia entering the Myall Lakes from the upper catchment are an emerging issue with the potential to establish and proliferate in the lake system.

**Weed control works** in The Grandis picnic area commenced in 1999. The works have involved the treatment of Lantana and Mist Flower in the rainforest and wet sclerophyll forest surrounding The Grandis picnic area.

**Coral Trees** (*Erythrina sykesii*) were previously planted in some of the recreational areas within the park. Coral Trees are a safety hazard in recreational areas (Mungo Brush and Neranie) because the softwood often succumbs to borers. Following rain periods the extra weight from water on the leaves can cause healthy-looking limbs to fall.

**Pine plantations** occur adjoining, and within, southern sections of the park along the lower section of the Myall River. Pine wildlings presently occur in small, scattered numbers and often in disturbed locations along roadways in Myall Lakes National Park such as Mungo Track and Yagon Road. A removal program has begun to reduce isolated plants from surrounding plantations. Pine trees have been removed along the Mungo Brush Road.

A variety of **annual weeds** occur within Myall Lakes National Park. These weeds are largely restricted to disturbed road edges and camping areas and are likely to have minimal impact on native plant communities.

The park contains isolated occurrences of several **noxious weeds** in addition to Bitou Bush and Salvinia. The NPWS will aim to treat noxious weed infestations in accordance with the Noxious Weeds Act. Noxious weeds that are currently being treated include Noogoora Burr (*Xanthium* spp.) and Blackberry (*Rubus fruticosus*) at Neranie, and Mist Flower (*Ageratina riparia*), Crofton Weed (*Ageratina adenophora*) and Giant Parramatta Grass (*Sporobolus indicus* var. *major*) along Stoney Creek Road.

On Broughton Island and Little Broughton Island Nature Reserve, Prickly Pear (*Opuntia* spp.) has successfully established. Two biological control agents have been released. They include the Cochineal Insect (*Dactylopius opuntiae*) and Cactoblastis larvae (*Cactoblastis cactorum*). Due to the salt-laden conditions on the islands these insects have been slow to establish. Other weeds on Broughton Island occur in proximity of the huts. The weed Morning Glory (*Ipomoea* spp.) occurs at the back of the huts along the bank and has the

potential to spread throughout the island. There are also several small isolated infestations of Bitou Bush on the island.

## ISSUES

---

- Further information on the distribution and abundance of introduced plants within the planning area is required to develop appropriate control programs (especially in the western extent of Myall Lakes National Park and for species not previously mapped).
- The Myall Lakes National Park vegetation survey (Hunter 2000) identifies introduced plants as a major threat to many plant communities.
- Programs to increase community awareness and education, especially relating to the introduction and management of introduced plant species and the promotion of community involvement and partnership in weed management, are required.
- The presence and control of water weeds (such as *Salvinia*) originating from the upper part of the catchment outside of the park is emerging as a key issue.
- Control of the spread of pines into and through the park from plantations that adjoin or that are within the park, needs to be addressed.

## DESIRED OUTCOME

---

Control, and eradication where possible, of introduced plants, and if rehabilitation is required, planting of locally indigenous species.

## GUIDELINES AND ACTIONS

---

3.2.1 Undertake introduced plant species management and control in accordance with the priorities defined in the *Draft Hunter Region Pest Management Strategy* (NSW NPWS 2001b). Species defined as highest priority under this strategy are:

- Bitou Bush
- Lantana
- *Salvinia*
- Asparagus Fern
- Crofton Weed/Mist Flower
- Morning Glory (Broughton Island)

3.2.2 Treat noxious weed infestations in accordance with the Noxious Weeds Act.

3.2.3 Reduce pine wildings occurring in the park and complete an investigation into options for removal of the mature remnant plantation of *Pinus elliotii* on the western side of the lower Myall River.

3.2.4 Provide information to the community on introduced plant species and programs and

encourage neighbour and community involvement in all pest species projects. In particular, encourage community involvement in gradually replacing the Coral Trees at Mungo Brush and Neranie with local indigenous plants and in monitoring of conditions within catchment watercourses to deter aquatic weeds entering the lakes system of the park.

- 3.2.5 Improve the amenity of recreational areas by the continuation of bush regeneration programs at Violet Hill, Johnsons Beach, Mungo Brush and The Grandis.
- 3.2.6 Continue to treat road-edge weeds, to maintain accessibility and visibility and to limit dispersal opportunities via vehicles. Give priority for treatment to roads in former forestry areas and key public access roads such as Violet Hill Road, Stoney Creek Road, Mungo Brush Road and Seal Rocks Road.
- 3.2.7 Monitor the distribution and abundance of introduced plant species and biological control releases to determine effectiveness of control programs.
- 3.2.8 Monitor the occurrence of aquatic weeds in the upper catchment in coordination with Great Lakes Council and NSW Agriculture.
- 3.2.9 Continue to undertake coordinated introduced plant control programs with the Mid North Coast Weed Committee other agencies such as the Great Lakes Council, park neighbours and Landcare groups.
- 3.2.10 Implement rainforest rehabilitation program at Mungo brush to protect threatened plant species.

### 3.3 INTRODUCED ANIMALS

See appendices, table A3

#### BACKGROUND

Introduced animals include feral and domestic animal species that are not native to an area. Introduced animals have a detrimental effect upon the natural condition of the park by disturbing the native vegetation, increasing soil erosion and through competition with, or predation on, native species.

Introduced animals recorded in the park include cats (*Felis catus*), dogs (*Canis familiaris*), foxes (*Vulpes vulpes*), European honey bees (*Apis mellifera*), rabbits (*Oryctolagus cuniculus*), hares (*Lepus capensis*), horses (*Equus caballus*), black rats (*Rattus rattus*), domestic cattle (*Bos taurus*), pigs (*Sus scrofa*) and goats (*Capra hircus*).

In 1998, a survey was undertaken in the eastern extent of the park to determine the occurrence and potential impact of vertebrate pest species (Leys & Cawthorne 1998). Whilst this survey proved that dog activity was high, there was little recorded occurrence of other introduced animal species. Animal pest programs within the park have been limited to some reactive control and an annual wild dog program which has been undertaken on the boundaries of the park. This control program was planned to reduce the impact of wild dogs on domestic stock.

A small herd of goats, which is having minimal impacts on vegetation due to their declining numbers, occurs at Neranie. Both cattle and feral horses are known to occur in the western part of the park around Nerong. The Myall Lakes Vegetation Survey (Hunter 2000) identified cattle and feral horses as major threats to a number of vegetation communities.

Whilst rabbits and hares occur in scattered locations throughout the park, their numbers remain small and they pose minimal impact. However, rabbit populations and the black rat are likely to impact on Broughton Island and Little Broughton Island. Rabbits compete for habitat with ground-nesting birds whilst bush rats prey on eggs.

The *Rural Lands Protection Act 1998* identifies the rabbit, pig and dog as declared pest animals. The *Rural Lands Protection Act* identifies two schedules for wild dog control. Myall Lakes National Park has been listed in Schedule 2, which lists reserves that are considered to contain high quality dingo habitat. A requirement of the Act is the development of a 'Wild Dog Management Plan' coordinated by the Rural Lands Protection Board. Wild dogs, including dingoes, cause losses to livestock, and the NPWS recognises the need for better control programs where the attacks are caused by wild dogs moving out of lands under its control. The NPWS, therefore, has the difficult task of balancing two objectives: preventing attacks on livestock from wild dogs moving out of its reserves, and conserving dingoes in core areas of some national parks.

Statewide threat abatement plans are currently being prepared and implemented under the Threatened Species Conservation Act for predation by the red fox and cat. These plans will identify priorities and best practices for control of these species throughout NSW. The Fox Threat Abatement Plan (NSW NPWS, 2001) does not identify any high priority areas for control in Myall Lakes National Park. Recovery plans may be prepared which identify the need to control certain introduced animals.

The *Draft Hunter Region Pest Management Strategy* (NSW NPWS 2001b) identifies populations of major pest species within the park and establishes criteria for prioritising control programs. Specific details of individual programs will be addressed in operational pest control plans.

## ISSUES

---

- Introduced animals have a detrimental effect upon the natural condition of the planning area by disturbing the native vegetation, increasing soil erosion, and through predation of and competition with native species.
- Wild dogs/ dingoes can be a problem off-park predating on domestic stock.

## DESIRED OUTCOME

---

Control and eradication, where possible, of introduced animals.



## GUIDELINES AND ACTIONS

---

- 3.3.1 Undertake introduced animal species management and control in accordance with the priorities defined in the Draft Hunter Region Pest Management Strategy (NSW NPWS 2001b). Species defined as highest priority under this strategy are the wild dog, fox and introduced species existing in isolation (Broughton Island) or limited in rangeland, and not yet established across the park.
- 3.3.2 Assess feral pig and horse numbers within former forestry areas (west of Nerong).
- 3.3.3 Implement reactive wild dog control programs in coordination with the Rural Lands Protection Board and neighbours and monitor the programs effectiveness.
- 3.3.4 Undertake feral pig control and horse removal programs in the former forestry areas as a priority. Engage in consultation with appropriate agencies and interest groups including state forests prior to any horse control programs being implemented.
- 3.3.5 Provide information to the community regarding introduced animal species and control programs and encourage neighbour involvement with all pest species projects.
- 3.3.6 Continue to undertake coordinated introduced animal control programs with other agencies such as the Rural Lands Protection Board, Great Lakes Council and Landcare groups using techniques identified by NSW Agriculture and the Rural Lands Protection Board as acceptable methods of control as defined in the NSW Agriculture Vertebrate Pest Control Manual.
- 3.3.7 Remove goats from Neranie Head.
- 3.3.8 Monitor any cattle grazing in the park and undertake action to remove cattle.
- 3.3.9 Assess the impact of rabbits and black rats on Broughton Island and Little Broughton Island and establish co-ordinated control programs aimed at eliminating introduced species from the island.

## *Management Strategy 4*

# Visitor Use



## 4.1 RECREATION MANAGEMENT

*See map 1*

### BACKGROUND

The Great Lakes region supports a range of recreational experiences and is known for its remote beaches, forests, lakes and dunes. Myall Lakes National Park contains all these features and also presents opportunities for recreational experiences not found elsewhere in the region.

From the early days of the Mungo Brush regatta (commencing in 1909) and Legges Camp Guest House (established by the early 1920s), recreation and tourism have grown as increasingly important values of Myall Lakes National Park. There is a diverse range of recreational activities undertaken throughout the park, including camping, picnicking, sight-seeing, walking, birdwatching, sailing, swimming, power boating, waterskiing, canoeing, four-wheel-driving and fishing. To support such activities, there is a range of visitor facilities, including roads, walking tracks, picnic areas, toilets, camping areas, boat ramps, wharves and information bays.

Visitation to the park is seasonal, with visitor numbers swelling during holidays, particularly the summer and Easter holiday periods. The nature of a visitor's recreational experience within the park can therefore significantly vary with the numbers of other people in the park.

To assist recreation planning and management, the NPWS Northern Directorate has developed a recreation management strategy (2000b). This strategy provides a framework for recreation management and is aimed at preserving the park's values and attributes while providing for an appropriate range of recreational opportunities. The key mechanism for achieving this is through park 'zoning'.

The zoning scheme uses a spectrum of recreation management units, which vary with regard to physical features, social characteristics and the way in which the area is managed, including permitted activities and facilities. The zones are graded from being described as 'wild/undeveloped' (zone 1) to 'developed' (zone 5). The principal purpose of each zone is summarised below.

#### Zone 1

A visitor can expect opportunities to experience solitude in a wild natural area requiring a high degree of self-reliance. Temporary management trails may only be constructed if there is an imminent threat to life or property (most likely from wildfire), and must be closed and rehabilitated immediately after the incident.

#### Zone 2

A visitor can expect to experience solitude in a natural area. Recreational users in this zone will be largely self-reliant with minimal facilities provided if essential for public safety and environmental protection. The only vehicular access is for management purposes and will usually only be for 4WD.

### **Zone 3**

A visitor can expect various opportunities for nature appreciation and some social interaction in a natural setting, but with some human disturbance. Ease of access to relatively large natural areas is the principal focus of recreation in this zone. 2WD access is often available but, seasonally, only 4WD access may be possible.

### **Zone 4**

A visitor can expect a natural setting, in which facilities and good access (all weather 2WD) are provided, with a moderate level of social interaction. The provision of visitor facilities and interpretation is a major feature of the zone.

### **Zone 5**

The visitor can expect what they perceive to be a relatively natural setting with the provision of significant visitor facilities for large numbers of visitors and a high level of social interaction may be evident. Visitors will rely on the facilities provided.

Table A5 in the appendices shows the appropriate level of access, activities and facilities for each recreation management zone.

Many visitors to Myall Lakes National Park undertake activities that rely on either boat or vehicular access to a destination within the park. While the majority of Myall Lakes currently falls into Zone 2, a significant portion is designated Zone 3, meaning that some social interaction with other visitors is likely and that there is access to some facilities. There are also more developed parts of the park categorised as zone 4 (for example, Mungo Brush) and zone 5 (Myall Shores). Currently, where visitor facilities are well developed, there is a greater level of social interaction.

Map 1 shows the projected zones (recreation management intent) for the planning area. To define the projected zones, the following factors were considered:

- natural and cultural conservation values of the park;
- desired recreation opportunities within the park; and
- recreation opportunities within the region.

The zoning in map 1 relates to land only. Whilst the lake system forms part of Myall Lakes National Park, waterways were excluded from the zone map. Recreation management on the waterways will be achieved through the regulation of boating activities as outlined in section 4.9 and shown on map 4 of this plan.

The emphasis of the projected zoning within this plan is to ensure the protection of areas of high conservation value within the park and to provide a diversity of recreational opportunities that complement other opportunities within the region. This will partly be achieved through the identification of 'less developed' recreation management areas (zone 2).

Nature reserves are refuge areas of special scientific interest where natural environments, phenomena, and wildlife can be studied without human interference. The provision of outdoor recreational opportunities is not a primary objective of nature reserves. The Myall Coast Reserves are relatively inaccessible and the only known recreational use of the

reserves is some occasional use by rock fishers. Consistent with objectives for their original reservation, the reserves are shown as zone 2. This means that no recreational facilities are provided. This strategy (visitor use) primarily relates to Myall Lakes National Park; reference to the Myall Coast Reserves is, therefore, minimal.

## ISSUES

---

- Some current visitor use and access is inappropriate to the natural and cultural conservation values of the park (for example, impact of vehicle access in areas surrounding The Moors to access both the beach and lakeside camping areas).
- Visitors to the park range from those seeking a remote experience in a natural setting to visitors who enjoy vehicle or boat-based camping and the social experience of activities such as group camping.
- There is currently conflict between some recreation activities where visitors are seeking different experiences at the same locations (for example, lakeside non-motorised camping and motorised (car and boat) camping).
- There is a need for a clear statement of management intent appropriate to different settings within the park so as to separate conflicting activities, to better manage visitor expectations, and to protect natural and heritage values.
- There is a need to ensure that recreational facilities are appropriate to visitor numbers and natural and cultural heritage conservation.
- Noise from park visitors, vehicles, aircraft and boats can impact on the enjoyment of park visitors and disturb wildlife.
- There is a need to consider the requirements of people with disabilities and to provide opportunities for disabled access when planning and constructing recreational facilities.

## DESIRED OUTCOME

---

Provision of an appropriate range of high-quality recreational opportunities within Myall Lakes National Park, consistent with the protection of the area's natural and cultural conservation values and that also satisfy a range of visitor expectations.

## GUIDELINES AND ACTIONS

---

- 4.1.1 Manage each recreation management zone in accordance with the general principles outlined in the appendices in table A5 by providing the appropriate level of access and facilities for both recreation and management operations. Projected recreation management zones for the planning area are shown in map 1.
- 4.1.2 Monitor recreation settings to collect baseline data on biophysical, social and management attributes. The inventory will include the use of photographs, videos and other site-survey techniques to ensure that recreation settings are maintained.

- 4.1.3 Manage visitor numbers and behaviour where natural or cultural values of an area are threatened in order to retain the predetermined range and quality of recreation opportunities and to protect the natural and cultural conservation values.
- 4.1.4 Provide accurate information to potential visitors about the recreation opportunities and experiences available in the planning area to enable visitors to make informed decisions and to protect the recreational setting. This information should include the rationale for applying the recreational zoning category to each area.
- 4.1.5 Liaise with other organisations and individuals involved in the provision of tourism and recreation opportunities outside the planning area in order to promote complementary and compatible tourism and recreational development in the region, and minimise impacts on the planning area.
- 4.1.6 Initiate discussion with the Department of Defence to discuss the feasibility of re-directing Air Force training exercises away from the airspace over the planning area to reduce the noise impact on park visitors and wildlife.
- 4.1.7 Prohibit private electric generators, hovercraft and fan-powered boats within the Park. Implement the boating management plan to reduce the noise impacts of boating to onshore recreation visitors (see section 4.9).
- 4.1.8 Prohibit the landing of any private aircraft within the park, unless required for emergency or essential management purposes.
- 4.1.9 Consider opportunities for provision of disabled access and the requirements of people with disabilities when planning and constructing recreational facilities, such as walking tracks and picnic facilities.

## **4.2 CAMPING**

*See map 2*

### **BACKGROUND**

Camping is probably the most popular recreational activity in Myall Lakes National Park, providing one of the most significant car and boat-based camping opportunities within any national park on the New South Wales coast.

In Myall Lakes National Park, numerous people enjoy the social aspect of camping. Many visitors to the park have been enjoying the same camping location for a number of years. Long-lasting friendships have been formed, and accounts from adult campers of being introduced to a camping area as children by their parents or — for some — grandparents, are common. The park also provides opportunities for first-time campers.

Myall Lakes National Park is an hour's drive from Newcastle and major centres in the Hunter Valley and less than four hours' drive from Sydney. Most camping opportunities in the park are accessible by 2WD vehicles while a small number of camping areas can only be accessed by boat (refer to table 1). From their camping base, people enjoy the diversity of natural settings including lakes, bush, beaches and ocean. Myall Lakes National Park also

incorporates Myall Shores Resort which is a leased, privately operated camping and cabin facility, providing opportunities for visitors who seek a higher level of facilities.

The Recreation Planning Framework for NSW National Parks (Draft) (NSW NPWS 2002) recommends the provision of a range of camping experiences in a diversity of recreational settings, each with different capacities and level of facility development. The NPWS aims to offer camping and recreational opportunities complementary to, yet different from, those provided elsewhere in the region. A major aim of this plan is to continue to provide for a relatively large number of diverse camping opportunities within the park.

Following the death of a camper within the park in December 2000, due to a falling limb of a Melaleuca (Broad-leaved Paperbark) tree, the NPWS undertook a comprehensive assessment of the risk posed by hazardous trees in all camping areas that occur in the Melaleuca fringing forest (URS Australia Pty Ltd 2002). This tree-fall risk assessment resulted in changes being necessary to where camping and picnicking may be safely undertaken within the park's Melaleuca areas. Table 1 and map 2 detail the proposed facilities for the designated camping areas within Myall Lakes National Park.

To better manage and service camping areas, as well as minimise visitor impact from camping, the NPWS acknowledges the need to consider the introduction of a booking system, definition of campsites, enhanced visitor education and provision of after-hours security.

## ISSUES

---

- There is a need to provide a range of camping experiences within the park and to ensure that facilities within camping areas are appropriate to the number of campers, the recreational settings (expressed by the zones, see map 1) and environmental constraints.
- A tree-fall risk assessment of existing and potential lakeside camping areas within the park identified, in many locations, an unacceptable level of risk to campers posed by hazardous trees (URS Australia Pty Ltd 2002). This has necessitated changes to the provision of camping opportunities in the park.
- For both public risk and environmental management reasons, there is a need to establish camping site limits for individual camping areas throughout the park.
- There is a need to provide cost-effective management and servicing of camping areas to ensure that visitor expectations are met.
- Toilet facilities need to be located at camping areas with a capacity of more than five sites to ensure that they do not impact on groundwater and, subsequently, surface waters. In the small capacity camping areas (less than five sites) practices need to be implemented to manage sewage.
- Foreshore erosion (resulting in shoreline instability) and the compaction of soils arising from the impact of trampling, camping and boating activity (resulting in loss of vegetative cover) have resulted in environmental degradation.
- Some camping currently occurs in frequently inundated areas.
- Damage is caused to vegetation through the collection of firewood (both 'live' and 'dead' material) and the use of vegetation to secure tents and boats. This also results in loss of

understorey and regrowth, and impacts on wildlife habitat.

- Unregulated wood fires have a range of detrimental impacts with regard to soil structure, accumulation of rubbish, unsightly fire residues and environmental values.
- There is a potential for increased turbidity and levels of phosphates and nitrates in the lakes resulting from recreational use on and around the lakes.
- The availability of campsites to visitors may not be equitable, especially during busy periods. In order to provide greater equity it may be necessary to implement a booking system for selected camping areas during holiday periods, set limits for length of stay at any one site and discourage the practice of establishing unoccupied sites especially prior to peak periods.
- There is a history of antisocial and illegal behaviour at camping areas (such as that at Yagon camping area) resulting in unacceptable impacts on other park visitors, NPWS staff and contractors, and the site's natural values.
- NPWS has been unable to identify alternative boat-based camping sites on Myall Lake following the decision to close Tickerabbit and One Horse Sands camping areas as a result of the tree-fall risk assessment (URS Australia Pty Ltd 2002).

## DESIRED OUTCOME

---

Provision of a diverse range of high-quality camping opportunities. Campsites within the park are designed to be consistent with the objectives of protecting the natural and cultural values, conforming to the recreation zones, and ensuring appropriate levels of visitor safety.

## GUIDELINES AND ACTIONS

---

- 4.2.1 Based upon the tree-fall risk assessment (URS Australia Pty Ltd 2002), the facility-based camping areas designated in map 2 and specified in table 1 will be developed. Existing camping locations closed due to the recommendations of risk assessment will be rehabilitated.
- 4.2.2 Where necessary to ensure public safety, areas or sites suitable for camping will be delineated within the camping areas shown on map 2.
- 4.2.3 Conduct ongoing research, monitoring and management of tree hazard identified by the tree-fall risk assessment (URS Australia Pty Ltd 2002), including research into the regeneration process and conservation needs of the lake fringe Melaleuca community.
- 4.2.4 Permit remote or bush camping (where facilities are not provided) in zones 2 and 3 (see map 1), provided that it occurs more than 200 metres from a water body (river or lake), public road, and/or the beach and dune system.
- 4.2.5 Safety information, including on-site information, may be provided at appropriate locations such as camping and day use areas where Melaleucas or other potential safety hazards occur.
- 4.2.6 Promote minimum-impact camping practices.



- 4.2.7 Regularly monitor the condition of campsites and ‘rotate and rest’ campsites as necessary to minimise loss of ground cover and soil erosion.
- 4.2.8 Provide non-polluting toilet systems for camping areas with five or more sites, while visitors to small camping areas with less than five sites (refer to table 1) will be required to provide their own self-contained toilet system (such as a Porta-Loo). This system in small camping areas will be monitored and, if unacceptable environmental impacts are occurring, toilets will be constructed.
- 4.2.9 Promote the existing discharge point for self-contained toilet systems at Myall Shores jetty and the use of the boat-based collection service. Establish land-based discharge points for self-contained toilet systems.
- 4.2.10 Wherever possible campsites with vehicle access will be designed to accommodate caravans, campervans and motor homes.
- 4.2.11 Introduce a booking system at some camping areas during high visitor use periods where the demand for sites exceeds supply or where there are potentially significant environmental impacts related to visitor use.
- 4.2.12 Restrict camping at any one site in the park to 28 consecutive days, except for Shelly Beach, Johnsons Beach and all camping areas with a maximum number of six campsites or less (refer to table 1) where the duration will be limited to 14 consecutive days. This will provide maximum access to a limited number of sites.
- 4.2.13 In order to achieve greater equity in the distribution of camping sites, occupied sites (eg. by motor vehicles, tents, caravans or campervans) must not be left unoccupied for periods greater than 24 hours.
- 4.2.14 Wood may be provided where wood scavenging may threaten the surrounding environment.
- 4.2.15 Provide gas or electric barbecue facilities in the more developed visitor facility areas (refer to table 1)
- 4.2.16 Investigate and introduce necessary measures to ensure appropriate visitor behaviour at camping areas, including the provision of a security service.
- 4.2.17 Work with the community, park users and the Hunter Region Advisory Committee to identify possible additional boat-based camping area opportunities on Myall Lake.
- 4.2.18 Rename the following camping areas to reflect either historical place names or traditional Aboriginal names:
- 15 BBQs will be renamed The Wells;
  - Mungo Corner will be renamed Dees Corner; and
  - Old Gibber Track will be renamed Boomeri.

	Broughton Island	Stewart & Lloyds	Banksia Green	Brambles Green	Rivermouth	Mungo Brush	Dee's Corner (Mungo Corner)	White Tree Bay	The Wells (15 BBQs)	Boomeri (Old Gibber Track)	Joes Cove	Myall Shores (Leased private facility)	Freshwater	Two Mile Sands	Korsmans Landing	Mackaway Bay	Sunnyside	Bungarie Bay	Violet Hill	Johnsons Beach	Shelly Beach	Neranie	Yagon
Max. number of campsites**	5	12	15	2	5	100	16	15	12	40	2	132*	6	4	53	2	6	6	50	16	18	25	40
Toilet facilities	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y
Showers (hot or cold)	N	N	N	N	N	N	N	N	N	N	N	H	N	N	N	N	N	N	C	N	N	N	N
Access to area	B	V	V	B	B	BV	BV	BV	BV	V	B	BV	B	B	BV	B	B	BV	BV	B	B	BV	V
Gas / Electric BBQs	N	N	N	N	N	Y	N	Y	N	Y	N	Y	N	N	Y	N	N	N	Y	N	N	Y	N
Wood fires in fireplaces	N	N	Y	Y	Y	N	N	N	Y	N	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N

Legend:

Y = Yes

N = No

H = Hot showers

C = Cold showers

B = Boat access

V = Motor vehicle access

\* = Maximum number of Unregistered Movable Dwellings and camping or caravan sites allowable under Masterplan.

\*\* = Campsites may be either designated or site equivalents within an area and the maximum number of people that may occupy a site is 6.

Table 1: Proposed camping areas

## 4.3 DAY USE

See map 2

### BACKGROUND

Day use areas not only provide for picnicking, but also are often the central focus for other nature-based leisure activities such as boating, sightseeing, birdwatching, bushwalking, fishing and beach activities.

The results of the tree-fall risk assessment (URS Australia Pty Ltd 2002) have, as with camping, altered the pattern of day use in the park. The majority of the lakes' foreshore, within designated recreation areas, is now allocated to day use. The day use areas associated with camping areas will be the focus of foreshore use by campers, including boating. Day use areas with picnic facilities are to be promoted specifically for use by day visitors.

There are three picnic areas along the lower Myall River foreshore that have been developed privately or by recreational clubs. These are located at Engels Reach, Tamboy and Kangaroo Island. The foreshore of Fame Cove in Port Stephens is also accessed by boat and is used for picnicking.

It is preferable to separate day use areas from camping areas as much as possible to reduce competition for facilities and to separate conflicting uses. Day use areas where picnic facilities will be provided are listed in table 2.

### ISSUES

---

- There is a need to provide for a range of day use activities within the park and to ensure that the facilities within the day use areas are appropriate to recreational settings and environmental constraints.
- A tree-fall risk assessment (URS Australia Pty Ltd 2002) of existing and potential visitor areas, around the lakes' shores within the park, has identified significant tree-fall hazard with respect to recreational use necessitating changes to many existing visitor use areas, including day use areas.
- Some of the current day use areas do not have appropriate facilities for the intended use and recreational setting.
- Toilet facilities need to be located to ensure that they do not impact on groundwater and surface waters.
- Damage is caused to vegetation through the collection of firewood (both 'live' and 'dead' material).
- There is competition between picnickers and campers for use of facilities.
- Existing picnicking opportunities are not actively promoted.

### DESIRED OUTCOME

---

Provision of a range of day use opportunities, in a diversity of natural settings.

## GUIDELINES AND ACTIONS

- 4.3.1 Based upon the tree-fall risk assessment (URS Australia Pty Ltd 2002) day use areas with designated picnic facilities will be developed in accordance with table 2.
- 4.3.2 Develop West Legges picnic area (which is currently closed) in accordance with table 2, if the proposed risk and environmental assessments prove to be satisfactory.
- 4.3.3 Investigate New Hole in the Wall — a car parking track-head facility for beach users — as a suitable location for the construction of a coastal viewing platform and the installation of a few picnic tables near the carpark. If the viewing platform is demonstrated to be feasible it may be constructed subject to a satisfactory environmental assessment.
- 4.3.4 Provide non-polluting toilet systems in identified areas (refer to table 2).
- 4.3.5 Provide only gas or electric barbecue facilities within day use and picnic areas (refer to table 2).
- 4.3.6 Redesign visitor facility areas to increase foreshore protection in accordance with areas identified in the tree-fall risk assessment (URS Australia Pty Ltd 2002).
- 4.3.7 Monitor the condition of day use and picnic areas, temporarily or permanently closing or restricting use in any area when there is an unacceptable risk to visitors or threat to environmental values.
- 4.3.8 Promote picnicking opportunities within the park in conjunction with local tourism authorities.

Table 2: Proposed picnic areas

	Black Oak (Kangaroo Point)	Kangaroo Island	Pipers Creek	Engels Reach	New Hole in the Wall (proposed)	Brambles Green	Tambooy Toilet facilities	Mungo Brush Toilet facilities	White Tree Bay Toilet facilities	Northern Broadwater Toilet facilities	West Legges (proposed)	Korsmans Landing	Violet Hill	Meranie	The Grandis	Sullivans Gap
Y	Y	Y	Y	Y	Y	Y	Y	Y								
Access to area	B	B	V	B	V	B	B	BV	BV	BV	BV	BV	BV	BV	V	V
Gas/electric BBQs	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N

Legend:

Y = Yes

N = No

B = Boat access

V = Motor vehicle access

## 4.4 BUSHWALKING

See map 2

### BACKGROUND

Bushwalking can be enjoyed by people of varying ages, interests and levels of physical fitness and mobility. It allows intimate exploration and appreciation of the natural and cultural environment.

Within Myall Lakes National Park, vehicle and boat-based recreation activities are predominant. There are, however, seven designated walking tracks of short duration (15 minutes to 2 hours) that lead to or through features of interest including rainforest and vantage points. They are:

- Mungo Brush Rainforest Track;
- The Grandis Walking Track and Viewing Platform;
- O'Sullivan's Gap Walking Track;
- The Tamboy Boardwalk and Walking Track;
- Violet Hill Walking Track;
- Yacaaba Headland Walking Track; and
- Broughton Island Walking Track.

Walkers also use a network of fire and management trails and beaches within the park. The 'Tops to Myall Heritage Trail' for example, uses a number of management trails, including the Mungo Track and the Tamboy Track. This track, developed by the Tea Gardens Lions Club, spans about 220 km from Barrington Tops to Hawks Nest. The Old Gibber Trail (on the eastern side of the three northern lakes) is also popular for walking. There are no walking tracks within the Myall Coast Reserves.

Walking on unmarked routes and through untracked bush also occurs within the Myall Lakes National Park. This is believed to be an infrequent activity, although walking along the dune systems and beaches occurs.

### ISSUES

---

- There is a lack of walking opportunities within Myall Lakes National Park which are separate from management trails and vehicular activity.
- Existing walking tracks are overgrown and without clear signage.
- Walking tracks are not currently 'classified' and, therefore, there is not a set standard for track maintenance and interpretation requirements or information about difficulty of the walk.
- Walking on unmarked routes and through untracked bush occurs without a formal management framework.
- There is a lack of longer duration walking opportunities within Myall Lakes National Park, including tracks that are connected to isolated camp sites.

## DESIRED OUTCOME

---

Provision of a series of well-maintained day-walk opportunities within Myall Lakes National Park, separate from vehicular activity.

## GUIDELINES AND ACTIONS

---

- 4.4.1 Maintain the walking tracks identified in map 2.
- 4.4.2 Continue to provide walking opportunities on management trails.
- 4.4.3 Permit walking on unmarked routes and through untracked bush.
- 4.4.4 Develop and implement a walking-track management strategy in consultation with relevant interest groups. This strategy will provide an inventory of walking tracks including information on their location, management objectives, recreation setting, environmental impact, level of use, classification and construction standard, cultural value, current condition, safety factors, maintenance requirements, costs and interpretive potential, and priorities for maintenance and reconstruction. Off-track walking or walking on unmarked routes is permitted and will form part of the development and implementation of a walking track management strategy.
- 4.4.5 Promote minimal impact bushwalking techniques.
- 4.4.6 Develop a walking track from Mungo Brush Road to The Moors (along the old mining road) with a viewing platform and interpretation of The Moors.
- 4.4.7 Develop a walking track at Neranie from the Mill site to the southern camping area which includes the cemetery and a viewing area on Neranie Head.
- 4.4.8 Convert fire trails no longer required for fire management and currently used for walking, such as the Mungo Track, into walking tracks.
- 4.4.9 Undertake an investigation into the viability of, and demand for, the construction of the following walking tracks with a view to their future creation:
  - a return loop from Mungo Brush to the Tamboy Track;
  - from Violet Hill to a vantage point on the Mayers Range, west of the Lakes Way;
  - on the Northern Broadwater from the most northern camping area to Bombah Point;
  - from Seal Rocks to Sandbar;
  - a return loop from Johnsons Beach camping area to Johnsons Hill; and
  - longer duration walks, possibly connected to remote camp sites.

## 4.5 ROAD NETWORK

*See map 3*

### BACKGROUND

Myall Lakes National Park is located off the Pacific Highway within a two-hour drive north of Newcastle. The five main access routes to the park are south-east of Bulahdelah along the Lakes Road, north of Hawks Nest on the Mungo Brush Road, east of Bungwahl on the Seal Rocks Road, east of Bulahdelah along the Lakes Way, and west of Bulahdelah on Girvan Road. It is possible to drive from Bulahdelah to Hawks Nest through the park via a vehicular ferry at Bombah Point managed by the NPWS. The Great Lakes Council manages part of Seal Rocks Road and Mungo Brush Road and the majority of Lakes Road. Some roads in the former forestry areas are managed and maintained by State Forests of NSW.

The roads within the Myall Lakes National Park are classified into two main categories. The 'Public Access Roads', as shown on Map 3, are those roads within Myall Lakes National Park that are open to the public. They include roads that are maintained by NPWS and by other Agencies or organisations such as Great Lakes Council. The 'Non-Public Access Roads', as shown on Map 3, are roads used and maintained by NPWS for management and emergency purposes and are not available for public vehicular use.

The existing road and trail network was mainly established to meet sand mining and timber industry needs. No changes have been made to the road network in the former Nerong, Renwick and Bulahdelah state forests since it became national park estate in January 1999. Some of these roads are used for 4WD touring in conjunction with surrounding state forests. This plan proposes to maintain through access to surrounding forestry areas.

The old mining road between Mungo Brush and Seal Rocks Road has been the subject of debate since the designation of Myall Lakes National Park. This road traverses an area of high conservation value known as The Moors and increases general access to the dune system between the lakes and the ocean. The road was constructed in the early 1970s and has substantially increased access to this area. The road itself has had impacts on the drainage of the wetlands and surrounding vegetation. The 1984 Plan of Management flagged the closure of the road. However it has remained open to the public and is trafficable by 4WD vehicles. The original environmental and management reasons for recommending closure of this road remain valid and are supported in this plan.

The road network proposed in this plan considers minimising environmental impact, the recreation management zones, access to key park attractions, and resourcing requirements. Under the proposal, there will be over 135 km of road available for 2WD touring and 81 km for 4WD touring in addition to 15.5 km of beaches, including two restricted public access roads that have access regulated by permit and gates. Fire-management considerations, along with the servicing of remote areas, have largely determined the management trail network.

## ISSUES

---

- Impact of the road network on conservation values for areas such as The Moors, wetlands and high dunes needs to be considered.
- Illegal vehicle access can cause loss of vegetation cover, compaction, dune instability, erosion, sand migration and damage to park infrastructure. Other potential impacts associated with legal and illegal access include increased arson risk, littering, weed invasion, feral animal predation and noise impacts.
- Substantial resource implications are associated with effecting and maintaining road closures.
- Illegal access to dune systems, such as those on the eastern side of the Myall Lakes system, is particularly difficult to manage, especially after fire.
- Maintenance of public access roads requires substantial resources. The costs of maintaining public access roads means that priority is generally given to those roads that provide access to recognised facilities and attractions.
- There is a demand for public access to relatively remote visitor destinations via 4WD vehicular access.
- There is a need to address pedestrian safety and more appropriate speed limits along the northern section of Mungo Brush Road where it approaches public-use areas around the Bombah Broadwater.

## DESIRED OUTCOME

---

Provision of a well-maintained road network that allows management access for essential purposes, public access to recognised park facilities and attractions, is cost-effective, and minimises impacts on natural and cultural values.

## GUIDELINES AND ACTIONS

---

- 4.5.1 Permit vehicles on the park road network as shown in map 3.
- 4.5.2 Maintain the public road network to an all-weather, two-wheel-drive standard with the exception of the following roads that will be maintained to at least a dry weather two-wheel-drive standard:
- Jarrah Road;
  - Nerong Road;
  - Stony Creek Road;
  - Purgatory Road; and
  - Crawford Road.
- 4.5.3 Close all management trails shown on map 3 to public vehicular access. Management roads are for NPWS management and emergency purposes only.



- 4.5.4 Rehabilitate all roads or trails not shown on map 3.
- 4.5.5 Retain the vehicular ferry between Mungo Brush Road and the Lakes Road at Bombah Point.
- 4.5.6 Coordinate with Great Lakes Council, State Forests of NSW and the University of NSW to achieve integrated management of public roads linking with park roads to provide consistent road standards and economies of scale for maintenance.
- 4.5.7 Seek advice from relevant authorities and investigate options for implementing traffic calming and speed reduction to minimise risks to motorists and pedestrians along the northern section of Mungo Brush Road where it approaches public-use areas around the Bombah Broadwater.
- 4.5.8 Subject to satisfactory environmental assessment and public risk, and preparation and public exhibition of an environmental management plan, establish a permit system for public vehicular access along two Restricted Public Access Roads as shown in Map 3. Permits will only be issued for 4WD vehicle access due to the unsuitability of these roads to 2WD access and their remoteness. The number of vehicles permitted to access these roads may be restricted for public safety or environmental management reasons.

## 4.6 BEACH ACCESS

*See map 3*

### BACKGROUND

There are a number of opportunities within the Hunter and mid-North Coast regions for 4WD beach driving. Between Lake Macquarie and Port Macquarie, over 170 km of beaches are currently accessible to 4WD vehicles. Four-wheel-drive beach opportunities within or adjacent to a national park or nature reserve are available north of Newcastle at Crowdy Bay National Park, Hat Head National Park, Darawank Nature Reserve, Limeburners Creek Nature Reserve and Myall Lakes National Park.

The Myall Coast stretches for 55 km from Yacaaba Headland to Sand Bar Beach and features spectacular headlands separated by long expanses of beach. The beaches support an important ecological resource and are an integral part of the recreational activities of the community. Of approximately 37 km of beaches within or adjacent to the park, 4WDs are currently permitted on 24 km (65%).

Approximately 9.87 km of the beaches along the Myall Coast are within the boundaries of Myall Lakes National Park. Mungo Beach, from a point north of White Tree Bay to the Big Gibber Headland is within the national park (to the mean low water mark). There are also four 4WD-access points through the dunes to the beach, which are within the national park boundary. The other beach areas, below mean high-water mark, are crown land under the care and control of the Great Lakes Council. 4WD beach access is permitted south of the Myall Lakes National Park boundary on Bennetts Beach by Council permit only.

Each year, thousands of people visit Myall Coast beaches to relax and enjoy their natural beauty. Many people choose to explore the beaches in 4WD vehicles. Some visitors enjoy the activity of beach driving itself while others enjoy accessing remote areas to swim, fish or picnic. 4WD access is particularly popular with fishers who use vehicles to transport their equipment and move rapidly from one part of the coast to another.

#### **Definition of 4WD vehicles**

In this plan, the term 4WD vehicles is used to include all registered off-road vehicles. Off-road vehicles include trail bikes, minibikes, motorcross bikes and 4WDs. Beaches are, by law, public places and all vehicles and drivers on beaches are subject to relevant acts and legislation, particularly with respect to registration of vehicles and licensing of drivers.

The challenge of the Myall Lakes planning process is to ensure the protection of the coast's natural and cultural values while providing for some recreational activity. Like other recreational activities, 4WD vehicles impact on the natural and cultural environment and the recreational experience of some visitors. Consideration of this impact is required to determine the appropriateness of existing and future 4WD activities.

A number of strategies can be employed to reduce the impacts of 4WD vehicles on beaches. These strategies include:

- permit systems (including a maximum limit on permit numbers);
- improved information to drivers;
- improved signage;
- clearly marked entry and exit points;
- hardening of entry and exit points; and
- seasonal beach closures to protect threatened species.

In developing the proposals in this plan, the above strategies and following criteria were considered:

- protection of threatened species, populations and communities;
- protection of cultural heritage sites;
- protection of the dune environment;
- proposed recreational management zone;
- consideration of recreational demand and community viewpoints;
- improvement of pedestrian safety and pedestrian experience; and
- resourcing and implementation.

Over a dozen options for 4WD access were considered, ranging from prohibition of 4WDs on all beaches to all beaches being open to 4WD-beach activity. All options represented a compromise on some, or all, of the above criteria. If conservation criteria were considered

in isolation from social and economic criteria, then there is a strong argument to eliminate 4WD access on the beach system within Myall Lakes National Park due to potential or current impacts on conservation values. However, 4WD beach driving has become a popular activity within the park over the past few decades and there is a strong desire expressed by many park visitors for continued opportunities for 4WD beach driving.

## ISSUES

---

The *Background Information: Revised POM for Myall Lakes National Park* (NSW NPWS 2001a) provides a comprehensive discussion of issues relating to 4WD beach driving. The discussion demonstrates the complexity of the issue and the range of factors for consideration.

- 4WD beach driving can impact on Aboriginal midden sites through accelerating wind-blown sand removal, exposing sites and through the crushing of shell and/or bone material. An Aboriginal heritage survey (Umwelt Australia 2001) found a high concentration of midden sites in the dunes, particularly to the west of the frontal dune.
- The Aboriginal heritage survey (Umwelt Australia 2001) found that the Dark Point Headland and dune areas to the north and south were of high Aboriginal cultural value and sensitivity. It recommended that 4WD access be restricted in this area.
- 4WD beach driving can impact on the dune environment through removal of vegetation and soil compaction, and on wildlife through direct mortality, disturbance, noise and habitat impacts.
- 4WD beach driving can impact on threatened species or listed migratory species under the EP&BC Act 1999 such as the Little Tern (*Sterna albifrons*) and the Pied Oystercatcher (*Haematopus longirostris*). Four-wheel-drive beach driving is a particular threat to Little Terns because they nest on the ground in a simple scrape, mostly within 150 m above the high-water mark. Little Terns also usually feed at the low-water mark in the breakers or just beyond. Therefore, fencing off a nesting area is not an effective measure in protecting tern hatchlings (runners).
- Along large sections of the Myall Coast beaches, there is a vehicle track on the fore-dunes, which is often paralleled by another track or becomes part of a network of tracks. These tracks are known as the 'backtrack'.
- There is a diversity of community viewpoints about appropriate levels of 4WD beach access within Myall Lakes National Park.
- 4WD beach driving, particularly access to headlands, is popular with recreational fishers within Myall Lakes National Park.
- The use of 4WD vehicles on beaches can conflict with other recreational users seeking more passive use of the beach and with pedestrian safety. There is a need to separate incompatible uses and provide for safe 4WD beach driving and pedestrian activity both at access points and along the beach.
- There is a need for improved parking near beaches, partly to reduce the demand for 4WD beach access.

## DESIRED OUTCOME

---

Provision of opportunities to drive 4WD vehicles on selected sections of beaches within Myall Lakes National Park with minimised risks to drivers and pedestrians and minimised impact on natural and cultural values.

## GUIDELINES AND ACTIONS

---

- 4.6.1 Permit 4WD beach driving on those beaches indicated on Map 3 only. This allows access from between Lemon Tree and the southern side of Dark Point (not including Dark Point itself) as well as between Dees Corner and Big Gibber Headland.
- 4.6.2 A permit for the conduct of the annual Gibber to Gibber Fishing Competition may be issued for one week of the year, during winter, by the Regional Manager. This permit would extend 4WD beach driving from Dees Corner south to Sandy Point only. The issuing of the permit will be subject to environmental and legal considerations.
- 4.6.3 Implement closures of sections of beaches where threatened species have been found to nest or rest to protect both the nesting birds and hatchlings that use the beach to feed and rest. To effect the closure and to ensure that vehicles do not drive on dunes, closure of the entire beach may be necessary in some instances.
- 4.6.4 Implement seasonal closures of sections of beaches when the beach has been eroded severely and it is considered unsafe for beach driving or where driving on dunes would be likely.
- 4.6.5 Subject to improved parking areas, environmental considerations and pedestrian access adjacent to the beach, restrict 4WD access between the Dark Point Headland and Dees Corner, Big Gibber (including Big Gibber Headland) and Treachery headland to 4WD beach access as shown on Map 3. The restriction on 4WD beach access should take into consideration levels of 4WD use on other beaches and the potential for cumulative impact, conflicts with pedestrian activity within the identified area and impacts on the natural and cultural values of the adjacent dune systems and wetlands.
- 4.6.6 Investigate the viability of an additional 4WD beach access point closer to Dark Point Headland in consultation with community groups, and subject to satisfactory environmental impact assessment and resourcing considerations, construct if feasible.
- 4.6.7 Develop and introduce a 4WD beach-driving permit system. A permit will be required to drive on those beaches in the park where 4WD beach driving is permitted. The emphasis of this system will be on:
- Education: Establish a point of contact to provide the visitor with information and/or guidelines on appropriate 4WD beach driving activity.
  - Encourage responsible driver behaviour: The permit will be revoked if a driver is found to not comply with the conditions of the permit. This is therefore an incentive for responsible driver behaviour.

- 4.6.8 Develop and implement a 4WD beach-driving education, information and signage strategy. This strategy will include interpretation on the importance of protection of Aboriginal cultural heritage sites, beach and dune systems and threatened species.
- 4.6.9 Impose a 40 km/h speed limit for vehicles on the beach, or 15 km/h when within 50 m of people on the beach and when accessing the beach.
- 4.6.10 Seek gazettal of all intertidal areas adjacent to the park, down to astronomical low watermark, to enable consistent management of the full beach environment and rocky shores.
- 4.6.11 Establish a monitoring program to ascertain the social and environmental impacts of vehicles on the beach and dune systems. If an ongoing review and monitoring determines that use of a particular beach environment by 4WD vehicles is having an unacceptable impact on the natural or historical features of a particular area, vehicle use will be reviewed in that area.

## **4.7 CYCLING**

*See map 3*

### **BACKGROUND**

In Myall Lakes National Park, cycling is becoming increasingly popular on public roads and management trails through the park. The flatter areas around the lakes are popular for the novice and families, while the hillier areas of the park to the west offer more challenging opportunities for more experienced riders.

### **ISSUES**

---

- Cycling is permitted on all identified roads and management trails in Myall Lakes National Park and appears to meet foreseeable demands.
- Key considerations are safety and potential environmental impacts. Through the prohibition of cycling on tracks designated for walking only (and not designated as management trails) and through safe and courteous road and trail use, most of these issues can be resolved.

### **DESIRED OUTCOME**

---

Provision of safe opportunities for recreational cycling.

## GUIDELINES AND ACTIONS

---

- 4.7.1 Cycling will be permitted on all public roads, management trails and beaches where 4WD vehicles are permitted (see map 3).
- 4.7.2 Highlight suitable cycling routes on park signage and brochures to encourage recreation cycling in appropriate areas within the park.

## 4.8 HORSERIDING

### BACKGROUND

Horseriding has not traditionally been an activity conducted within Myall Lakes National Park. Under the 1984 Myall Lakes POM, no provision was made for horseriding. A key reason for not permitting horseriding relates to the sensitive nature of the coastal sand based environment.

Opportunities for horseriding available elsewhere in the region are considerable, including extensive areas of state forests (Bulahdelah, Myall River, Nerong and Wang Wauk) and on private property. There are also a number of commercial horseriding operators within the area in both the Great Lakes and Newcastle regions.

Horses have been found to cause erosion of soils and tracks, increase soil compaction, and introduce weeds and plants species not native to the area. Horseriding can conflict with other recreational uses (NSW NPWS 1988). This plan proposes a continuation of the existing policy of no horseriding within Myall Lakes National Park. Horseriding is prohibited in nature reserves.

### ISSUES

---

- Myall Lakes National Park has highly erodible soils, particularly the sand dunes and the new areas of the park (for example, The Grandis). The potential impacts of horseriding on these areas would be high.
- A continuation of the existing policy of prohibiting horseriding within Myall Lakes National Park should have minimal or no impact on visitors given that the existing policy has been in place for 17 years and there are opportunities available elsewhere in the region for this activity.

## DESIRED OUTCOME

---

Continue to deny horseriding opportunities within the planning area due to the sensitive nature of the sand-based environment and in consideration of the fact that opportunities are available elsewhere for horseriding in the region.

## GUIDELINES AND ACTIONS

---

4.8.1 Prohibit horseriding within the planning area.

### 4.9 BOATING

See map 4

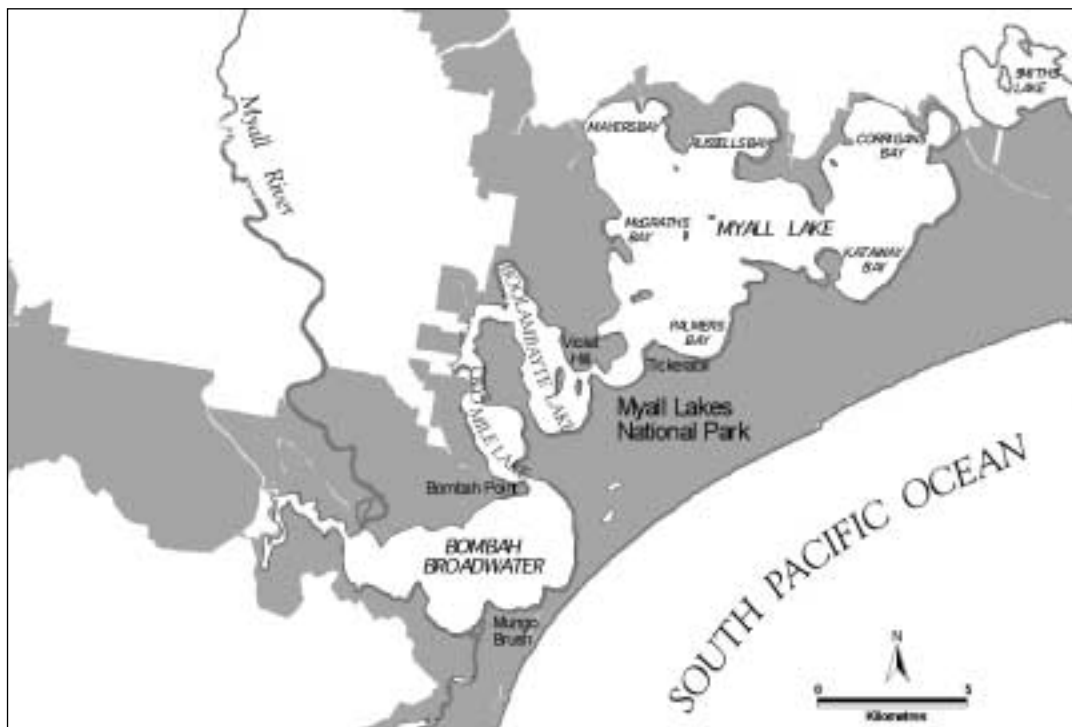


Figure 3: The Waterways of Myall Lakes National Park

## BACKGROUND

Boating is an activity that offers a particularly diverse range of recreational experiences. People go boating for many different reasons. For example, the experience of skiing behind a powerboat, canoeing in a quiet bay or spending a few days in a houseboat are some of the vastly different experiences sought by park visitors. Diversity represents an important part

of the Myall Lakes experience. A key task in the planning process for the NPWS is to consider the range of recreational waterway experiences provided for, and to separate incompatible uses.

The Hunter region encompasses some of the most extensive and diverse waterways in Australia. Boating on these waterways is an important activity which provides many people with an enjoyable pastime and contributes to the regional economy. The most popular boating recreational areas within the region are the Port Stephens estuary, Myall Lakes, Wallis Lakes and Lake Macquarie. The Myall Lakes are more than 10,000 ha in area and are contained wholly within the boundaries of Myall Lakes National Park.

Activities such as overnight camping (on cruisers and houseboats), canoeing, sailing, waterskiing and fishing are popular on the lakes system, with the predominant vessel being runabouts up to 7 m. Other boating craft include canoes, trailer-sailers, small and large cabin cruisers, personal watercraft, hire-drive houseboats and commercial charter vessels. In the lower section of the lakes system (south of Violet Hill), car-based camping in conjunction with boating is popular. In the top section (Myall Lake), there are a number of camping areas accessible by vessel only.

Currently, there are 50 hire and drive commercial vessels licensed with the Waterways Authority of NSW to operate within Port Stephens and the Myall Lakes. Of the commercial passenger carrying charter vessels, approximately eight operate regularly within the Myall Lakes. Recreational vessel numbers are difficult to calculate as registration details are tied to the residential address of the registered owners and are not an accurate reflection of where vessels operate. However, within NSW, vessel registration has increased by an average of 2.5% per annum over the past ten years. The Waterways Authority of NSW believes that a similar growth rate is reflected in boat usage around the Myall Lakes and Myall River, with the exception of certain periods when localised events (for example, bushfire and blue-green algae blooms) cause a reduction in boat numbers.

Boat access to the Myall Lakes from Port Stephens is via the Myall River, a distance of approximately 22 km. There are wharves at Violet Hill, Korsmans and Bombah Point as well as three wharves on the lower Myall River (at Tamboy, Engels Reach and Kangaroo Island). Major boat-launching ramps are located at Violet Hill, Mungo Brush and Nerong. There are minor, basic boat-launching ramps at Korsmans and Neranie. The lower Myall River has an average depth of 2 m in several areas (Monkey Jacket, Durness and Pine Plantation) where siltation has restricted access by larger vessels.

At present, 22 moorings are available within the Myall Lakes to cater for both recreational and commercial vessels. Moorings are located at Bombah Point, Professors Cove, Violet Hill, Long Point Bay and Kataway Bay. The moorings were installed by the Waterways Authority of NSW with assistance from local boating clubs and Myall Shores Resort. They are well utilised throughout the lakes and provide safe refuges in the sheltered bays. Currently the moorings are maintained by the Waterways Authority of NSW, with the exception of five courtesy moorings located near the Myall Shores lease area which are maintained by the lessee.

There are a number of agencies with differing legislative responsibilities relating to the waterways within Myall Lakes National Park. The NPWS manages the lake system which is part of the national park. Under the National Parks and Wildlife Act and Threatened



Species Conservation Act, the NPWS is responsible for the protection and care of not only threatened species, but also all vegetation, native mammals, birds, reptiles and amphibians within and surrounding the lake. NSW Fisheries is responsible for the conservation of fish stocks, threatened fish species and fish habitat, including seagrasses, under the Fisheries Management Act. The Waterways Authority of NSW is responsible for the safe and equitable use of the waterway.

The Waterways Authority of NSW, in an effort to reduce the potential impact of boat wastes on the Myall Lakes system, operate a mobile sewage collection barge on the lakes and a sewage pump-out facility located at Bombah Point. These facilities collect in excess of 320,000 litres of effluent annually from vessels and shore-based facilities. The Waterways Authority of NSW have also released a discussion paper on the issue (Waterways Authority of NSW 2000). The paper proposes that sensitive ecosystems, such as the Myall Lakes system, be designated as 'no discharge zones' for treated and untreated sewage from all vessels.

This section of the plan has been prepared jointly with the Waterways Authority of NSW. To prepare the plan, the NPWS and Waterways Authority of NSW mapped the occurrence of different popular boat-based activities and areas sensitive to potential environmental impacts (shallow, presence of aquatic vegetation, waterfowl habitat). As the impacts of boating on turbidity and waterbirds are greater when boating at higher speeds, for most shallow areas there is an 'idle speed only' recommended. However, the 'idle speed only' does not apply to shallow areas adjacent to popular Broadwater camping areas such as Mungo Brush. In this area, general regulations apply. These general regulations prohibit personal watercraft from travelling at a speed greater than 10 knots when within 200 m of shore and other craft when within 30 m of shore. The decision not to apply the 'idle speed only' to shallow areas in this location represents a compromise in permitting the continuation of some waterskiing activity in an area popular for this activity.

For most of the land surrounding the Myall Lake, it is proposed to promote a serene, peaceful and remote recreational experience. The appropriateness of noise generated from different waterway activities in this area is therefore an important consideration. A quieter recreational experience will be achieved in part through the identification of 'idle speed only' areas and through the identification of some 'paddle craft only' boating areas. As well, the provision of 'paddle-craft only' areas will also ensure opportunities for safe swimming.

The *Background Information: Revised POM for Myall Lakes National Park* (NSW NPWS, 2001a) provides a comprehensive discussion of issues relating to boating on the Myall Lakes system. The discussion demonstrates the complexity of the issue and the range of factors for consideration.

## ISSUES

---

- There is minimal data on the extent of environmental impacts of boating on the Myall Lake system.
- Some foreshore erosion is evident in areas where aquatic plants have been removed or trampled which may be due in part to the beaching of vessels in vulnerable areas. Potential accelerated rates of foreshore erosion associated with boat wakes, especially

within 60 to 90 m of the shore, is of particular concern.

- The impacts of boat-waste discharge, including greywater and fuel spillage, is of concern to the NPWS, particularly given that the Myall Lakes system is generally poorly flushed.
- Boating activities have the potential to disturb and displace waterbirds as well as aquatic vegetation, particularly in shallow waters.
- Boating activities on the water can impact on recreational experiences on the shore. Impacts can include noise from power boats as well as safety and comfort concerns for swimmers in the lake. There is a need to provide for a range of water and land-based recreational experiences and to separate incompatible boating and boating/land-based activities.
- Moorings can provide a safe and convenient refuge and minimise environmental impacts of anchors on aquatic vegetation but there is a need to balance the provision of additional moorings with the potential impacts on other users and visual amenity.
- There is a need to ensure that moorings are available for short-term recreational use and are not used for long-term or permanent mooring of boats.
- The desire for an upgraded boat-launching ramp at Bungwahl, in the northern part of Myall Lake, has been expressed to the NPWS. There are issues associated with ensuring safe road access that make a ramp in this location unsuitable. As an alternative, the NPWS is providing a new boat ramp in proximity of Bungwahl at Neranie.

## DESIRED OUTCOME

---

Provision of a range of appropriate boat-based activities and associated facilities in Myall Lakes National Park that do not adversely impact on the natural or cultural values of the park, or on the quality of other visitors' experiences.

## GUIDELINES AND ACTIONS

---

4.9.1 Implement proposed waterway plan shown in map 4. This plan includes:

- an 'idle speed only' limit in most of the identified sensitive areas;
- personal watercraft (jet skis) must not be driven in an irregular manner (that is, they should travel in a direct line) as defined by section 15AA of the Water Traffic Regulations in areas indicated on the map; and
- identification of safe swimming areas near Mungo Brush, Northern Broadwater, Neranie, Shelly Beach and Tickerabil where motorised vessels will not be permitted.

4.9.2 Establish a monitoring program to ascertain the impacts of boating on aquatic vegetation and fauna in collaboration with relevant research institutions and community interest groups.

4.9.3 Adopt an adaptive management approach to waterways within Myall Lakes in collaboration with the Waterways Authority of NSW. That is, if on-going monitoring

demonstrates that there is a risk to the environmental qualities of the lakes or to visitor safety, appropriate controls will be developed and implemented in consultation with the community.

- 4.9.4 Develop a 'boating code of conduct' which promotes minimal impact boating. Promote the natural and cultural values of the waterways and appropriate visitor behaviour by providing appropriate signage and interpretation material. This may include brochures and information boards at strategic visitor nodes, including Violet Hill and Mungo Brush.
- 4.9.5 Encourage and, where appropriate, undertake maintenance of established boating facilities in cooperation with other agencies.
- 4.9.6 Support any proposal to install a suitable small wharf at Bungwahl to replace the existing boat ramp and to enable access to the Bungwahl shop.
- 4.9.7 Only permit new wharves, boat ramps and jetties near identified camping and picnic areas, and subject to assessment of the impacts on other users, amenity and natural and cultural values.
- 4.9.8 Investigate, in conjunction with Waterways Authority of NSW, the potential application of 'no discharge guidelines' for greywater from commercial and recreational vessels.
- 4.9.9 Support the continued service of the mobile sewage collection barge and the Bombah Point pump-out facility by the Waterways Authority of NSW.
- 4.9.10 Prohibit private moorings in the park. Permit a total of five moorings for commercial use by the lessee at Myall Shores and seventeen public moorings, for casual short-term use, in those locations shown in map 4 (subject to 4.9.11, 4.9.12 and 4.9.13).
- 4.9.11 Monitor the use of moorings and, if warranted, quantify a maximum length of stay in terms of days and nights for commercial and recreational moorings. This maximum may vary seasonally.
- 4.9.12 Allow up to five additional recreational moorings at Tickerabit, but only provide additional commercial and recreational moorings elsewhere if it is demonstrated that this increase will have a substantial benefit for the protection of habitat and an acceptable level of impact on the visual qualities and other users of the lake system.
- 4.9.13 If the number of proposed additional recreational moorings exceeds four (not including up to five additional recreational moorings at Tickerabit) or if additional commercial moorings are proposed, prepare a mooring plan jointly with Waterways Authority of NSW. This plan must consider the cumulative environmental impacts of additional moorings, visual impacts and desired boating numbers. This plan will be exhibited for public comment. If the total number of moorings (commercial and recreational) identified in the mooring plan exceeds 35, an amendment to this Plan of Management will be required.
- 4.9.14 Subject to actions 4.9.12 and 4.9.13, discourage boat launching and storage where there are no boat launching or storage facilities, so as to reduce impacts on shoreline vegetation and soils. This may be achieved through the provision of additional moorings or jetties near camping and picnic areas.
- 4.9.15 Require commercial operators to fund installation and maintenance of any new commercial moorings.

- 4.9.16 Locate moorings in sheltered areas with preference to locations that are in proximity of designated camping and/or picnic areas.
- 4.9.17 Develop and implement a fuel spillage response plan in collaboration with relevant agencies.

## 4.10 COMMERCIAL TOURISM

### BACKGROUND

A commercial activity is an organised activity conducted within the park operated by a business or organisation to generate income or profit. Commercial operators play an important role in the provision of recreational opportunities within Myall Lakes National Park. With over 10,000 ha of lakes and an offshore island (Broughton Island) accessible by boat, water based activities are the focus of commercial recreation. Water-based activities include cruises, private charters (fishing and diving), hire of houseboats and canoeing trips. Land-based activities include coach tours, wildlife and wildflower viewing, guided walks, camping trips and educational tours.

Broughton Island, in particular, is growing in popularity for commercial operators. It is the largest offshore island along the NSW coast, with an approximate area of 114 ha. The island is popular with local boating enthusiasts for fishing and scuba diving and is important to the local tourism industry. The island is also an important nesting area for a number of seabirds including Shearwaters (Muttonbirds) and contains viable breeding populations of the endangered Green and Golden Bell Frog. Broughton Island also has the highest density and variety of recorded Aboriginal sites for any area of comparable size within the park.

Tours and commercial activities within the park have many potential benefits. They can increase visitor opportunities to participate in nature-based activities with professional instruction in both safety and minimal impact techniques. Guided activities also provide opportunities to interpret and promote the natural and cultural heritage of Myall Lakes National Park. Conversely, these activities have the potential to impact on park values and the experience of other visitors where there is competition for facilities and overcrowding of sites.

Commercial activities in the park are permitted under the National Parks and Wildlife Act and associated regulations. Commercial operators are required to have a lease or a licence with the NPWS, while organised non-commercial groups are required to have consent.

There are five commercial operators currently licensed with the NPWS within Myall Lakes National Park. These include four land-based operators and one water-based operator. In addition, some local businesses are licensed to sell items such as bread, milk and ice to patrons of the park.

## ISSUES

---

- There is a need to ensure that all commercial operators undertaking activities within Myall Lakes National Park (including to and from Broughton Island) are licensed.
- An effective licensing system is required to ensure that tour operators and group activities are appropriate for the management objectives of the site and the resource.
- It is not known whether current visitor numbers to both Broughton Island and on the Myall Lakes system are ecologically sustainable. The NPWS needs to define appropriate visitor numbers for those destinations within the park which may be negatively impacted by overuse and misuse so as to create a sustainable and quality recreation experience. This also applies to non-commercial activities.
- Given the particular natural and cultural values of Broughton Island, and that it is a discrete smaller area, it may be suitable as a 'pilot project' for setting a limit for visitor numbers.
- Monitoring of the activities of all commercial operators within the park is required to ensure the protection of the natural and cultural values of the park and its recreational setting.

## DESIRED OUTCOME

---

Provision of opportunities for commercial recreational activities within Myall Lakes National Park that contribute to a positive, nature-based recreation experience with minimal impact on natural and cultural values.

## GUIDELINES AND ACTIONS

---

- 4.10.1 Continue to implement a commercial licensing system for all commercial activities within the park, including on the park's waterways (but excluding commercial fishing activities licensed under the Fisheries Management Act, unless utilising management trails or facilities within the park (see also action 5.2.4)).
- 4.10.2 Ensure the long-term protection of the natural and cultural values of the park, park visitor experiences and safety, and recreation opportunities by prescribing leases and licences with:
- the approved activities;
  - location and frequency of activities;
  - maximum group sizes and minimum guide ratios for each activity;
  - guide standards;
  - ratio of clients to guides;
  - fees;
  - appropriate behaviour; and
  - other special provisions.

#### 4.10.3 Direct management of guided activities and commercial recreation towards:

- protection of the natural and cultural values of Myall Lakes National Park;
- protection of the special recreational experiences available in the park;
- protection of non-commercial recreational opportunities;
- control and management of environmental impacts;
- promotion of safety and accountability;
- professionalism in the tourism industry;
- provision of quality recreational experiences;
- maximisation of educational benefits;
- recovery of appropriate commercial returns to the NPWS;
- ensuring activities are appropriate for a national park setting; and
- providing visitors with an understanding of the NPWS and its management principles, and objectives for the park.

#### 4.10.4 Develop and implement, through licensing procedures, detailed commercial activity guidelines for:

- Broughton Island;
- vessel-based activities on the Myall Lake system; and
- land-based activities in Myall Lakes National Park.

These guidelines will address common criteria such as operator and guide knowledge, experience, group sizes for activities, qualifications and accreditation. The objectives, proposed visitor limits and strategies to be examined in each of these guidelines are outlined in table 4. The guidelines should be developed in consultation with the commercial tourism industry and representatives of other user groups.

#### 4.10.5 Require commercial operators whose activities may encroach on, utilise or visit an Aboriginal site or place, to negotiate with, and seek the support of local Aboriginal groups including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified).

#### 4.10.6 Monitor all commercial and non-commercial operators with respect to cumulative impacts, conflicts with other park visitors, safety requirements, quality of information being given and compliance with licence conditions.

#### 4.10.7 Prohibit commercial activities in the Myall Coast Reserves.

Table 3: Proposed guidelines for commercial activities: Objectives and strategies

Objectives	Proposed strategies
<p><b>Broughton Island</b></p> <p>To facilitate opportunities for visitors to participate in high-quality commercially run activities on an offshore island (Broughton Island) which is remote and relatively difficult to access, ensuring that these activities:</p> <ul style="list-style-type: none"> <li>• are ecologically sustainable and have minimal impact on the natural and cultural values of Broughton Island;</li> <li>• reinforce the feeling of a remote nature-based recreation experience; and</li> <li>• provide a quality learning experience enabling the visitor to leave with a greater understanding of the natural and cultural values of Broughton Island.</li> </ul> <p>To ensure that commercial operators are appropriately trained and knowledgeable about Broughton Island so as to provide high-quality visitor experiences.</p>	<p>To reinforce a remote, isolated recreation experience and to ensure that visitors do not feel crowded, one or all of the following measures may be implemented:</p> <ul style="list-style-type: none"> <li>• the specification of a maximum number of people at any one time that may visit the island on a commercial tour or activity;</li> <li>• the designation of areas and facilities that commercial tours may utilise (higher visitor numbers may be permitted on some areas of the island, for example, at Esmeralda Cove);</li> <li>• the specification of periods and times within the year where commercial tours to the island are permitted;</li> <li>• permit system for visiting the island;</li> <li>• discussion with industry in regard to monitoring impacts and industry contribution to costs; and</li> <li>• monitoring of impacts to work toward a basis for setting visitor limits.</li> </ul>
<p><b>Myall Lakes: Land-based</b></p> <p>To facilitate opportunities for visitors to participate in high-quality commercially operated recreational activities within Myall Lakes National Park.</p> <p>To ensure that these activities:</p> <ul style="list-style-type: none"> <li>• provide and promote activities which are ecologically sustainable and have minimal impact on the natural and cultural values of Myall Lakes National Park;</li> <li>• promote recreational experiences consistent with the proposed recreation management zoning; and</li> <li>• provide a quality learning experience enabling the visitor to leave with a greater understanding of the natural and cultural values of Myall Lakes National Park.</li> </ul> <p>To ensure that commercial operators are appropriately trained and knowledgeable in Myall Lakes National Park so as to provide high-quality visitor experiences.</p>	<ul style="list-style-type: none"> <li>• Discussion with industry in regard to monitoring impacts and industry contribution to costs; and</li> <li>• Monitoring of impacts to work toward a basis for setting visitor limits.</li> </ul>
<p><b>Myall Lakes: Vessel-based</b></p> <p>To facilitate opportunities for visitors to enjoy the waterways of Myall Lakes National Park from commercially hired vessels.</p> <p>To ensure that commercial operators hiring vessels:</p> <ul style="list-style-type: none"> <li>• assist in the provision of information which explains the natural and cultural values of Myall Lakes National Park;</li> <li>• are ecologically sustainable and have minimal impact on the natural and cultural values of Myall Lakes National Park;</li> <li>• ensure safety of passengers; and</li> <li>• ensure that the type of vessel and activity is appropriate in a national park setting.</li> </ul> <p>To ensure that operators of guided water-based activities are appropriately trained and knowledgeable in Myall Lakes National Park to provide high-quality visitor experiences.</p>	<p>Discussion with the industry in respect of:</p> <ul style="list-style-type: none"> <li>• encouraging commercial vessels to provide commercial moorings located in sheltered mooring areas;</li> <li>• encouraging commercial vessels to utilise commercial moorings;</li> <li>• placing an absolute limit on the number of commercial moorings in the lake system (for example, 20 moorings);</li> <li>• monitoring impacts and industry contribution to costs; and</li> <li>• monitoring of impacts to work toward a basis for setting visitor limits.</li> </ul>

## 4.11 LEASING

### BACKGROUND

#### Myall Shores Resort

The Myall Shores Resort is operated as a commercial facility under a lease between the Minister for the Environment and the lessee for the 'Myall Shores Resort Camping/Caravan Park at Bombah Point and Ferry Service'. The lease was established in 1988 for a term of 45 years. The lease relates to a 14-hectare site at Bombah Point within the park.

The lease provides for caravan and camping sites, a small shop (kiosk), a licensed restaurant, an educational facility and the hire of small boats. The lease also includes the operation of the Bombah Point vehicular ferry service.

The outcomes sought by the NPWS from any redevelopment and subsequent operation of the Myall Shores Resort, as defined in the Master Plan brief, included:

- an enhanced appreciation of Myall Lakes National Park and its values by visitors;
- reduced environmental impacts, both on-site and across the wider national park, with an effective environmental performance monitoring and management system in place;
- a facility closely integrated with the values, character and management of Myall Lakes National Park that offers a range of accommodation types and visitor experiences consistent with its protected area setting, NPWS policy and planning directions, and community expectations; and
- an economically viable operation and mutually beneficial partnership between the lessee and the NPWS.

A Master Plan for Myall Shores Eco Resort was publicly exhibited and was subsequently approved by the NPWS. The Master Plan includes comprehensive performance objectives and detailed standards relating to:

- site layout (including unregistered movable dwellings and powered campsites);
- vegetation, foreshore and erosion protection;
- landscaping and site character;
- public open space and national park entry;
- environmental protection/ performance requirements;
- bunkhouse, function and education/appreciation facilities;
- retail, restaurant and reception area;
- staff accommodation and service areas;
- utilities, effluent disposal; and
- fire fighting and management.

The Master Plan reduces the number of allowable sites from 203 to a maximum of 132 sites. This is made up of 85 Unregistered Movable Dwellings and 47 camping or caravan sites. A maximum carrying capacity of 600 people has been set by the Master Plan, this limit



includes those visitors utilising the school facility.

### **University of New South Wales: Field study centre**

The University of New South Wales operates a field study centre within the park at Smiths Lake. It is under a 20-year lease which began in October 1986. The main functions of the field study centre relate to research and teaching. The lease provides for:

- the operation of a laboratory to be used for biological teaching research; and
- pens, cages, compounds and other areas for the housing and observation of fauna and flora; and
- for purposes incidental to the above.

### **Mineral Deposits Limited**

Mineral Deposits Ltd own and manage a property, accessed from Mungo Brush Road, that shares a boundary with the park. To access the property, Mineral Deposits Ltd utilise land within the park. A licence was established in 1984 between Mineral Deposits Ltd (the Licensee) and the Minister for the Environment. This licence enables the Licensee to use land described in the licence for the purpose of gaining access to property managed by the Licensee. The licence is personal to the Licensee and will terminate upon sale or transfer of the property.

## **ISSUES**

---

- Ensure that the redevelopment of the Myall Shores Eco Resort is consistent with the Master Plan and achieves the outcomes sought by the NPWS including:
  - an enhanced appreciation of Myall Lakes National Park and its values by visitors;
  - reduced environmental impacts, both on-site and across the wider national park, with an effective environmental performance monitoring and management system in place;
  - a facility closely integrated with the values, character and management of Myall Lakes National Park that offers a range of accommodation types and visitor experiences consistent with its protected area setting, NPWS policy and planning directions, and community expectations; and
  - an economically viable operation and mutually beneficial partnership between the lessee and the NPWS.
- Ensure that the use and maintenance of the University of NSW Field Study Centre is consistent with NPWS objectives and this plan.

## DESIRED OUTCOME

---

Integration of commercially leased facilities with Myall Lakes National Park and its management in terms of protection of the park's natural and cultural values, landscape and aesthetic values, visitor perceptions and experience.

## GUIDELINES AND ACTIONS

---

- 4.11.1 Ensure that the redevelopment of the Myall Shores Eco Resort complies with the approved Master Plan and achieves the outcomes sought by the NPWS.
- 4.11.2 Require any changes to the approved Master Plan to be subject to the development and approval of a new Master Plan and inclusion in an amendment to this Plan of Management.
- 4.11.3 Review the lease for the University of New South Wales Field Study Centre at Smiths Lake in 2006. Ensure that the continued use of the study centre is for research and teaching purposes that are consistent with this plan and NPWS policy for the conduct of field studies centres.

## 4.12 INFORMATION, INTERPRETATION AND EDUCATION

### BACKGROUND

#### The Myall Lakes visitor

The origin, characteristics and number of visitors to Myall Lakes National Park is not well recorded or known. A study undertaken for the NPWS in 1994–95 confirmed that the majority of visitors to Myall Lakes National Park come from the Sydney and Hunter regions. A smaller percentage of visitors come from country NSW and interstate, with the international tourist representing a very minor proportion of the overall market (Frank Small & Associates 1998).

Popular reasons for visiting Myall Lakes National Park are to be with family, to enjoy nature, and to be with other people (NSW NPWS 1984, Sostaric 1989). Popular recreational activities are relaxing, camping, motor boating, swimming, fishing, bushwalking, waterskiing and sight-seeing (NSW NPWS 1984; Sostaric 1989, Jackson *et al.* 1998).

#### Public contact

Contact by NPWS with the public involves providing information, education, interpretation, promotion and publicity with the aim of increasing awareness, encouraging appropriate behaviour and enhancing the quality of visitor experiences. Information may be provided through guided tours, signage, interpretive displays, education programs, self-guided walks and the publication of information sheets and brochures.

The main current methods of public contact are through the provision of visitor information such as brochures at tourism outlets (for example, local tourist information centres and NPWS offices), through contact with customer service officers in the park, information bays in the park, signage, and general national park information points (for example, the NPWS web page and the NPWS information centre). Discovery and education programs have been conducted with varying degrees of success and popularity in the park.

There is also one education/field centre within the park (Smiths Lakes Field Studies Centre) managed by the University of New South Wales. This centre offers facilities for education programs related to the park's natural and heritage values. Public education programs on the natural values of Myall Lakes National Park have also been offered from this venue (for example, flora and fauna studies of Myall Lakes National Park).

### **Community involvement**

Many people have expressed their passion for and concern about Myall Lakes National Park and their desire to actively participate and contribute to management of the park. A number of volunteer groups have actively participated in maintenance of sites. These groups include the Bungwahl Progress Association (Neranie Cemetery), the Myall Lakes Yacht Club (involvement in Clean-Up Australia Days) and the Tea Gardens/Hawks Nest Lions Club (construction of walking tracks). The community has also been actively involved in the blue-green algae issue and catchment management.

## **ISSUES**

---

- There is scope to improve visitor education on appropriate park use (for example, appropriate boating conduct), and on the natural and cultural values of the park, and to involve community groups in facilitating this educative process.
- Some people have expressed feelings of alienation from the NPWS staff (NSW NPWS 2001a), especially locals that have a strong historical connection with the park.
- Signage within the park requires a major review. Signs are of different ages and, therefore, of different standards and condition. There are a number of park facilities and destinations that are not signposted.
- There is considerable potential for interpretation of heritage sites (both Aboriginal and European).
- There is potential to increase community involvement in the management and appropriate use of the park, monitoring impacts on the park (for example, water quality), assistance with the protection of threatened species (for example, Bird Observers Club), and weed management.

## DESIRED OUTCOME

---

Enhancement of visitor understanding and appreciation of natural and cultural values of the park, with visitors well-informed about appropriate use of the park and about recreational opportunities available within the park and across the region.

## GUIDELINES AND ACTIONS

---

4.12.1 Aim to increase community understanding and appreciation of the natural and cultural values of Myall Lakes National Park by placing emphases on:

- the outstanding natural and cultural values of the Myall Lakes system, particularly in regard to the fact that the park is recognised as a Ramsar Wetland of International Importance;
- the uniqueness of the lakes system and its ecology, and catchment-related issues which threaten the ecosystem;
- the coastal landforms, particularly the dune system, which have been described as a 'giant filing cabinet' containing important information on climate change and sea-level rise;
- the diversity of plants and animals and the importance of the extensive shallow areas of the lakes for waterfowl habitat (CAMBA and JAMBA species);
- the traditional use of the park by the Worimi people and the value of the park to the Worimi people today;
- the history of the early European settlement and use of the park area and the strong historical associations that many people today have with the park;
- the importance of Myall Lakes National Park to regional tourism and its popularity for car and boat-based recreational activities and camping;
- the history of controversy surrounding mining and the achievement of creating the park;
- minimal recreation impact including appropriate boating behaviour and vehicle use on beaches; and
- park visitors have access to information regarding the rationale behind the various management zones of the National Park.

4.12.2 Develop and implement a public contact and interpretation plan. This plan will:

- emphasise key themes (as identified by action 4.12.1), particularly the conservation values of the park, and include key messages to encourage appropriate visitor expectations and behaviour;
- provide an inventory and assessment of existing interpretative material including brochures, interpretative displays, information on the internet and park signage;
- identify gaps/weaknesses in information provision;
- identify improvements;

- identify priorities for implementation of this plan; and
  - seek resources to implement the plan.
- 4.12.3 Encourage continued community involvement in park management and investigate new opportunities for involvement. Such opportunities may relate to the promotion of appropriate visitor behaviour (for example, a boating code of conduct), assistance with the protection and interpretation of heritage sites, assistance with threatened species protection (for example, the Little Tern) and monitoring impacts on the park.
- 4.12.4 Encourage more effective use of technology (for example, the internet and email) in education and information programs.
- 4.12.5 Hold local community days to encourage community involvement and provide information to neighbours and the surrounding community on park management issues.
- 4.12.6 Continue active participation with local and regional tourism authorities and economic development organisations in the development and implementation of regional tourism strategies, to ensure the promotion of ecologically sustainable tourism within the park.
- 4.12.7 Liaise with other organisations which provide information to park visitors to ensure all information is accurate, consistent, up to date and promotes appropriate visitor expectations and behaviour.
- 4.12.8 Encourage relevant authors and publishers to liaise with NPWS regional staff regarding park information and encourage the promotion of minimal impact recreational use in publications.

## 4.13 RESEARCH

### BACKGROUND

The primary function of research in the planning area is to provide information that contributes to effective management and decision-making and to improve understanding of:

- community and economic values;
- characteristics of the park visitor; and
- the natural and cultural resources and the processes that affect them.

Research in Myall Lakes National Park commenced long before it was declared a national park in 1972. This is indicative of the significance and importance of the area to many people. The earliest known scientific study was conducted on the geology of the area (Carey 1934) in 1934. Since then, over 140 scientific studies have been conducted. The majority of these studies have focused on the natural environment (85%), especially the vegetation (28%), water resources (16%), ecology (13%) and fauna (15%). Studies have also investigated other issues relating to the management of the park (for example, access, recreation and economics) and special interest groups have conducted a number of scientific studies.

It is also an obligation, under the Ramsar Convention on Wetlands, to monitor for changes to the ecological character of the Ramsar site. Any changes to the ecological character should be reported to Environment Australia.

Consultants, agencies (other than the NPWS), academics, tertiary institutions and special interest groups have conducted the majority of studies. Studies that the NPWS has conducted in the park have focused on the cultural values and issues relating directly to the management of the park (especially recreation).

The *Background Information: Revised POM for Myall Lakes National Park* (NSW NPWS 2001a) contains a comprehensive bibliography of research undertaken in the park to date.

## ISSUES

---

The following have been identified as priority research areas:

- the impact of threatening processes on native plants and animals (for example fire, feral animals, lake nutrient enrichment, 4WD beach-driving) with priority to be given to impact on threatened species;
- the distribution and type of Aboriginal sites and the impact of threatening process on Aboriginal heritage sites;
- the impact of recreational activities, both land and water based, on biophysical attributes (for example, vegetation, soils) and an evaluation of this impact over time;
- aquatic biodiversity and habitats so as to understand their role in the healthy functioning of the aquatic environment in the park;
- historic heritage sites with the priority given to recording oral histories;
- park visitor profiles (for example, popular recreational activities, visitor numbers, and origins);
- the carrying capacity of sites within the park; and
- changes to the ecological character of the Ramsar site.

## DESIRED OUTCOME

---

Completion of appropriate research activities and a continuing commitment to increase understanding and knowledge about the cultural and natural values of the park and the park visitor, thereby contributing to improved park management.

## GUIDELINES AND ACTIONS

---

- 4.13.1 Require all researchers to be licensed in accordance with legislative requirements under the Threatened Species Conservation Act, National Parks and Wildlife Act, and NPWS policy and procedures.
- 4.13.2 Direct NPWS research efforts towards establishing baseline data and monitoring the

impact of recreational activities on biophysical indicators. This research will provide information critical to effective and adaptive management.

- 4.13.3 Prepare a prospectus to encourage the involvement of other organisations in identified priority research areas. Priority research areas are defined in the issues section above.
- 4.13.4 Work collaboratively with and encourage researchers from other organisations to share information and to design research programs that provide information that is directly useful for park management purposes.
- 4.13.5 Monitor for any changes to the ecological character of the Ramsar site and report these findings to Environment Australia.

## *Management Strategy 5*

# Management Operation





## 5.1 MANAGEMENT OPERATIONS AND ALIEN LAND USES

### BACKGROUND

#### **Park management**

Myall Lakes National Park and Myall Coast Reserves are managed within the Hunter Region of the NPWS. The Great Lakes area manages Myall Lakes National Park, with the exception of Broughton Island and Fame Cove. These locations, along with the Myall Coast Reserves, are managed by the Hunter Coast Area.

The NPWS regional office and Hunter Coast Area office are located at Nelson Bay and the Great Lakes Area office is located within Booti Booti National Park, south of Forster. A works depot, which is a base for field activities for the majority of the park, is located at Bombah Point, while the north-eastern part of the park is serviced from a works depot located south of Forster (the Booti Booti depot). Field activities for Broughton Island and Fame Cove are serviced from a works depot in Tomaree National Park.

#### **Boundary fencing**

Although the NPWS has no legal responsibility to contribute to boundary fencing under the *Dividing Fences Act 1951*, there are sometimes wildlife and management reasons for NPWS involvement. In Myall Lakes National Park, there have been a number of issues related to boundary fencing, particularly the grazing in the park of domestic animals from lands adjacent to the park, due to ineffective fencing.

#### **Non-NPWS infrastructure**

There are four known trigonometric stations located within the park. There are a number of powerlines throughout the park, especially to the west of Bombah Point and in the former forestry areas. The latter provide electricity to facilities such as the towers at Nerong and Mt Chapman and are part of the supply grid covering the region.

Three telecommunication sites are located in Myall Lakes National Park. They comprise towers and associated infrastructure that were in place prior to gazettal of the area as a national park and are administered through original Occupation Permits issued by State Forests of NSW. Two towers are located at Nerong and a single tower exists at Mount Chapman. They are used for the purposes of operating a telecommunications service and network by Telstra Corporation, Cable & Wireless Optus Limited and Vodafone Australia. The NPWS is currently developing amendments to the occupancy conditions for these facilities to meet NPWS general management objectives.

#### **Council local environmental plan**

Myall Lakes National Park is within the local government area of Great Lakes. Under the Great Lakes Council Local Environmental Plan 1996 the park is zoned 8(a) national park. The objectives of this zone are to:

- identify land which is reserved or dedicated under the National Parks and Wildlife Act; and

- allow for the management and appropriate use of that land as provided for under the Act.

While some of the former forestry areas are still zoned 1(f) forestry, Great Lakes Council advises that these lands will be rezoned to 8(a) national park with the next review of council's local environmental plan.

Zones adjacent to and surrounding the park include:

- 8(b) national park proposed
- 1(a) rural
- 1(c) future urban investigation
- 1(f) forestry
- 7(b) conservation

Any proposed development in an 8(b) zone requires the concurrence of the Director-General of the NPWS. There are approximately 193.7 ha zoned 8(b). As opportunities arise for the acquisition of 8(b) lands, the NPWS may negotiate with the owner to purchase the lands if funds permit.

A minimum lot size (and general dwelling entitlement provision) of 40 ha applies to land zoned 1(a), 1(c) and 7(b). This minimum lot size assists in the protection of the scenic qualities of the visual catchment to the park.

### **Beekeeping**

The NPWS adopts a precautionary and pragmatic approach to beekeeping on NPWS-managed land by permitting the continuance of existing sites but prohibiting any new sites. Under the 1984 Plan of Management, no new apiary sites were permitted within the park and current sites were to be phased out over five years. These, however, have not been phased out and there are 22 known apiary sites within Myall Lakes National Park. The majority of these sites are within the former forestry areas of the park.

## **GUIDELINES AND ACTIONS**

---

- 5.1.1 Retain the Bombah Point works depot and the Booti Booti depot as bases for field activities covering the extent of the park.
- 5.1.2 Continue to manage Broughton Island and Fame Cove from Nelson Bay as boat-based access and staff resources are readily available.
- 5.1.3 Undertake an inventory of boundary fencing in the park and where incursions of domestic stock occur, consult with adjoining property owners regarding replacement of the fencing.
- 5.1.4 Confirm the status of the trigonometric stations to determine if they are still operational. If they are no longer operational, request removal of these facilities and rehabilitation of the sites or retain as an example of 'old style' surveying. Continue to licence operational facilities under the provisions of the National Parks and Wildlife Act.

- 5.1.5 Continue the rights of existing telecommunications occupiers under Occupation Permits issued by State Forests of NSW until they are amended by agreement or terminated by NPWS in accordance with their existing interest.
- 5.1.6 Prohibit additional telecommunications towers in Myall Lakes National Park.
- 5.1.7 Seek easement licences with owners of non-NPWS utility infrastructure that will set prescriptions for the maintenance of these facilities and access roads.
- 5.1.8 Require a suitable level of environmental impact assessment and NPWS approval for any alterations to existing non-NPWS infrastructure.
- 5.1.9 Seek an agreement with Great Lakes Council on management prescriptions for road reserves along council roads adjoining the park.
- 5.1.10 Liaise with Great Lakes Council regarding any changes to provisions of the Local Environmental Plan that may impact on cultural or natural values of the park. Formally request the council to refer such proposals to the NPWS for comment (see also action 1.1.2).
- 5.1.11 Recognise current beekeeping consents and/or permits in accordance with NPWS policy. Under clause 16(2) of the National Parks and Wildlife (Land Management) Regulation 1995, all apiary sites will be licensed. Permit no additional apiary sites in the park.

## **5.2 COMMERCIAL FISHING**

### **BACKGROUND**

Up to 45 commercial fishers make use of Myall Lakes National Park, including the beaches and the lakes system. Commercial fishing occurs throughout most of the park's waterways. Commercial prawning occurs mostly in the lower Myall River and mesh netting for fish occurs in the lakes. Commercial fish catches in the lake include Sea Mullet, Eel, Bream, Luderick, Silver Biddy and Whiting. School prawns dominate the crustacean catch and the Blue Swimmer and Mudcrabs are also important. Commercial beach fish catches include Mullet, Luderick, Bream and hand collecting of beachworms and pipis.

Commercial fishers must be licensed under the Fisheries Management Act. Commercial fishing authorised by NSW Fisheries under this act cannot be prohibited in NPWS-managed estate, including use of the waterways. However, commercial fishers must be licensed or obtain a permit under the National Parks and Wildlife Act and National Parks (Land Management) Regulation for the use and erection of facilities within the park associated with commercial fishing, including use of management trails. The NPWS can also require conditions addressing, for example, the location and management of access routes, and the prohibition of dogs and firearms, and compliance with such conditions.

## ISSUES

---

- There are a number of unlicensed structures associated with commercial fishing within the park, particularly on the lower Myall River and at Neranie Bay. These include huts and/or built structures associated with prawning shots on the lower Myall River.
- With the exception of the Tamboy Creek and Pipers Creek management trails, permits have not been issued for access through the park, including beach access to undertake commercial fishing activities.
- Whilst the management of fish stocks falls within NSW Fisheries jurisdiction, the NPWS has an interest in ensuring that all practices, including commercial fishing, are ecologically sustainable to maintain the ecological health of the lake system.

## DESIRED OUTCOME

---

Implementation of procedures to ensure facilities and access agreements associated with commercial fishing in the park are consistent with objectives of this plan and that they have appropriate NPWS approval.

## GUIDELINES AND ACTIONS

---

- 5.2.1 Support and encourage any initiatives by NSW Fisheries to collect data on commercial fish catches and to manage fish populations and habitat in the lake system (see action 1.3.1).
- 5.2.2 Undertake a review of existing structures and/or facilities in the park required for commercial fishing in consultation with NSW Fisheries, Waterways Authority of NSW and local commercial fishers. Leases or licences will only be issued for existing facilities if the activity is considered consistent with the objectives of this plan of management.
- 5.2.3 Prohibit the construction of new structures and facilities in the park required for commercial fishing.
- 5.2.4 Require fishers engaged in commercial fishing activities to have a licence or permit to access the beach or lake system including the Myall River, either via a management trail or via the beach.

### 5.3 BROUGHTON ISLAND HUTS



Figure 4: Broughton Island huts

#### BACKGROUND

Broughton Island, gazetted as part of Myall Lakes National Park in 1972, is a 114-hectare island that lies approximately 3 km offshore from Dark Point and 16 km north-east of the entrance to Port Stephens.

The history of the island is colourful with periods of occupation and use including Aboriginal use, exploration, commercial and recreational fishing, agricultural activity, scientific research and conservation. The environmental values of the island were recognised as early as 1862 when the island was reserved as a water and wildlife reserve.

A settlement was established at Esmeralda Cove, on the southern side of the island by commercial fishers of mixed nationalities in the 1920s (EJE Group 2000). Seven huts remain at Esmeralda Cove. These have been substantially modified since the 1920s, particularly following severe storm damage in the 1970s. These huts have been the subject of controversy since 1972 when the island was gazetted as part of Myall Lakes National Park. The 1984 Plan of Management recommended the removal of the huts and their replacement with a basic emergency shelter. The huts and associated activities were considered to be in conflict with the conservation objectives of the park and with the National Parks and Wildlife Act, in relation to the private occupation of public land.

Stakeholder groups, including the Maitland City Offshore Fishing Club and the Newcastle District Anglers Association, rallied at the prospect of losing the huts and formed the Broughton Island Conservation Society Incorporated (BICSI) to lobby for the retention of the huts. They were successful, with a licence being established in 1994 for the use of the hut sites by the BICSI. The current licence expired in November 2001. Under the licence, the BICSI owns the buildings (the huts).

The NPWS undertook a contextual history and conservation study of the Broughton Island hut precinct in 2000 (EJE Group 2000). The study assessed the social, historic and aesthetic significance of the huts and hut precinct. It found that the hut precinct had historic significance due to its continuation as a settlement that was established by commercial fishers prior to the 1930s. The huts were considered to have little aesthetic significance, apart from their scenic setting, due to substantial modifications made to the hut structures.

The study found that the huts had social significance as the settlement has strong associations with social groups loosely focussed on recreational fishing and on the preservation of the settlement itself. The study concluded that the heritage value of the Broughton Island huts, with the exception of one hut that retains characteristics of the early settlement, belongs more to the site at Esmeralda Cove rather than to the individual structures that persist.

The NPWS has continued discussions with the BICSI over the last 12 months to resolve a position on the huts including their continued existence, role and use of the island.

## ISSUES

---

- The value and role that the Broughton Island huts and licensees play in NPWS management of a remote offshore island, such as rendering assistance during emergencies and/or providing information to members of the public about the values of the island, needs to be acknowledged.
- Huts and licensees provide a presence to deter vandalism and other inappropriate behaviour on the island.
- Removal of the huts from the island may result in a net loss for the conservation values of the island by dispersing visitor use to new sites and encouraging camping use which may be more detrimental than the huts presence.
- The huts could be managed and licensed in a fair and equitable manner allowing the general community an acceptable degree of access to privately owned huts that occupy public land.
- Existing hut structures need to meet relevant standards for health, safety and occupation, therefore, minimising the liability risk to the NPWS and licensees.
- Waste management systems associated with the huts must meet acceptable standards to minimise impacts on the island's environmental values.
- It is important to ensure that the historical and social context of the huts, in particular their setting, is recognised, and that the maintenance of the huts or activities associated with their occupation, does not detract from this context, general visitor use and other values of the island.

## DESIRED OUTCOME

---

Renewal of the licence with the Broughton Island Conservation Society Incorporated to use and occupy the hut sites at Broughton Island, including the buildings situated thereon, for casual recreational use by its members. Development of guidelines for the use and maintenance of the huts and hut sites.

## GUIDELINES AND ACTIONS

---

- 5.3.1 Renew the licence to use and occupy the hut sites at Broughton Island. This would include the use of the island's seven buildings for casual recreation by its members only. Prohibit new huts.
- 5.3.2 Renew the licence for the Broughton Island hut sites for a period of up to five years, with non-compliance resulting in forfeiture of the licence.
- 5.3.3 Facilitate dialogue between the NPWS and the BICSI through NPWS representation and participation in the society's meetings.
- 5.3.4 Identify and resolve legal implications of hut occupation at Broughton Island and compliance with health, safety, and building code requirements.
- 5.3.5 NPWS indicate its preference to the BICSI for one of the huts being made available to the NPWS to manage for public use, either as a general picnic facility or for information display.
- 5.3.6 Formulate a development control plan for the Broughton Island hut precinct to guide management of the precinct. This plan to:
- identify heritage values and guidelines for the protection of identified heritage values;
  - require all repairs or alterations to the huts to be approved in writing by the NPWS, and to address identified heritage values;
  - detail acceptable materials for repair and replacement;
  - specify no increase in existing hut numbers or floor areas;
  - prohibit new unauthorised works at the back of the beach to protect the huts from wave and/or storm attack; and
  - prohibit the replacement of any huts severely damaged or destroyed by events, such as storms and fire.

## 5.4 TAMBOY HUTS

### BACKGROUND

The Tamboy fishing village was constructed in the early 1900s as a base for professional fishers. The history of the village at Tamboy is strongly associated with prawning on the Myall River and, up until 1979, a 'sale' was conducted monthly at the village to establish prawning locations (locally known as the 'Tamboy Prawn Sale'). Activities of the village are still associated with professional fishing.

The 1984 Plan of Management required the removal of over 90 huts from the park, but recommended that the huts at Tamboy remain to 'preserve a historic situation'. The plan required that formal agreements with professional fishers occupying the huts, a rehabilitation program, building standards and limits to the extension of the village be established. All



Figure 5: Tamboy huts

nine huts are currently under separate licence arrangements.

The NPWS undertook a detailed contextual history and conservation assessment of the Tamboy hut precinct in 2000 (EJE Group 2000). The study assessed the social, historic and aesthetic significance of the huts and the hut precinct. The study found that the Tamboy hut precinct has historic significance because of its strong association with the development of a local prawning industry on the Myall River. Although the huts were not considered technically sophisticated, the study found that they displayed a range of skills and ingenuity not commonly found in other types of construction and, therefore, had aesthetic significance. The social significance of the village stemmed from its ability to demonstrate the day-to-day interactions between fishers and their families, enjoying a lifestyle based on prawning and subjected to isolation. The study concluded that the significance of the site relied on the presence of the fishers and their associated equipment to help give an understanding of the development and use of the village.

## ISSUES

---

- It is important that the historical context of the nine remaining huts is maintained, in particular their setting and association with professional fishing.
- Existing hut structures need to meet relevant standards for health, safety and occupation, therefore minimising the liability risk to the NPWS and licensees.
- Waste management systems associated with the huts must meet acceptable standards to minimise impacts on the park's environmental values.
- There is a need to develop an appropriate means of resolving succession of licences which recognises the importance of maintaining the link between the village and professional fishers.
- There is a risk of buildings being altered without NPWS approval.
- There is a need to ensure that the general community has an acceptable degree of access to the area.
- Interpretation to the general community of the historic significance of the huts is required.



## DESIRED OUTCOME

---

Establishment of a licence with an incorporated society, representing the interests of the existing Tamboy hut licensees. The licence to provide for the use and casual occupation of the hut sites at Tamboy, including the buildings situated thereon, by members of the society for purposes related to professional fishing only. Development of guidelines for the use and maintenance of the huts and hut sites.

## GUIDELINES AND ACTIONS

---

- 5.4.1 Establish a licence, with an incorporated society representing the interests of the existing Tamboy hut licensees. The licence to provide for the use and casual occupation of the hut sites at Tamboy, including the buildings situated thereon, by members of the society for purposes related to professional fishing only. Prohibit new huts.
- 5.4.2 Renew the licence for the Tamboy hut sites biannually with non-compliance resulting in forfeiture of the licence.
- 5.4.3 Facilitate dialogue between the NPWS and the proposed Tamboy huts society, through NPWS representation and participation in the society's meetings.
- 5.4.4 Identify and resolve legal implications of the occupation of the Tamboy huts and compliance with health, safety, and building code requirements.
- 5.4.5 Formulate a development control plan for the Tamboy hut precinct to guide management of the precinct. This plan to:
- identify heritage values and guidelines for the protection of heritage values;
  - require all repairs or alterations to the huts to be approved in writing by the NPWS and to address identified heritage values;
  - stipulate required protection measures for the buildings from degradation, including termites and rot;
  - detail acceptable materials for repair and replacement;
  - specify no increase in existing hut numbers or floor areas; and
  - detail guidelines for bushfire management within the hut precinct.
- 5.4.6 Maintain and if necessary upgrade the current picnic facility within the Tamboy hut precinct. Provide accessibility to appropriate toilet facilities for this area.
- 5.4.7 Erect interpretative material within the Tamboy hut precinct in a location accessible by the public, explaining the heritage significance of the site and other features.



# C

## Implementation



## **PLAN IMPLEMENTATION**

### **SUMMARY OF ACTIONS AND GUIDELINES**

This plan of management is part of the system of management developed by the National Parks and Wildlife Service. The system includes the National Parks and Wildlife Act and National Parks (Land Management) Regulation 1995, Threatened Species Conservation Act, the NPWS Corporate Plan, associated strategies and management policies. It also includes directorate and regional operational planning.

The orderly implementation of this plan of management will be undertaken within the annual programs of the NPWS Hunter Region. Priorities will be determined during the development of these programs and will be subject to regional priorities, the availability of funding and staff and any specific requirements of the Director-General or the Minister.

Regional and area programs are subject to on-going review within which works and any other activities carried out in parks and reserves of the Hunter region will be evaluated in relation to priorities in this plan.

The environmental impact of all development proposals and significant activities will be assessed in accordance with established environmental assessment procedures.

In accordance with section 81 of the National Parks and Wildlife Act, this plan shall be carried out and given effect to, and no operations shall be undertaken in relation to the planning area unless those operations are in accordance with this plan. If after adequate investigation, operations not included in the plan are found to be justified, this plan may be amended in accordance with section 75 of the Act.

As a guide to the implementation of the specific actions in this plan, relative priorities have been assigned (high, medium, low) to each action which is summarised in table 4. The following criteria have been used to allocate priorities:

- High: Imperative to achieve the plan's stated management strategies and desired outcomes and if deferred, would result in unacceptable loss of natural and/or cultural heritage values.
- Medium: Important to achieve the plan's stated management strategies and desired outcomes, but can be deferred without unacceptable loss of natural and/or cultural heritage values.
- Low: Programs that can be undertaken after high and moderate priority programs have been completed or which can be undertaken by other means such as volunteers, grant, concession operation, sponsorship or similar.

Table 5 summarises the guidelines in the plan (it is noted that some of these guidelines may contain a smaller action component).

## IMPLEMENTATION

The relevant area managers will prepare a comprehensive plan implementation program. This program will identify estimated costs and funding sources for each action, area of responsibility and projected completion date. Actions within the plan will be incorporated when possible into relevant regional and area operational plans.

The NPWS area manager staff will monitor the implementation of this plan on an annual basis. This will identify actions that have been implemented in the previous year, those that are ongoing and priorities for following financial years.

Timing of this evaluation should coincide with the NPWS financial management process, in particular, immediately prior to developing proposals for the following financial year's budget. This will facilitate appropriate resourcing of actions scheduled for implementation in subsequent years.

A review of the progress of implementation will be conducted with NPWS staff and the regional advisory committee every two years.

*Table 4: Summary of actions*

### No.      Action

#### High priority

1.1.3	Maintain a network of public roads and management trails. Close and rehabilitate disturbed areas and illegal access tracks not required for public use or management.
1.1.7	Develop and commence implementation of a dune stabilisation strategy to facilitate restoration/stabilisation of key 'sand blow' erosion sites.
1.2.4	Rehabilitate disturbed areas and illegal access tracks not required for public use or management.
1.2.6	Implement recovery plans as prepared under the Threatened Species Conservation Act for species, communities and populations listed as endangered or vulnerable.
1.3.3	Monitor catchment characteristics in conjunction with relevant agencies. Implement catchment management policies and programs to control water quality.
1.4.5	Maintain programs for the ongoing monitoring of ground and lake water quality in collaboration with relevant government agencies and the community.
1.4.6	Monitor blue-green algae populations within the lake system, in collaboration with relevant agencies, to provide information that may assist in developing appropriate responses. Informing park visitors when a health risk exists in regards to blue green algae blooms through the erection of relevant signage.
2.1.1	Consult with and encourage the involvement of local Aboriginal groups, including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified), in all aspects of landscape management, particularly of Aboriginal sites, within the planning area.
2.1.2	Maintain and further develop a cooperative and joint management approach of Dark Point between the Karuah Local Aboriginal Land Council and the NPWS.

Table 4: Summary of actions contd

No.	Action
-----	--------

**High priority contd**

2.1.3	Progressively survey the planning area, as resources permit, to locate and record Aboriginal sites with priority given to areas most threatened by human impact or natural deterioration. Include any recorded sites on the NPWS Aboriginal Sites Register.
2.1.4	Protect identified Aboriginal sites from disturbance or damage by human activities in liaison with local Aboriginal groups including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified), with priority given to areas most threatened with human impact or natural deterioration.
2.1.8	Monitor the impacts of visitation to sites open to park visitors in accordance with action 2.1.7 and regulate use if necessary to avoid adverse impacts.
2.2.1	Prioritise cultural heritage places and landscapes for further investigation and, in order of identified priority, assess the heritage significance and values of sites, historic themes or routes, conditions, threats to site protection and potential conservation actions.
2.2.2	Based on the assessment undertaken in accordance with action 2.2.1, develop long-term conservation and management outcomes for significant places and landscapes under threat. Management options may include removal, passive management and periodic monitoring, stabilisation, adaptive re-use, cultural tourism, restoration, interpretation or other use.
3.1.3	Complete and exhibit the fire management plan for Myall Lakes National Park and Myall Coast Reserves by 2003 and, following its adoption, commence implementation.
3.1.4	Maintain fire history data for the park and adjacent areas and incorporate this information into fire-management planning.
3.2.1	Undertake introduced plant species management and control in accordance with the priorities defined in the Hunter Region Pest Management Strategy (NSW NPWS 2001b). Species defined as highest priority under this strategy are: <ul style="list-style-type: none"> <li>• Bitou Bush</li> <li>• Lantana</li> <li>• Salvinia</li> <li>• Asparagus Fern</li> <li>• Crofton Weed/ Mist Flower</li> <li>• Morning Glory (Broughton Island)</li> </ul>
3.2.3	Reduce pine wildings occurring in the park and complete an investigation into options for removal of the mature remnant plantation of <i>Pinus elliotii</i> on the western side of the lower Myall River.
3.2.6	Continue to treat road-edge weeds, to maintain accessibility and visibility and to limit dispersal opportunities via vehicles. Give priority for treatment to roads in former forestry areas and key public access roads such as Violet Hill Road, Stoney Creek Road, Mungo Brush Road and Seal Rocks Road.
3.2.10	Implement rainforest rehabilitation program at Mungo brush to protect threatened plant species.

Table 4: Summary of actions contd

**No.      Action****High priority contd**

3.3.1	Undertake introduced animal species management and control in accordance with the priorities defined in the draft <i>Hunter Region Pest Management Strategy</i> (NSW NPWS 2001b). Species defined as highest priority under this strategy are the wild dog, fox and introduced species existing in isolation (Broughton Island) or limited in rangeland, and not yet established across the park.
3.3.2	Assess feral pig and horse numbers within former forestry areas (west of Nerong).
3.3.4	Undertake feral pig control and horse removal programs in the former forestry areas as a priority. Engage in consultation with appropriate agencies and interest groups including state forests prior to any horse control programs being implemented.
3.3.7	Remove goats from Neranie Head.
3.3.9	Assess the impact of rabbits and black rats on Broughton Island and Little Broughton Island and establish co-ordinated control programs aimed at eliminating introduced species from the island.
4.1.2	Monitor recreation settings to collect baseline data on biophysical, social and management attributes. The inventory will include the use of photographs, videos and other site survey techniques to ensure that recreation settings are maintained.
4.2.1	Based upon the tree fall risk assessment (URS Australia Pty Ltd 2002) the facility based camping areas designated in map 2 and specified in table 1 will be developed. Existing camping locations closed due to the recommendations of risk assessment will be rehabilitated.
4.2.2	Where necessary to ensure public safety, areas or sites suitable for camping will be delineated within the camping areas shown on map 2
4.2.3	Conduct ongoing research, monitoring and management of tree hazard identified by the tree fall risk assessment (URS Australia Pty Ltd 2002) Including research into the regeneration process and conservation needs of the lake fringe Melaleuca community.
4.2.5	Safety information, including on-site information, may be provided at appropriate locations such as camping and day use areas where Melaleucas or other potential safety hazards occur.
4.2.7	Regularly monitor the condition of campsites and 'rotate and rest' campsites as necessary to minimise loss of ground cover and soil erosion.
4.2.8	Provide non-polluting toilet systems for camping areas with five or more sites, while visitors to small camping areas with less than five sites (refer to table 1) will be required to provide their own self-contained toilet system (eg. Porta-Loo). This system in small camping areas will be monitored, and if unacceptable environmental impacts are occurring, toilets will be constructed.
4.3.1	Based upon the tree fall risk assessment (URS Australia Pty Ltd 2002) day use areas with designated picnic facilities will be developed in accordance with table 2.

Table 4: Summary of actions contd

No.	Action
-----	--------

*High priority contd*

4.3.4	Provide non-polluting toilet systems in identified areas (refer to table 2).
4.3.6	Redesign visitor facility areas to increase foreshore protection in accordance with areas identified in the tree fall risk assessment (URS Australia Pty Ltd 2002).
4.3.7	Monitor the condition of day use and picnic areas, temporarily or permanently closing or restricting use in any area when there is an unacceptable risk to visitors or threat to environmental values.
4.4.1	Maintain the walking tracks identified in map 2.
4.5.2	Maintain the public road network to an all-weather, two-wheel-drive standard with the exception of the following roads that will be maintained to at least a dry weather two-wheel-drive standard: <ul style="list-style-type: none"> <li>• Jarrah Road;</li> <li>• Nerong Road;</li> <li>• Stony Creek Road;</li> <li>• Purgatory Road; and</li> <li>• Crawford Road.</li> </ul>
4.5.3	Close all management trails shown on map 3 to public vehicular access. Management roads are for NPWS management and emergency purposes only.
4.5.4	Rehabilitate all roads or trails not shown on map 3.
4.5.8	Subject to satisfactory environmental assessment and public risk, and preparation and public exhibition of an environmental management plan, establish a permit system for public vehicular access along two Restricted Public Access Roads as shown in Map 3. Permits will only be issued for 4WD vehicle access due to the unsuitability of these roads to 2WD access and their remoteness. The number of vehicles permitted to access these roads may be restricted for public safety or environmental management reasons.
4.6.1	Permit 4WD beach driving on those beaches indicated on map 3 only. This allows access from between Lemon Tree and the southern side of Dark Point (not including Dark Point itself) as well as between Dees Corner and Big Gibber Headland.
4.6.3	Implement closures of sections of beaches where threatened species have been found to nest or rest to protect both the nesting birds and hatchlings that use the beach to feed and rest. To effect the closure and to ensure that vehicles do not drive on dunes, closure of the entire beach may be necessary in some instances.
4.6.4	Implement seasonal closures of sections of beaches when the beach has been eroded severely and it is considered unsafe for beach driving or where driving on dunes would be likely.
4.6.5	Subject to improved parking areas, environmental considerations and pedestrian access adjacent to the beach, restrict 4WD access between the Dark Point Headland and Dees Corner, Big Gibber (including Big Gibber Headland) and Treachery headland to 4WD beach access as shown on Map 3. The restriction on 4WD beach access should take into consideration levels of 4WD use on other beaches and the potential for cumulative impact, conflicts with pedestrian activity within the identified area and impacts on the natural and cultural values of the adjacent dune systems and wetlands.



Table 4: Summary of actions contd

No.	Action
<i>High priority contd</i>	
4.6.8	Develop and implement a 4WD beach-driving education, information and signage strategy. This strategy will include interpretation on the importance of protection of Aboriginal cultural heritage sites, beach and dune systems and threatened species.
4.6.10	Seek gazettal of all intertidal areas adjacent to the park, down to astronomical low watermark, to enable consistent management of the full beach environment and rocky shores.
4.6.11	Establish a monitoring program to ascertain the social and environmental impacts of vehicles on the beach and dune systems. If an ongoing review and monitoring determines that use of a particular beach environment by 4WD vehicles is having an unacceptable impact on the natural or historical features of a particular area, vehicle use will be reviewed in that area.
4.9.1	<p>Implement proposed waterway plan shown in map 4. This plan includes:</p> <ul style="list-style-type: none"> <li>• an 'idle speed only' limit in most of the identified sensitive areas;</li> <li>• personal watercraft (jet skis) must not be driven in an irregular manner (that is, they should travel in a direct line) as defined by section 15AA of the Water Traffic Regulations in areas indicated on the map; and</li> <li>• identification of safe swimming areas near Mungo Brush, Northern Broadwater, Neranie, Shelly Beach and Tickerabil where motorised vessels will not be permitted.</li> </ul>
4.9.2	Establish a monitoring program to ascertain the impacts of boating on aquatic vegetation and fauna in collaboration with relevant research institutions and community interest groups.
4.9.4	Develop a 'boating code of conduct' which promotes minimal impact boating. Promote the natural and cultural values of the waterways and appropriate visitor behaviour by providing appropriate signage and interpretation material. This may include brochures and information boards at strategic visitor nodes, including Violet Hill and Mungo Brush.
4.10.1	Continue to implement a commercial licensing system for all commercial activities within the park, including on the park's waterways (but excluding commercial fishing activities licensed under the Fisheries Management Act, unless utilising management trails or facilities within the park (see also action 5.2.4)).
4.10.4	<p>Develop and implement through licensing procedures detailed commercial activity guidelines for:</p> <ul style="list-style-type: none"> <li>• Broughton Island;</li> <li>• vessel-based activities on the Myall Lake system; and</li> <li>• land-based activities in Myall Lakes National Park.</li> </ul>
4.10.6	Monitor all commercial and non-commercial operators with respect to cumulative impacts, conflicts with other park visitors, safety requirements, quality of information being given and compliance with licence conditions.
4.11.1	Ensure that the redevelopment of the Myall Shores Eco Resort complies with the approved Master Plan and achieves the outcomes sought by the NPWS.
4.13.3	Prepare a prospectus to encourage the involvement of other organisations in identified priority research areas. Priority research areas are outlined in the issues section above.

Table 4: Summary of actions contd

**No.      Action****High priority contd**

5.2.2	Undertake a review of existing structures and/or facilities in the park required for commercial fishing in consultation with NSW Fisheries, Waterways Authority of NSW and local commercial fishers. Leases or licences will only be issued for existing facilities if the activity is considered consistent with the objectives of this plan of management.
5.3.4	Identify and resolve legal implications of hut occupation at Broughton Island and compliance with health, safety and building code requirements.
5.4.4	Identify and resolve legal implications of the occupation of the Tambooy huts and compliance with health, safety and building code requirements.

**Medium priority**

1.1.9	Monitor limestone ecosystems with a view to implementing protection measures if necessary.
1.2.1	Undertake systematic fauna surveys within the planning area with priority given to reptile surveys, migratory species under JAMBA and CAMBA, and surveys in former forestry areas.
1.2.8	Promote the understanding and protection of native plants and animals through interpretation programs.
1.2.9	Continue implementation of signage and information strategies to discourage visitors from feeding wildlife.
1.4.1	Undertake research into the nutrient dynamics and ecological processes of the lake system, in collaboration with relevant agencies and research institutions, to increase understanding of nutrient issues.
1.4.4	Develop guidelines and information strategies to reduce disposal of grey water from onshore into the lake system and to reduce the introduction of products such as chemicals and soaps into the water from both land and water-based activities.
1.4.12	Investigate options for adding the bed of the Myall River, where it adjoins the park, to Myall Lakes National Park.
1.14.13	Investigate and develop appropriate strategies to address the potential for groundwater contamination at disused sullage sites.
1.5.2	Monitor the ecological character of the wetlands to determine extent of restoration or required rehabilitation works.
1.5.3	Pursue external avenues of funding (for example, through government and private grants) to assist with works identified in accordance with action 1.5.2.
2.1.9	Undertake research into the Aboriginal use of the planning area post-European contact.

Table 4: Summary of actions contd

**No.      Action***Medium priority contd*

2.2.4	Interpret a range of historic themes which tell the story of the park and reserves at a number of representative and readily accessible historic places. Emphasise the following important historic themes in any interpretation: <ul style="list-style-type: none"> <li>• forestry, including logging, railway, timber mills, old growth areas and vegetation;</li> <li>• fishing, with emphasis on the Tamboy fishing village;</li> <li>• maritime archaeology, including boat-building and shipwrecks;</li> <li>• human settlement, for example, Neranie, Broughton Island, Mungo Brush, Carters;</li> <li>• early recreation, for example, Mungo Regatta, Legges Camp Guesthouse; and</li> <li>• use of Broughton Island;</li> <li>• sand mining, and the opposition to it.</li> </ul>
3.2.4	Provide information to the community on introduced plant species and programs and encourage neighbour and community involvement in all pest species projects. In particular, encourage community involvement in gradually replacing the Coral Trees at Mungo Brush and Neranie with local indigenous plants, and in monitoring the conditions within catchment watercourses to deter aquatic weeds entering the lakes system of the park.
3.2.7	Monitor the distribution and abundance of introduced animal species and biological control releases to determine effectiveness of control programs.
3.2.8	Monitor the occurrence of aquatic weeds in the upper catchment in coordination with Great Lakes Council and NSW Agriculture.
3.3.3	Implement reactive wild dog control programs in coordination with the Rural Lands Protection Board and neighbours and monitor the programs effectiveness.
3.3.5	Provide information to the community regarding introduced animal control programs and encourage neighbour involvement with all pest species projects.
3.3.8	Monitor any cattle grazing in the park and undertake action to remove cattle.
4.1.4	Provide accurate information to potential visitors about the recreation opportunities and experiences available in the planning area to enable visitors to make informed decisions and to protect the recreational setting. This information should include the rationale for applying the recreational zoning category to each area.
4.1.6	Initiate discussion with the Department of Defence to discuss the feasibility of re-directing Air Force training exercises away from the airspace over the planning area to reduce the noise impact on park visitors and wildlife.
4.2.6	Promote minimum-impact camping practices.
4.2.9	Promote the existing discharge point for self-contained toilet systems at Myall Shores jetty and the use of the boat-based collection service. Establish land based discharge points for self-contained toilet systems.
4.2.11	Introduce a booking system at some camping areas during high visitor use periods where the demand for sites exceeds supply or where there are potentially significant environmental impacts related to visitor use.

Table 4: Summary of actions contd

**No.      Action***Medium priority contd*

4.2.15	Provide gas/electric barbecue facilities in the more developed visitor facility areas (refer to table 1)
4.2.16	Investigate and introduce necessary measures to ensure appropriate visitor behaviour at camping areas, including the provision of a security service.
4.2.17	Work with the community, park users and the Hunter Region Advisory Committee to identify possible additional boat based camping area opportunities on Myall Lake.
4.2.18	Rename the following camping areas to reflect either historical place names or traditional Aboriginal names: <ul style="list-style-type: none"> <li>• 15 BBQs will be renamed The Wells,</li> <li>• Mungo Corner will be renamed Dees Corner, and</li> <li>• Old Gibber Track will be renamed Boomeri.</li> </ul>
4.3.2	Develop West Legges picnic area, which is currently closed, in accordance with table 2 if the proposed risk and environmental assessments prove to be satisfactory.
4.3.3	Investigate New Hole in the Wall, a car parking track head facility for beach users, for a suitable location for the construction of a coastal viewing platform and the installation of a few picnic tables near the carpark. If the viewing platform is demonstrated to be feasible it may be constructed subject to a satisfactory environmental assessment.
4.3.5	Provide only gas or electric BBQ facilities within day use and picnic areas (refer to table 2).
4.3.8	Promote picnicking opportunities within the park in conjunction with local tourism authorities.
4.4.4	Develop and implement a walking-track management strategy in consultation with relevant interest groups. This strategy will provide an inventory of walking tracks including information on their location, management objectives, recreation setting, environmental impact, level of use, classification and construction standard, cultural value, current condition, safety factors, maintenance requirements, costs and interpretive potential, and priorities for maintenance and reconstruction. Off-track walking or walking on unmarked routes is permitted and will form part of the development and implementation of a walking track management strategy.
4.4.6	Develop a walking track from Mungo Brush Road to The Moors (along the old mining road) with a viewing platform and interpretation of The Moors.
4.5.6	Coordinate with Great Lakes Council, State Forests of NSW and the University of NSW to achieve integrated management of public roads linking with park roads to provide consistent road standards and economies of scale for maintenance.
4.5.7	Seek advice from relevant authorities and investigate options for implementing traffic calming and speed reduction to minimise risks to motorists and pedestrians along the northern section of Mungo Brush Road where it approaches public-use areas around the Bombah Broadwater.

Table 4: Summary of actions contd

No.	Action
<i>Medium priority contd</i>	
4.6.6	Investigate the viability of an additional 4WD beach access point closer to Dark Point Headland in consultation with community groups, and subject to satisfactory environmental impact assessment and resourcing considerations, construct if feasible.
4.6.7	Develop and introduce a 4WD beach-driving permit system. A permit will be required to drive on those beaches in the park where 4WD beach-driving is permitted. The emphasis of this system will be on: <ul style="list-style-type: none"> <li>• Education: Establish a point of contact to provide visitors with information and/or guidelines on appropriate 4WD beach-driving activity.</li> <li>• Encourage responsible driver behaviour: The permit will be revoked if a driver is found to not comply with the conditions of the permit. This is, therefore, an incentive for responsible driver behaviour.</li> </ul>
4.7.2	Highlight suitable cycling routes on park signage and brochures to encourage recreation cycling in appropriate areas within the park.
4.9.8	Investigate, in conjunction with Waterways Authority of NSW, the potential application of 'no discharge guidelines' of greywater from commercial and recreational vessels.
4.9.13	If the number of proposed additional recreational moorings exceeds four (not including up to five additional recreational moorings at Tickerabit) or if additional commercial moorings are proposed, prepare a mooring plan jointly with Waterways Authority of NSW. This plan must consider the cumulative environmental impacts of additional moorings, visual impacts and desired boating numbers. This plan will be exhibited for public comment. If the total number of moorings (commercial and recreational) identified in the mooring plan exceeds 35, an amendment to this Plan of Management will be required.
4.9.14	Subject to actions 4.9.12 and 4.9.13, discourage boat-launching and storage where there are no boat-launching or storage facilities so as to reduce impacts on shoreline vegetation and soils. This may be achieved through the provision of additional moorings or jetties near camping and picnic areas.
4.9.17	Develop and implement a fuel-spillage response plan in collaboration with relevant agencies.
4.12.2	Develop and implement a public contact and interpretation plan. This plan will: <ul style="list-style-type: none"> <li>• emphasise key themes (as identified by action 4.12.1), particularly the conservation values of the park, and include key messages to encourage appropriate visitor expectations and behaviour;</li> <li>• provide an inventory and assessment of existing interpretative material including brochures, interpretative displays, information on the internet and park signage;</li> <li>• identify gaps and/or weaknesses in information provision;</li> <li>• identify improvements;</li> <li>• identify priorities for implementation of this plan; and</li> <li>• seek resources to implement the plan.</li> </ul>
4.13.5	Monitor for any changes to the ecological character of the Ramsar site and report these findings to Environment Australia.

Table 4: Summary of actions contd

**No.      Action***Medium priority contd*

5.1.3	Undertake an inventory of boundary fencing in the park and, where incursions of domestic stock occur, consult with adjoining property owners regarding replacement of the fencing.
5.3.6	Formulate a development control plan for the Broughton Island hut precinct to guide management of the precinct. This plan to: <ul style="list-style-type: none"> <li>• identify heritage values and guidelines for the protection of heritage values;</li> <li>• require all repairs or alterations to the huts to be approved in writing by the NPWS and to address identified heritage values;</li> <li>• detail acceptable materials for repair and replacement;</li> <li>• specify no increase in existing hut numbers or floor areas;</li> <li>• prohibit new unauthorised works at the back of the beach to protect the huts from wave and/or storm attack; and</li> <li>• prohibit the replacement of any huts severely damaged or destroyed by events, such as storms and fire.</li> </ul>
5.4.5	Formulate a development control plan for the Tamboy hut precinct to guide management of the precinct. This plan to: <ul style="list-style-type: none"> <li>• identify heritage values and guidelines for the protection of heritage values;</li> <li>• require all repairs or alterations to the huts to be approved in writing by the NPWS and to address identified heritage values;</li> <li>• stipulate required protection measures for the buildings from degradation, including termites and rot;</li> <li>• detail acceptable materials for repair and replacement;</li> <li>• specify no increase in existing hut numbers or floor areas; and</li> <li>• detail guidelines for bushfire management within the hut precinct.</li> </ul>
5.4.6	Maintain and if necessary upgrade the current picnic facility within the Tamboy hut precinct. Provide access to appropriate toilet facilities for this area.
5.4.7	Erect interpretative material within the Tamboy hut precinct, in a location accessible by the public, explaining the heritage significance of the site and other features.

**Low priority**

2.2.3	Record structures and other places assessed as having minimal cultural heritage significance and no management value and determine appropriate management action, which may include retention or removal and regeneration of sites.
3.2.5	Improve the amenity of recreational areas by the continuation of bush regeneration programs at Violet Hill, Johnsons Beach, Mungo Brush and The Grandis.
4.4.7	Develop a walking track at Neranie from the Mill site to the southern camping area which includes the cemetery and a viewing area on Neranie Head.
4.4.8	Convert fire trails no longer required for fire management and currently used for walking, such as the Mungo Track, into walking tracks.

Table 4: Summary of actions contd

**No.      Action***Low priority contd*

4.4.9	<p>Undertake an investigation into the viability of, and demand for, the construction of the following walking tracks with a view to their future creation:</p> <ul style="list-style-type: none"> <li>• a return loop from Mungo Brush to the Tamboy Track;</li> <li>• from Violet Hill to a vantage point on the Mayers Range, west of the Lakes Way;</li> <li>• on the Northern Broadwater from the most northern camping area to Bombah Point;</li> <li>• from Seal Rocks to Sandbar;</li> <li>• a return loop from Johnsons Beach camping area to Johnsons Hill; and</li> <li>• longer duration walks, possibly connected to remote camp sites.</li> </ul>
4.12.5	Hold local community days to encourage community involvement and provide information to neighbours and the surrounding community on park management issues.
5.1.4	Confirm the status of the trigonometric stations to determine if they are still operational. If they are no longer operational, request removal of these facilities and rehabilitation of the sites, or retain as an example of 'old style' surveying. Continue to license operational facilities under the provisions of the National Parks and Wildlife Act.
5.1.7	Seek easement licences with owners of non-NPWS utility infrastructure that will set prescriptions for the maintenance of these facilities and access roads.
5.1.9	Seek an agreement with Great Lakes Council on management prescriptions for road reserves along council roads adjoining the park.

Table 5: Summary of guidelines

No.	Guideline
1.1.1	Design, situate and maintain all new facilities to harmonise with surroundings and to be visually unobtrusive.
1.1.2	Liaise with Great Lakes Council regarding any proposed developments that may impact on the scenic values and the visual catchment of the park. Formally request the council to refer such proposals to the NPWS for comment. In cooperation with Great Lakes Council, work through planning instruments to protect the visual catchment for the park.
1.1.4	Manage recreational and other uses to minimise erosion, changes in soil structure and degradation of catchment values.
1.1.5	Prohibit the extraction of sand, clay, rock and gravel from the planning area, except for essential management work where no practical and/or prudent alternative is available and where the NPWS considers, through its environmental assessment process, that the environmental impacts are acceptable.
1.1.6	Minimise erosion arising from prescribed burns and wildfires in fire planning and management programs.
1.1.8	Design and maintain beach-access points to minimise wind erosion and subsequent dune and vegetation damage.
1.2.2	Give priority to research into the impact and management of threatening processes on native plants and animals.
1.2.3	Maintain fauna habitat through the control of introduced species, recreation related impacts and appropriate fire-management regimes.
1.2.5	Use species indigenous to the park in planting and bush-regeneration programs, except for grasses in high-visitor-use areas, provided that they are proven to cause no environmental degradation to the park through growth patterns and spread.
1.2.7	Encourage the retention and, where possible, improvement of wildlife corridors linking the park to other large naturally vegetated tracks of land.
1.3.1	Support and encourage any initiatives by NSW Fisheries to manage aquatic fauna and habitat within the waters of Myall Lakes National Park.
1.3.2	Encourage further research and monitoring of the aquatic flora and fauna communities by external institutions and agencies to facilitate an understanding of their role in the healthy functioning of the aquatic environment, so as to assess threats and methods of reducing threats.
1.4.2	Ensure best-practice nutrient management within the park and work with the community to reduce nutrient inputs across the catchment.
1.4.3	Encourage park visitor behaviour that minimises nutrient input to the lake system through the design and implementation of appropriate services for public-use areas in the park and the display and promotion of relevant information.



Table 5: Summary of guidelines contd

No.	Guideline
1.4.7	Support the principles of catchment and estuary management, and liaise with local government, other authorities and the community to maintain and improve the water quality of the Myall Lakes system and associated catchment.
1.4.8	Actively contribute to the implementation of the Port Stephens–Myall Lakes Estuary Management Plan (Umwelt Australia 2000) and the Smith Lakes Estuary Management Plan (Webb, McKeown & Associates 2001) as they relate to the land and waterways within Myall Lakes National Park.
1.4.9	Actively support the development and implementation of the Myall River Catchment Management Plan and the Lower North Coast Catchment Blueprint.
1.4.10	Actively contribute to the development and implementation of the relevant water management plan for the catchment (which will be developed under the <i>Water Management Act 2000</i> ).
1.4.11	Support proposals by the Waterways Authority of NSW to designate the Myall Lakes system a ‘no discharge zone’ for treated and untreated sewage from all vessels.
1.5.1	Adopt an integrated catchment management approach.
1.5.4	Consult and actively involve local Aboriginal groups, including the Karuah and Forster Local Aboriginal Land Councils, and other community groups in wetlands management.
1.5.5	Encourage community understanding and appreciation of the natural values of the wetlands.
2.1.5	Undertake an archaeological and historical assessment of works in areas with potential to impact on Aboriginal sites and values.
2.1.6	Only publicise the location of and/or interpret Aboriginal sites where: <ul style="list-style-type: none"> <li>• agreement of local Aboriginal groups, including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified), has been obtained;</li> <li>• a conservation study has been prepared in liaison with local Aboriginal groups including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified), and any management works necessary to protect the site from damage have been implemented; and</li> <li>• the site has been interpreted to promote public knowledge and appreciation of Aboriginal culture.</li> </ul>
2.1.7	Where possible encourage local Aboriginal people to interpret their culture, including sites, to park visitors.
2.1.10	Encourage research activities supported by local Aboriginal groups including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified). Give priority to research that provides the basis to identify and manage sites.
2.2.5	Incorporate the interpretation of maritime heritage of the Myall Lakes system into the proposed ‘boating management plan’ to be developed jointly by the NPWS and Waterways Authority of NSW (see action 4.9.4).

Table 5: Summary of guidelines contd

No.	Guideline
2.2.6	Undertake a site survey and historic impact assessment of management activities with the potential to damage historic places. Modify or relocate works to protect sites of cultural significance.
2.2.7	Comply with the International Council on Monuments and Sites (ICOMOS) Charter for the conservation of places of cultural significance (the Burra Charter), in the management of historic places in Myall Lakes National Park.
2.2.8	Record historic sites on the NPWS Historic Sites Register. Consult the database when undertaking management, recreation and site planning activities.
2.2.9	Encourage the community, particularly those with ancestral ties, to become actively involved in the management and interpretation of historic sites. This may be achieved by encouraging and facilitating the establishment of a historical interest group.
3.1.1	<p>In accordance with the <i>Rural Fires Act 1997</i>, National Parks and Wildlife Act and the Threatened Species Conservation Act, the primary objectives for fire management are to:</p> <ul style="list-style-type: none"> <li>• protect identified Aboriginal cultural heritage places and landscapes;</li> <li>• protect life and property;</li> <li>• maintain a diverse range of fire-age classes in heath and forest communities;</li> <li>• prevent a single fire event burning the area known as The Moors;</li> <li>• carry out selected ecological burns on the outer sand dunes;</li> <li>• protect nominated sensitive areas which have remained unburnt for long periods from fires, including littoral rainforests within and adjoining Myall Lakes National Park;</li> <li>• protect known habitat areas of threatened plant species from fire until research on their fire ecology is undertaken; and</li> <li>• protect fire prone rainforest and mesophyll vegetation in areas west of Bulahdelah.</li> </ul>
3.1.2	Continue participation in the Great Lakes Bush Fire Management Committee. Consult with the Bush Fire Management Committee, volunteer Rural Fire Service brigades, park neighbours and other stakeholders, to assess bushfire threats to assets, and to prioritise fuel-management treatments.
3.1.5	Encourage research into fire behaviour in the local area and the effects of fire on plant and animal communities and biodiversity, in particular, on rare and threatened plants and animals. Incorporate results into fire-management programs.
3.1.6	Encourage councils and private developers to incorporate boundary firebreaks and other fuel reduction measures in any development adjacent to, or in proximity of, the park.
3.2.2	Treat noxious weed infestations in accordance with the Noxious Weeds Act 1993.
3.2.9	Continue to undertake coordinated introduced plant control programs with the Mid North Coast Weed Committee other agencies such as the Great Lakes Council, park neighbours and Landcare groups.
3.3.6	Continue to undertake coordinated introduced animal control programs with other agencies such as the Rural Lands Protection Board, Great Lakes Council and Landcare groups using techniques identified by NSW Agriculture and the Rural Lands Protection Board as acceptable methods of control as defined in the NSW Agriculture Vertebrate Pest Control Manual.

Table 5: Summary of guidelines contd

No.	Guideline
4.1.1	Manage each recreation management zone in accordance with the general principles outlined in the appendices, table A5, by providing the appropriate level of access and facilities for both recreation and management operations. Projected recreation management zones for the planning area are shown in map 1.
4.1.3	Manage visitor numbers and behaviour where natural or cultural values of an area are threatened in order to retain the predetermined range and quality of recreation opportunities and to protect the natural and cultural conservation values.
4.1.5	Liaise with other organisations and individuals involved in the provision of tourism and recreation opportunities outside the planning area in order to promote complementary and compatible tourism and recreational development in the region and minimise impacts on the planning area.
4.1.7	Prohibit private electric generators, hovercraft and fan-powered boats within the Park. Implement the boating management plan to reduce the noise impacts of boating to onshore recreation visitors (see section 4.9).
4.1.8	Prohibit the landing of private aircraft within the park, unless required for emergency or essential management purposes.
4.1.9	Consider opportunities for provision of disabled access and the requirements of people with disabilities when planning and constructing recreational facilities, such as walking tracks and picnic facilities.
4.2.4	Permit remote or bush camping (where facilities are not provided) in zones 2 and 3 (see map 1) provided it occurs more than 200 metres from a water body (river or lake), public road, and/or the beach and dune system.
4.2.10	Wherever possible campsites with vehicle access will be designed to accommodate caravans, campervans and motor homes.
4.2.12	Restrict camping at any one site in the park to 28 consecutive days, except for Shelly Beach, Johnsons Beach and all camping areas with a maximum number of six campsites or less (refer to table 1) where the duration will be limited to 14 consecutive days. This will provide maximum access to a limited number of sites.
4.2.13	In order to achieve greater equity in the distribution of camping sites, occupied sites (eg. by motor vehicles, tents, caravans or campervans) must not be left unoccupied for periods greater than 24 hours.
4.2.14	Wood may be provided where wood scavenging may threaten the surrounding environment.
4.4.2	Continue to provide walking opportunities on management trails.
4.4.3	Permit walking on unmarked routes and through untracked bush.
4.4.5	Promote minimal impact bushwalking techniques.
4.5.1	Permit privately owned vehicles on the park road network as shown in map 3.

Table 5: Summary of guidelines contd

No.	Guideline
4.5.5	Retain the vehicular ferry between Mungo Brush Road and the Lakes Road at Bombah Point.
4.6.2	A permit for the conduct of the annual Gibber to Gibber Fishing Competition may be issued for one week of the year, during winter, by the Regional Manager. This permit would extend 4WD beach driving from Dees Corner south to Sandy Point only. The issuing of the permit will be subject to environmental and legal considerations.
4.6.9	Impose a 40 km/h speed limit for vehicles on the beach, or 15 km/h when within 50 m of people on the beach and when accessing the beach.
4.7.1	Cycling will be permitted on all public roads, management trails and beaches where 4WD vehicles are permitted (see map 3).
4.8.1	Prohibit horseriding within the planning area.
4.9.3	Adopt an adaptive management approach to waterways within Myall Lakes in collaboration with the Waterways Authority of NSW. That is, if ongoing monitoring demonstrates that there is a risk to the environmental qualities of the lakes or to visitor safety, appropriate controls will be developed and implemented in consultation with the community.
4.9.5	Encourage and where appropriate undertake maintenance of established boating facilities in cooperation with other agencies.
4.9.6	Support any proposal to install a suitable small wharf at Bungwahl to replace the existing boat ramp and to enable access to the Bungwahl shop.
4.9.7	Only permit new wharves, boat ramps and jetties near identified camping and picnic areas, and subject to assessment of the impacts on other users, amenity and natural and cultural values.
4.9.9	Support the continued service of the mobile sewage collection barge and the Bombah Point pump-out facility by the Waterways Authority of NSW.
4.9.10	Prohibit private moorings in the park. Permit a total of five moorings for commercial use by the lessee at Myall Shores and seventeen public moorings, for casual short-term use, in those locations shown in map 4 (subject to 4.9.11, 4.9.12 and 4.9.13). Commercial moorings are those moorings operated by a licensed commercial operator for casual/short-term use by the general public.
4.9.11	Monitor the use of moorings and, if warranted, quantify a maximum length of stay in terms of days and nights for commercial and recreational moorings. This maximum may vary seasonally.
4.9.12	Allow up to five additional recreational moorings at Tickerabit, but only provide additional commercial and recreational moorings elsewhere if it is demonstrated that this increase will have a substantial benefit for the protection of habitat and an acceptable level of impact on the visual qualities and other users of the lake system.

Table 5: Summary of guidelines contd

No.	Guideline
4.9.15	Require commercial operators to fund installation and maintenance of any new commercial moorings
4.9.16	Locate moorings in sheltered areas with preference to locations that are in proximity of designated camping and/or picnic areas.
4.10.2	<p>Ensure the long-term protection of the natural and cultural values of the park, park visitor experiences and safety, and recreation opportunities by prescribing leases and licenses with:</p> <ul style="list-style-type: none"> <li>• the approved activities;</li> <li>• location and frequency of activities;</li> <li>• maximum group sizes and minimum guide ratios for each activity;</li> <li>• guide standards;</li> <li>• ratio of clients to guides;</li> <li>• fees;</li> <li>• appropriate behaviour; and</li> <li>• other special provisions.</li> </ul>
4.10.3	<p>Direct management of guided activities and commercial recreation towards:</p> <ul style="list-style-type: none"> <li>• protection of the natural and cultural values of Myall Lakes National Park;</li> <li>• protection of the special recreational experiences available in the park;</li> <li>• protection of non-commercial recreational opportunities;</li> <li>• control and management of environmental impacts;</li> <li>• promotion of safety and accountability;</li> <li>• professionalism in the tourism industry;</li> <li>• provision of quality recreational experiences;</li> <li>• maximisation of educational benefits;</li> <li>• recovery of appropriate commercial returns to the NPWS;</li> <li>• ensuring activities are appropriate for a national park setting; and</li> <li>• providing visitors with an understanding of the NPWS and its management principles and objectives for the park.</li> </ul>
4.10.5	Require commercial operators, whose activities may encroach on, utilise or visit an Aboriginal site or place, to negotiate with, and seek the support of, local Aboriginal groups including the Karuah and Forster LALCs, elder groups and Native Title claimants (if identified).
4.10.7	Prohibit commercial activities in the Myall Coast Reserves.
4.11.2	Require any changes to the approved Master Plan to be subject to the development and approval of a new Master Plan and inclusion in an amendment to this Plan of Management.
4.11.3	Review the lease for the University of New South Wales Field Study Centre at Smiths Lake in 2006. Ensure that the continued use of the study centre is for research and teaching purposes that are consistent with this plan and NPWS policy for the conduct of field studies centres.

Table 5: Summary of guidelines contd

No.	Guideline
4.12.1	<p data-bbox="456 421 1426 479">Aim to increase community understanding and appreciation of the natural and cultural values of Myall Lakes National Park by placing emphases on:</p> <ul data-bbox="456 506 1426 1205" style="list-style-type: none"> <li data-bbox="456 506 1426 600">• the outstanding natural and cultural values of the Myall Lakes system, particularly in regard to the fact that the park is recognised as a Ramsar Wetland of International Importance;</li> <li data-bbox="456 604 1426 663">• the uniqueness of the lakes system and its ecology, and catchment-related issues which threaten the ecosystem;</li> <li data-bbox="456 667 1426 761">• the coastal landforms, particularly the dune system, which have been described as a ‘giant filing cabinet’ containing important information on climate change and sea-level rise;</li> <li data-bbox="456 766 1426 824">• the diversity of plants and animals and the importance of the extensive shallow areas of the lakes for waterfowl habitat (CAMBA and JAMBA species);</li> <li data-bbox="456 828 1426 887">• the traditional use of the park by the Worimi people and the value of the park to the Worimi people today;</li> <li data-bbox="456 891 1426 949">• the history of the early European settlement and use of the park area and the strong historical associations that many people today have with the park;</li> <li data-bbox="456 954 1426 1012">• the importance of Myall Lakes National Park to regional tourism and its popularity for car and boat-based recreational activities and camping;</li> <li data-bbox="456 1016 1426 1075">• the history of controversy surrounding mining and the achievement of creating the park;</li> <li data-bbox="456 1079 1426 1137">• minimal recreation impact including appropriate boating behaviour and vehicle use on beaches; and</li> <li data-bbox="456 1142 1426 1200">• park visitors have access to information regarding the rationale behind the various management zones of the National Park.</li> </ul>
4.12.3	<p data-bbox="456 1232 1426 1391">Encourage continued community involvement in park management and investigate new opportunities for involvement. Such opportunities may relate to the promotion of appropriate visitor behaviour (for example, a boating code of conduct), assistance with the protection and interpretation of heritage sites, assistance with threatened species protection (for example, the Little Tern) and monitoring impacts on the park.</p>
4.12.4	<p data-bbox="456 1417 1426 1476">Encourage more effective use of technology (for example, the internet and email) in education and information programs.</p>
4.12.6	<p data-bbox="456 1503 1426 1585">Continue active participation with local and regional tourism authorities and economic development organisations in the development and implementation of regional tourism strategies to ensure the promotion of ecologically sustainable tourism within the park.</p>
4.12.7	<p data-bbox="456 1612 1426 1695">Liaise with other organisations which provide information to park visitors to ensure all information is accurate, consistent, up-to-date and promotes appropriate visitor expectations and behaviour.</p>
4.12.8	<p data-bbox="456 1722 1426 1805">Encourage relevant authors and publishers to liaise with NPWS regional staff regarding park information and encourage the promotion of minimal impact recreational use in publications.</p>
4.13.1	<p data-bbox="456 1832 1426 1957">Require all researchers to be licensed in accordance with legislative requirements under the Threatened Species Conservation Act, National Parks and Wildlife Act, and NPWS policy and procedures. As part of the licence, require researchers to provide results of research to the NPWS.</p>

Table 5: Summary of guidelines contd

No.	Guideline
4.13.2	Direct NPWS research efforts towards establishing baseline data and monitoring the impact of recreational activities on biophysical indicators. This research will provide information critical to effective and adaptive management.
4.13.4	Work collaboratively with, and encourage, researchers from other organisations to share information and to design research programs that provide information that is directly useful for park management purposes.
5.1.1	Retain the Bombah Point works depot and the Booti Booti depot as bases for field activities covering the extent of the park.
5.1.2	Continue to manage Broughton Island and Fame Cove from Nelson Bay as boat-based access and staff resources are readily available.
5.1.5	Continue the rights of existing telecommunications occupiers under occupation permits issued by State Forests of NSW until they are amended by agreement, or terminated by NPWS in accordance with their existing interest.
5.1.6	Prohibit additional telecommunications towers in Myall Lakes National Park.
5.1.8	Require a suitable level of environmental impact assessment and NPWS approval for any alterations to existing non-NPWS infrastructure.
5.1.10	Liaise with Great Lakes Council regarding any changes to provisions of the Local Environmental Plan that may impact on cultural or natural values of the park. Formally request the council to refer such proposals to the NPWS for comment (see also action 1.1.2).
5.1.11	Recognise current beekeeping consents and/or permits in accordance with NPWS policy. Under clause 16(2) of the National Parks and Wildlife (Land Management) Regulation 1995, all apiary sites will be licensed. Permit no additional apiary sites in the park.
5.2.1	Support and encourage any initiatives by NSW Fisheries to collect data on commercial fish catches and to manage fish populations and habitat in the lake system (see action 1.3.1).
5.2.3	Prohibit the construction of new structures and facilities in the park required for commercial fishing.
5.2.4	Require fishers engaged in commercial fishing activities to have a licence or permit to access the beach or lake system, including the Myall River, either via a management trail or via the beach.
5.3.1	Renew the licence to use and occupy the hut sites at Broughton Island. This would include the seven buildings situated thereon for casual recreational use by its members only. Prohibit new huts.
5.3.2	Renew the licence for the Broughton Island hut sites for a period of up to five years, with non-compliance resulting in forfeiture of the licence.
5.3.3	Facilitate dialogue between the NPWS and the BICSI through NPWS representation and participation in the society's meetings.
5.3.5	NPWS indicate its preference to the BICSI for one of the huts being made available to the NPWS to manage for public use, either as a general picnic facility or as an information shelter.

Table 5: Summary of guidelines contd

No.	Guideline
5.4.1	Establish a licence, with an incorporated society, representing the interests of the existing Tamboy hut licensees. The licence to provide for the use and casual occupation the hut sites at Tamboy, including the buildings situated thereon, by members of the society for purposes related to professional fishing only. Prohibit new huts.
5.4.2	Renew the licence for the Tamboy hut sites biannually with non-compliance resulting in forfeiture of the licence.
5.4.3	Facilitate dialogue between the NPWS and the proposed Tamboy huts society, through NPWS representation and participation in the society's meetings.








# Myall Lakes National Park & Myall Coast Reserves

Plan of Management

Recreation Management Zones

## LEGEND

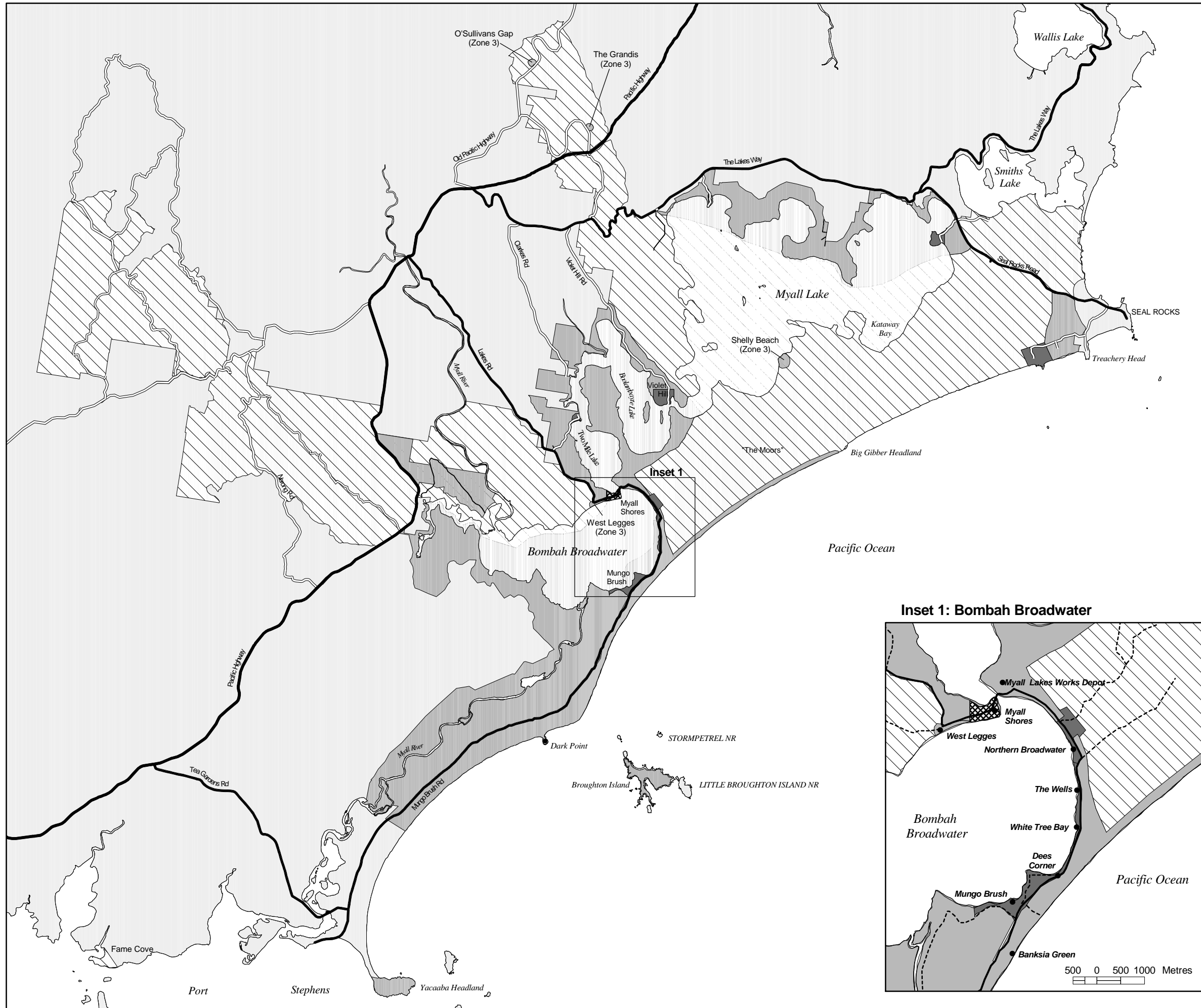
### Recreation Management Zones

	Zone 1 (none within the planning area)	Wild/ No development ↑
	Zone 2	
	Zone 3	↓ Modified/ most Developed
	Zone 4	
	Zone 5	



Printed on:  
13 August 2002

Copyright NSW National Parks and Wildlife Service February 2001  
This map is not guaranteed to be free from error or omission  
The NSW National Parks and Wildlife Service and its employees  
disclaim liability for any act done on the information in the  
map and any consequences of such acts or omissions



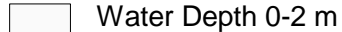


# Myall Lakes National Park

Plan of Management






## Boating Management Plan

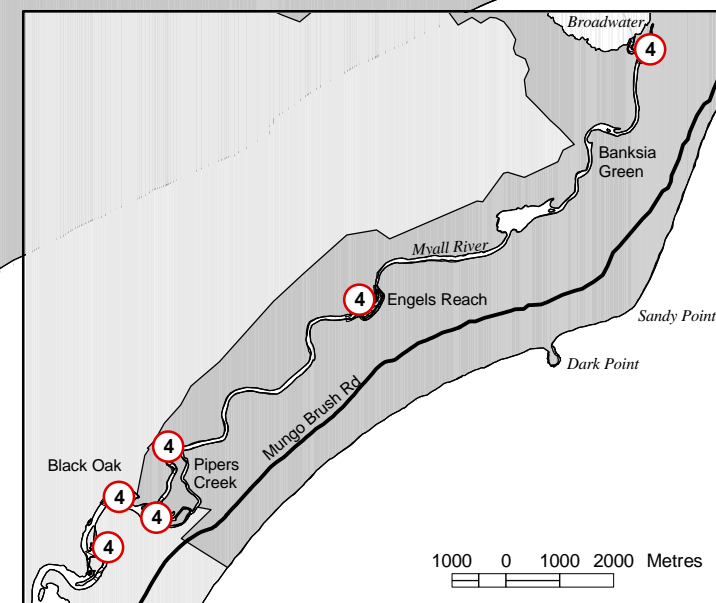
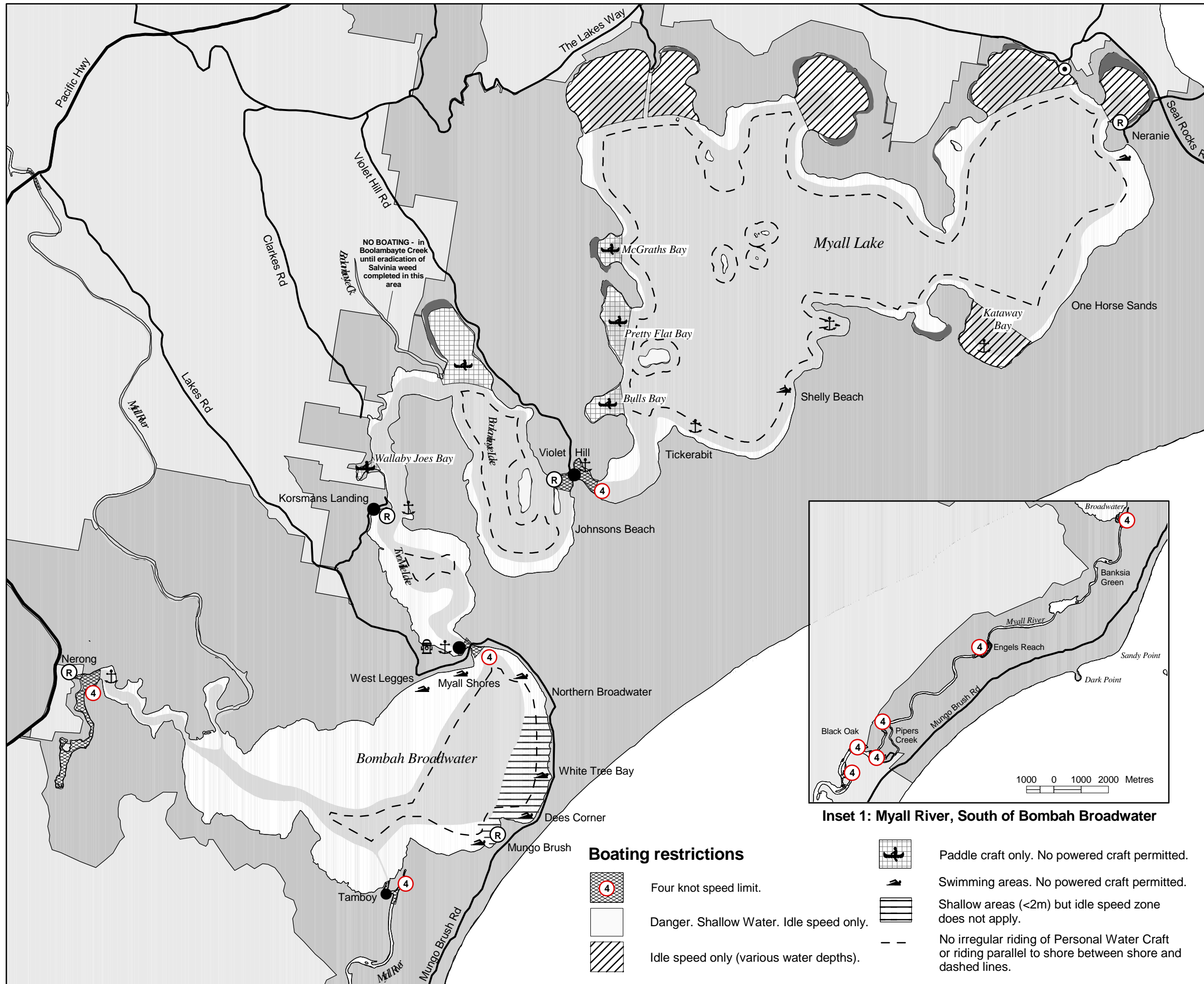
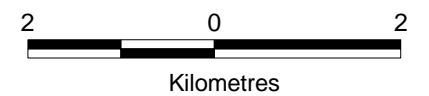
### LEGEND

#### General Information

-  Water Depth 0-2 m
-  Water Depth > 2m
-  Aquatic Vegetation in Shallow Water








#### Boating Facilities

-  Casual or Visitor Mooring Areas
-  Public Pumpout Facility
-  Public Wharf
-  Proposed Public Wharf
-  Launching Ramp



**Inset 1: Myall River, South of Bombah Broadwater**

### Boating restrictions

-  Four knot speed limit.
-  Danger. Shallow Water. Idle speed only.
-  Idle speed only (various water depths).
-  Paddle craft only. No powered craft permitted.
-  Swimming areas. No powered craft permitted.
-  Shallow areas (<2m) but idle speed zone does not apply.
-  No irregular riding of Personal Water Craft or riding parallel to shore between shore and dashed lines.



Printed on:  
13 August 2002

Copyright NSW National Parks and Wildlife Service February 2001  
This map is not guaranteed to be free from error or omission  
The NSW National Parks and Wildlife Service and its employees  
disclaim liability for any act done on the information in the  
map and any consequences of such acts or omissions







# Myall Lakes National Park

## Plan of Management

### Road Network, Management Trails & Beach Access

#### LEGEND

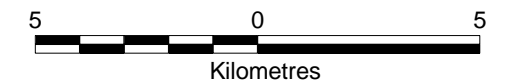
##### Public Access Roads

-  Car Park near beach
-  Sealed Road
-  Unsealed Road (2WD all weather standard)
-  Unsealed Road (2WD dry weather standard)
-  Restricted Public Access Road (Permit Required)
-  4WD Unsealed Road

##### Non-Public Access Roads

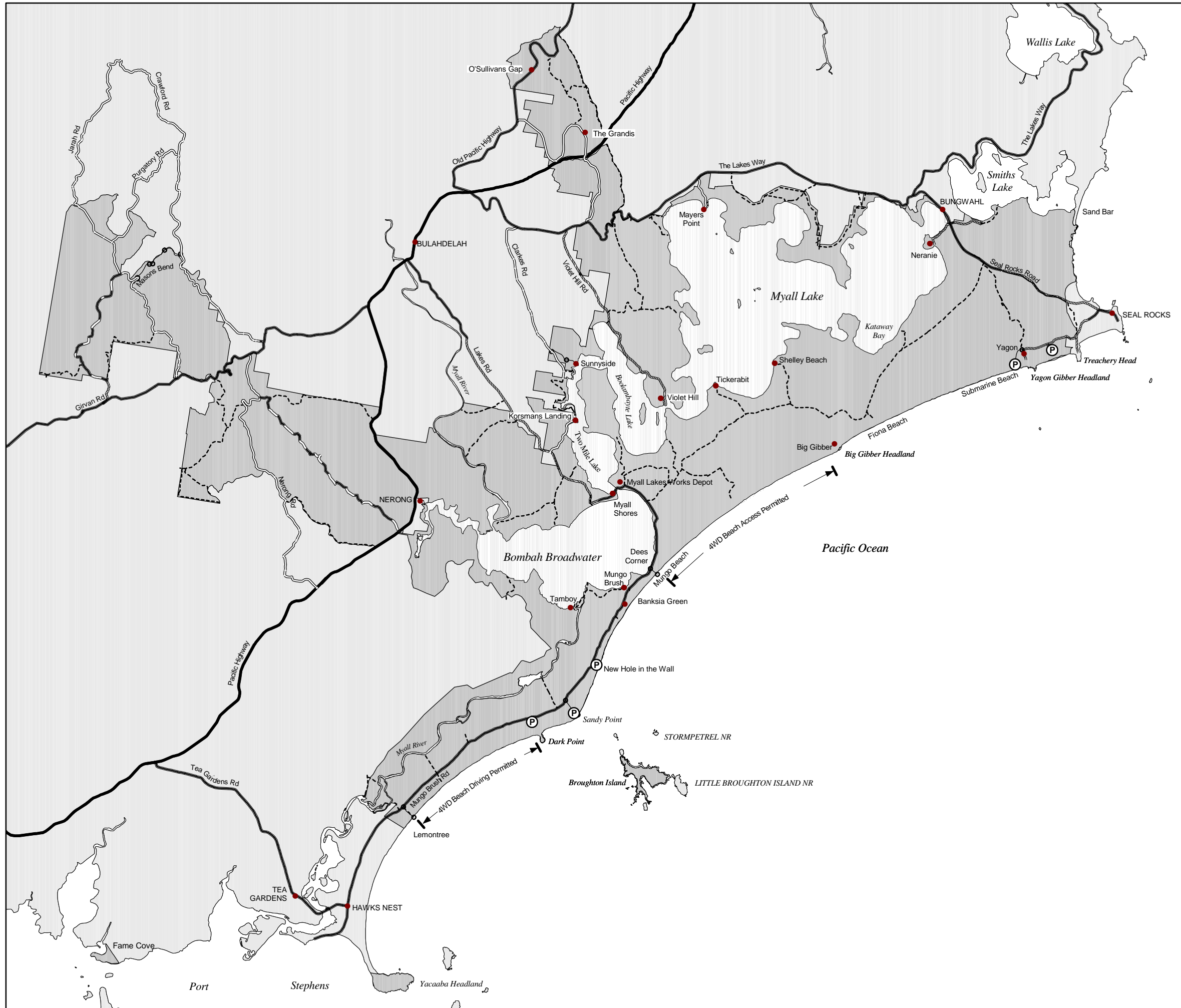
-  Management Access Only (No Public Vehicles)

Note: Unless otherwise identified on this map, vehicles must remain on the road network.



Printed on:  
13 August 2002

Copyright NSW National Parks and Wildlife Service February 2001  
This map is not guaranteed to be free from error or omission.  
The NSW National Parks and Wildlife Service and its employees  
disclaim liability for any act done on the information in the  
map and any consequences of such acts or omissions












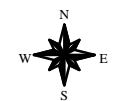
# Myall Lakes National Park

Plan of Management

Camping, Picnic Areas & Walking Tracks

## LEGEND

-  Picnic Facilities
-  Camping Area
-  Walking Tracks
-  Highway
-  Major Road
-  Secondary Road
-  Myall Lakes NP



Printed on:  
13 August 2002

Copyright NSW National Parks and Wildlife Service February 2001  
This map is not guaranteed to be free from error or omission  
The NSW National Parks and Wildlife Service and its employees  
disclaim liability for any act done on the information in the  
map and any consequences of such acts or omissions



## REFERENCES

- Atkinson, G., Hutchings, P., Johnson, M., Johnson, W.D. & Melville, M.D. 1981, 'An ecological investigation of the Myall Lakes region', *Aust. J. of Ecol.*, vol. 6, pp. 299–327.
- Australian Home Companion 1859, p. 116, cited in NSW Heritage Office 1999, *The Maritime Archaeology of Myall Lakes/Tea Gardens: Area Conservation Plan*, p. 10).
- Carey, S. W. 1934, 'Report on geology of the Myall Lakes', *Sydney University Science J.*, vol. 13, p. 44.
- Clements, A. 1988, 'Vegetation patterns on Quaternary sands of the Fens Embayment, mid-north coast of NSW', unpub. PhD thesis, University of Sydney.
- Department of Land and Water Conservation (DLWC) 1997, Acid Sulphate Soil Maps Mapping Project, co-sponsored by Soil Conservation Service and the Natural Resources Council.
- Department of Land and Water Conservation (DLWC) 1999, 'Report on the Potentially Toxic Cyanobacteria Bloom, Myall Lakes, April 1999: A discussion of Management Implications and Potential Risks'.
- Department of Public Works NSW (DPWS) 1999, Port Stephens–Myall Lakes Estuary Process Study.
- Drake & Fleming 1988, *Legge's Camp and the Battle for Myall Lakes*, S & M Fleming, NSW, copy held at NPWS library.
- EJE Group 2000, Draft Conservation Assessment: Broughton Island and Tamboy huts Myall Lakes National Park, commissioned by NPWS.
- Fairley, A. 1979, *Myall Lakes National Park*, Murray Child, Sydney.
- Fox, B. J. & McKay, G. M. 1981, 'Small mammal responses to pyric successional changes in eucalyptus forest', *Aust. J. Ecol.*, vol. 6, pp. 29–41.
- Fox, B. J. 1982, 'Fire and mammalian secondary succession in an Australian coastal heath', *Ecol.*, vol. 63, pp. 332–41.
- Fox, B. J. 1983, 'Mammal species diversity in Australian heathland: The importance of pyric succession and habitat diversity', in *Ecological Studies: Mediterranean Type Ecosystems*, vol. 43. eds F. J. Kruger, D. T. Mitchell & J. U. M. Jarvis, pp. 473–89.
- Frank Small & Associates 1998, Collection and Collation of Visitor Use Data: 1998 Update: NPWS Visitor Study (market research).
- Garland, H. K. & Wheeler, J. 1982, *Myall Lakes Creation to Controversy: An Intimate Story*, Palms Press, Pacific Palms.
- Higgs, P. & Fox, B. J. 1993, 'Interspecific Competition: A Mechanism for Rodent Succession after Fire in Wet Heathland', *Aust. J. Ecol.*, vol. 18, pp. 193–201.
- Hunter, J. T. 2000, *Flora Survey of Myall Lakes National Park*, NPWS report.
- Jackson, M., Maltby, N. & Wood, A. 1998, Myall Lakes National Park Visitor Survey, University of Technology Sydney.
- Johnson, D. 1976, 'Hydrochemistry of Myall Lake Catchment', in *Myall Lake Catchment Study: Compilation of reports*, G. Atkinson, 1976, pp. 27–55.
- Kuss, F. R., Graffe, A. R. & Vaske, J. J. 1990, *Visitor Impact Management: A review of Research*, National Parks and Conservation Association, Washington D. C., vol. 1.
- Leys, V. & Cawthorne, R. 1998, Vertebrate Pest Survey of Myall Lakes National Park, unpublished report, NPWS.
- Llewellyn, L. C. & Courtice, G. P. 1999, A survey for mammals, reptiles and amphibia of Neranie Head, an extension to the northern end of Myall Lakes National Park, Curlew Biological Services.

- Longdin, R. 1999, *Neranie Headland Historic Report*, NPWS report.
- Markwell, K. & Knight, R. 1986, An Inventory of the Herpetofauna of the South-Eastern Section of Myall Lakes National Park, NSW, Hunter Wetlands Trust.
- Nick Angelini Planning Services 1999, *Great Lakes Tourism Strategy 1999–2003*.
- NSW Heritage Office, 1999, *The Maritime Archaeology of Myall Lakes –Tea Gardens: Area Conservation Plan*.
- NSW Heritage Office 2000, *SS Fiona (1874–1882), Fiona Beach, Seal Rocks: Conservation Management Plan*.
- NSW Heritage Office 2000, *Submarine K-IX (1922–1945), Submarine Beach, Seal Rocks: Conservation Management Plan*.
- NSW National Parks & Wildlife Service 1984, *Myall Lakes National Park Plan of Management*, Sydney.
- NSW National Parks & Wildlife Service 1988, Field Management Policies.
- NSW National Parks & Wildlife Service 1998, Brief for the preparation of a master plan for the Myall Shores Eco Resort draft: Version 3 (23–7/98).
- NSW National Parks & Wildlife Service 1999, *Visions for the New Millennium: Report of the Steering Committee to the Minister for the Environment*.
- NSW National Parks & Wildlife Service 2000a, NSW NPWS Corporate Plan: 2001–2003.
- NSW National Parks & Wildlife Service, 2000b, *Recreation Management Strategy for the Parks & Reserves of the Northern Directorate of NSW (draft)*.
- NSW National Parks & Wildlife Service 2001a, *Background Information: Revised POM for Myall Lakes National Park*, NPWS Hunter Region.
- NSW National Parks & Wildlife Service 2001b, *Draft Hunter Region Pest Management Strategy*, NPWS Hunter Region.
- NSW National Parks & Wildlife Service 2002, *Recreation Planning Framework for NSW National Parks (draft)*.
- Recher, H. F. 1971, 'Myall Lakes: Now and Tomorrow', *Aust. National Hist.*, vol. 17, pp. 34–39.
- Regional Advisory Coordinating Committee (RACC) 2000, *Myall Lakes Fact Sheet: Blue-green Algae in Myall Lakes*.
- Sostaric, L. 1989, *Visitor and Developer Responses to Recreation Opportunities and Facilities in the Myall Lakes Area*, NSW BA thesis, University of Newcastle, NSW.
- Timms, B. V. 1982, 'Coastal Dune Waterbodies of North-eastern New South Wales', *Aust. J. Freshwater Res.*, vol. 33, pp. 203–22.
- Umwelt Australia Pty Ltd 2000, *Port Stephens–Myall Lakes Estuary Management Plan*, prepared for Port Stephens Council, NSW Department of Land and Water Conservation and Great lakes Council.
- Umwelt Australia Pty. Ltd. 2001, *A Reconnaissance Aboriginal Heritage Survey of the Coastline of Myall Lakes National Park*, prepared for NSW National Parks and Wildlife Service.
- URS Australian Pty Ltd 2002, *Tree Fall Risk Assessment and Preliminary Risk Management Plan*.
- Wallis, K. 1986, *Aquatic Ecology: Myall Lakes Report*, NSW Institute of Technology Sydney.
- Waterways Authority of NSW 2000, *Sewage Pollution from Vessels Discussion Paper: Findings and Proposed Actions*, March 2000.
- Webb, McKeown & Associates 2001, *Smiths Lake Estuary Management Study and Management Plan*.

# Appendices



Table A1: Threatened or endangered plant species found in the planning area (Threatened Species Conservation Act 1995)

Species	Common name	Status (TSC Act 1995)
<i>Syzygium paniculatum</i>	Magenta Lillypilly	Vulnerable (sch 2)
<i>Dillwynia tenuifolia</i>		Vulnerable (sch 2)
<i>Melaleuca groveana</i>		Vulnerable (sch 2)
<i>Grevillea guthrieana</i>		Endangered (sch 1, part 1)
<i>Chamaesyce psammogeton</i>		Endangered (sch 1, part 1)
<i>Senna acclimis</i>		Endangered (sch 1, part 1)

Table A2: Vulnerable or endangered fauna species found in the planning area (Threatened Species Conservation Act 1995)

Species	Common name	Community	Status (TSC Act)
<i>Crinia tinnula</i>	Wallum Froglet	Heath, estuarine forest	Vulnerable (sch 2)
<i>Litoria aurea</i>	Green & Golden Bell Frog	Heath, estuarine forest (including Broughton Is)	Endangered (sch 1 pt 1)
<i>Litoria brevipalmata</i>	Green-Thighed Frog	Forest	Vulnerable (sch 2)
<i>Mixophyes balbus</i>	Stuttering Frog	Rainforest, forest	Vulnerable (sch 2)
<i>Heleioporus australiacus</i>	Giant Burrowing Frog		Vulnerable (sch 2)
<i>Hoplocephalus stephensii</i>	Stephen's Banded Snake	Forest, rainforest	Vulnerable (sch 2)
<i>Cacophis harriettae</i>	White-Crowned Snake	Rainforest, forest, heath	Vulnerable (sch 2)
<i>Ephippiorhynchus asiaticus</i>	Black-Necked Stork	Estuarine forest,	Vulnerable (sch 2)
<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	Sand dune, beach thickets (also Broughton Is.)	Vulnerable (sch 2)
<i>Haematopus longirostris</i>	Pied Oystercatcher	Sand dune	Vulnerable (sch 2)
<i>Dupetor flavicollis</i>	Black Bittern	Estuarine forest	Vulnerable (sch 2)
<i>Esacus magnirostris</i>	Beach Stone Curlew	Sand dune, estuarine forest	Endangered (sch 1)
<i>Pandion haliaetus</i>	Osprey	Estuarine forest, forest, woodland	Vulnerable (sch 2)
<i>Sterna fuscata</i>	Sooty Tern	Sand dune	Vulnerable (sch 2)
<i>Sterna albifrons</i>	Little Tern	Estuarine forest, sand dune	Endangered (sch 1)
<i>Pezoporus wallicus</i>	Ground Parrot	Heath	Vulnerable (sch 2)
<i>Xanthomyza phrygia</i>	Regent Honeyeater	Forest, woodland	Endangered (sch 1)
<i>Erythrorhynchus radiatus</i>	Red Goshawk	Forest, woodland	Endangered (sch 1)
<i>Ptilinopus magnificus</i>	Wompoo Fruit Dove	Rainforest	Vulnerable (sch 2)
<i>Neophema pulchella</i>	Turquoise Parrot	Woodland	Vulnerable (sch 2)
<i>Ninox strenua</i>	Powerful Owl	Forest, woodland	Vulnerable (sch 2)
<i>Tyto novaehollandiae</i>	Masked Owl	Forest, woodland	Vulnerable (sch 2)
<i>Tyto tenebricosa</i>	Sooty Owl	Rainforest, forest	Vulnerable (sch 2)
<i>Calyptorhynchus lathamii</i>	Glossy Black Cockatoo	Forest, woodland	Vulnerable (sch 2)
<i>Calyptorhynchus magnificus</i>	Red-Tailed Black Cockatoo	Forest, woodland,	Vulnerable (sch 2)
<i>Pterodroma leucoptera</i>	Gould's Petrel	Rainforest (Cabbage Tree Is)	Vulnerable (sch 2)
<i>Dasyurus maculatus</i>	Tiger Quoll	Forest, woodland	Vulnerable (sch 2)
<i>Macropus parma</i>	Parma Wallaby	Forest	Vulnerable (sch 2)
<i>Phascogale tapoatafa</i>	Brush-Tailed Phascogale	Forest, woodland	Vulnerable (sch 2)
<i>Phascolarctos cinereus</i>	Koala	Forest, woodland	Vulnerable (sch 2)
<i>Petaurus australis</i>	Yellow-Bellied Glider	Forest, woodland	Vulnerable (sch 2)
<i>Pseudomys gracilicaudatus</i>	Eastern Chestnut Mouse	Heath	Vulnerable (sch 2)
<i>Miniopterus australis</i>	Little Bent-Wing Bat	Littoral rainforest, forest	Vulnerable (sch 2)
<i>Miniopterus schreibersii</i>	Common Bent-Wing Bat	Littoral rainforest, forest, woodland	Vulnerable (sch 2)
<i>Kerivoula papuensis</i>	Golden-Tipped Bat	Littoral rainforest, forest	Vulnerable (sch 2)



Table A3: Significant pest species occurring in the planning area

Pest species	Location	Potential impact	Weed type	Priority	Legal status
<b>Weeds</b>					
Bitou Bush <i>Chrysanthemoides monilifera</i>	Coastal foredunes, hind dunes, coastal forest and heath, Broughton Island	Potential to spread in all vegetation communities excluding wetlands	S	H	N
Blackberry <i>Rubus fruticosus</i>	Isolated occurrences in previously grazed areas	Restricted to disturbed areas	V	M	N
Black-Eyed Susan <i>Thunbergia alata</i>	Occurring in rainforest at Mungo Brush, garden escape	Potential to cause impact to canopy species	V	M	
Coastal Morning Glory <i>Ipomoea cairica</i>	Isolated occurrences, Broughton Island	Potential impact by smothering trees	V	M	
Coral Tree <i>Erythrina sykesii</i>	Recreation areas	Minimal impact to vegetation communities, however, limb dropper	T	M	
Crofton Weed <i>Ageratina adenophora</i>	Scattered distribution throughout the western extent of the park limited to disturbed sheltered areas along road edges, creeks & drainage easements	Potential to infest along freshwater creeks	H		N
Cape Ivy <i>Delairea odorata</i>	Occurring at Mungo Brush	Potential to infest rainforest canopy	V	M	
Lantana <i>Lantana camara</i>	Previous grazing lands, adjacent to roadways, recreational areas	Potential to colonise all disturbed areas, obstruct roadways and impede recreation, potential to impact on dry sclerophyll forest	S	M	
Mist Flower <i>Ageratina riparia</i>	As for Crofton Weed	As for Crofton Weed	H	M	N
Moth Plant <i>Araujia hortorum</i>	Isolated occurrences	Potential to establish in rainforest / wet sclerophyll	V	M	
Noogoora Burr <i>Xanthium</i> spp.	Found to occur at Neranie	Minimal impact to natural vegetation potential to be transported by recreational users	H	M	N
Pine species <i>Pinus</i> spp.	Isolated scattered occurrence	Potential to spread if left unchecked	T	M	
Yellow Cassis <i>Senna pendula</i>	Isolated occurrence, garden escape	Potential to spread along disturbed sites and infest following fire	S	M	
Asparagus ferns <i>Protoasparagus</i> spp.	Isolated occurrence, garden escape: Korsmans/ Bombah Point	Potential to spread in all vegetation communities	S, V	H	
Small-Leaved Privet <i>Ligustrum sinense</i>	Isolated occurrences as a result of garden planting	Potential to infest along freshwater creeks/moist gullies	T	M	

Table A3: Significant pest species occurring in the planning area contd

Pest species	Location	Potential impact	Weed type	Priority	Legal status
White Passionflower <i>Passiflora subpeltata</i>	Scattered	Minor	V	L	
Blackberry Nightshade <i>Solanum</i> spp.	Scattered in disturbed areas		S,H	L	
Prickly Pear <i>Opuntia</i> spp.	Broughton Island/ Little Broughton Island			M	N
Salvinia <i>Salvinia molesta</i>	Boolambayte creek and lake	Potential impact on the aquatic ecosystem of Myall Lakes	A	H	N
<b>Vertebrate pests</b>					
Rabbits <i>Oryctolagus cuniculus</i>	Scattered populations restricted to western side Broughton Island	Potential impact on regeneration in disturbed areas, competition with ground dwelling mammals		M	N
Hares <i>Lepus capensis</i>	Scattered populations occurring in the coastal dunes	As above		L	
Goats <i>Capra hircus</i>	Small population occurring at Neranie			M	
Dogs <i>Canis familiaris</i>	Wild dogs have been recorded on the boundaries of the park	Potential impact on native fauna		H	N
Cat <i>Felis catus</i>	Scattered individuals throughout park				
Horses <i>Equus caballus</i>	Population in Nerong area			L	
Black Rats <i>Rattus rattu</i>	Broughton Island/ Little Broughton Island	Potential impact on ground-nesting birds breeding		M	
Foxes <i>Vulpes vulpes</i>	Scattered populations	Potential impact on critical weight range mammals, birds, amphibians & reptiles		H	
<b>Legend: Table A3</b>					
Weed type	Priority	Legal status			
V = vine	H (high) = highly invasive of non-disturbed areas; priority for immediate control programs	N = noxious weed or animal			
S = shrub	M (medium) = invasive in disturbed environments, reduced threat to non-disturbed areas				
T = tree	L (low) = restricted to areas of disturbance				
A = aquatic water weed					
G = grass					
H = herb					

Table A4: Vegetation communities

Community	Key species names
Community 1: Smooth Barked Apple/Blackbutt–Banksia Dry Open Forest/Woodlands	Smooth Barked Apple ( <i>Angophora costata</i> ), Blackbutt ( <i>E. pilularis</i> ), Old Man Banksia ( <i>Banksia serrata</i> )
Community 2: Tallowwood/Flooded Gum Moist Open Forest	Tallowwood ( <i>Euclayptus microcorys</i> ), Flooded Gum ( <i>E. grandis</i> ), Lilly Pilly ( <i>Acmena smithii</i> ), Scentless Rosewood ( <i>Synoum glandulosum</i> )
Community 3: Tallowwood–Turpentine Moist Open Forest	Tallowwood ( <i>Euclayptus microcorys</i> ), Turpentine ( <i>Syncarpia glomulifera</i> ), Forest Oak ( <i>Allocasuarina torulosa</i> )
Community 4: Tallowwood–Bloodwood Open Forest	Tallowwood ( <i>Euclayptus microcorys</i> ), Red Bloodwood ( <i>Corymbia gummifera</i> ), Forest Oak ( <i>Allocasuarina torulosa</i> )
Community 5: Tallowwood–Stringybark Open Forest	Tallowwood ( <i>Eucalyptus microcorys</i> ), Blue Stringybark ( <i>E. agglomerata</i> )/Thin-leaved Stringybark ( <i>E. eugenioides</i> )
Community 6: Cabbage Palm Subtropical Rainforest (Closed Fan Palm Forest)	Cabbage Palm ( <i>Livistona australis</i> ), Broad-leaved Paperbark ( <i>Melaleuca quinquenervia</i> ), Shining-leaved Stinging Tree ( <i>Dendrocnide photinophylla</i> ), Scentless Rosewood ( <i>Synoum glandulosum</i> )
Community 7: Banksia–Smooth-Barked Apple Shrubby Woodland–Tall Heathland	Coast Banksia ( <i>Banksia integrifolia</i> ), Old Man Banksia ( <i>B. serrata</i> ), Wallum Banksia ( <i>B. aemula</i> ), Smooth-barked Apple ( <i>Angophora costata</i> )
Community 8: Banksia Shrubland/Heathlands (Wet & Dry Heath)/Woodlands	Wallum Banksia ( <i>B. aemula</i> ), Coast Banksia ( <i>B. integrifolia</i> ) Sydney Peppermint ( <i>E. piperita</i> ), Northern Scribbly Gum ( <i>E. signata</i> ), <i>Leptospermum</i> spp. <i>Banksia oblongifolia</i>
Community 9: Spotted Gum–Tallowwood/Grey Gum (Dry Open Forest)	Spotted Gum ( <i>Corymbia maculata</i> ), Tallowwood ( <i>E. microcorys</i> ) Small-fruited Grey Gum ( <i>E. propinqua</i> ), Forest Oak ( <i>Allocasuarina torulosa</i> )
Community 10: Smooth-barked Apple–Tallowwood Dry Open Forest	Smooth-barked Apple ( <i>Angophora costata</i> ), Tallowwood ( <i>E. microcorys</i> ), Forest Oak ( <i>Allocasuarina torulosa</i> )
Community 11: Grey Ironbark–Grey Gum Dry Open Forest	Grey Ironbark ( <i>Eucalyptus siderophloia</i> ), Small-fruited Grey Gum ( <i>E. propinqua</i> ), Forest Oak ( <i>Allocasuarina torulosa</i> )
Community 12: Spotted Gum–Smooth-barked Apple Dry Open Forest	Spotted Gum ( <i>Corymbia maculata</i> ), Smooth-barked Apple ( <i>Angophora costata</i> ), Tallowwood ( <i>E. microcorys</i> ), Forest Oak ( <i>Allocasuarina torulosa</i> )

Table A4: Vegetation communities contd

Community	Key species names
Community 13: Broad-leaved Paperbark–Swamp Oak Swamp Forest or Lake Fringe Forest	Broad-leaved Paperbark ( <i>Melaleuca quinquenervia</i> ), Swamp Oak ( <i>Casuarina glauca</i> ), Swamp Mahogany ( <i>E. robusta</i> )
Community 14: Dune Complex (includes closed scrub, low closed forest, open scrub, grassland, herbfield)	Coast Banksia ( <i>Banksia integrifolia</i> ), <i>B. serrata/aemula</i> , <i>Leptospermum</i> spp., <i>Spinifex sericeus</i> , <i>Lomandra longifolia</i> and Littoral Rainforest species
Community 15: Sedgeland (Swamp)	<i>Schoenus brevifolius</i> , <i>Baumea rubiginosa</i> , <i>Banksia robur</i> , <i>Gahnia sieberiana</i> , <i>Lepironia acticulata</i> and occasional Broad-leaved Paperbark ( <i>Melaleuca quinquenervia</i> )

Table A5: Recreation management zone characteristics and criteria

GENERAL ZONE CHARACTERISTICS		Wild/undeveloped	<----->	Developed	
		No formed access	<----->	Highly accessible	
		Unmodified landscape	<----->	Modified landscape	
		No visitor facilities	<----->	Full facilities provided	
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
<b>Description</b>	Generally large areas with either very high natural values and/or 'wild' qualities. Negligible evidence of non-traditional human activity. No formed access or alien tenures.	Generally 'remote' areas with conservation significance. Only minor evidence of human activity and development, inc. management roads and walking tracks.	Natural area providing motorised and walking access and basic visitor facilities. Most visitors will use this zone to explore the park, either by car or on foot.	Includes areas of relative naturalness, with recreation facilities evident. All weather motorised access is usually provided.	Includes major visitor facilities such as picnic areas, camping grounds, scenic drives and major access routes, information centres and carparks.
<b>Principal purpose</b>	Preservation of either 'wild' values or significant natural values. May provide very low intensity, self-reliant recreation. Protection of natural and catchment values is implied.	Conservation of significant natural and cultural values and low intensity recreation and catchment protection. May form a 'land bank' for future zone 1.	Conservation of natural and cultural values and low to moderate intensity recreation with some facilities. Main zone to provide for scenic driving and bushwalking.	Provides for moderate intensity, facilities-based recreation in a natural setting. Cognisant of the need to protect natural (esp. landscape) and cultural values.	Medium to high levels of recreation and social interaction in a natural setting. High level of site hardening and provision of facilities is evident.
<b>PHYSICAL CRITERIA</b>					
<b>Size</b>	Generally large areas (usually 5 km narrowest dimension).	No minimum size.	No minimum size.	No minimum size.	No minimum size.
<b>Landscape</b> Landscape quality and character is essential for the recreational setting sought by many activities.	Ideally a totally natural landscape that has not been affected by modern technological land use (if minor areas of disturbance, rehabilitation will be an important priority).	Natural landscape with only minor recreation and management structures and works evident. Ideally no alteration to skylines and escarpments.	Natural landscape with minor works and structures that support management and recreation are evident.	A natural appearing landscape where the built environment has components for management and recreation but is not dominated by them.	A modified landscape with natural elements. The built environment is a major component of the landscape character.

Table A5: Recreation management zone characteristics and criteria contd

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
<b>Conservation values</b>	May contain areas of very high conservation value or function, but large enough for natural process to occur without human interference.	High conservation value and function but usually smaller in size than zone 1, or where greater management inputs are required.	Generally moderate to high conservation value, although small areas may have very high values.	Generally moderate conservation value. Areas of higher conservation value should be avoided in this zone.	A natural, although modified, setting with moderate to low conservation values. Stable environment able to support use.
<b>SOCIAL CRITERIA</b>					
<b>Probable recreation experiences</b>	Isolation from the sights and sounds of people. Opportunities for independence, solitude, closeness to nature, tranquillity and self-reliance through the application of outdoor skills in an environment that offers a high degree of challenge.	General isolation from people, though minimal contact with other visitors will occur. Opportunities for independence, closeness to nature, tranquillity and self-reliance in an environment that offers a high degree of challenge.	Low frequency of contact with other visitors. Opportunities for closeness to nature, tranquillity and some self-reliance through the application of outdoor skills (inc. 4WD) in a natural environment.	Opportunities to interact with the natural environment, while still having access to visitor facilities. Some social interaction with other visitors is likely.	Opportunities of social interaction with other users of the site. Group or family activities are an important part of the recreational experience. A natural bush setting is important but in the security of a safe and managed setting.
<b>Site modification and visitor facilities</b> Extent and type of site modification and facilities provided. (Also refer to table 3 and appendices 1, 2, 3 and 4 for details on visitor facilities provided).	No facilities provided or structures of any description present.	Minor modification of some sites only for essential management purposes and low-key recreation. Essential basic safety structures, walking trails and management roads may be evident. Basic visitor facilities only provided for public safety and health and environmental protection.	Generally natural environments with only minor modification evident. Various classes of unsealed roads, basic visitor facilities and basic walking tracks and trails may be provided. Toilets may be provided at sensitive or regularly used sites.	Predominantly natural-appearing environment. Some modifications will be evident at specific sites. Smaller scale camping and picnic areas, toilets, good all weather road access, walking tracks and safety structures are provided.	Modified natural environment with areas of intensive recreational use. Good all-weather roads, graded walking tracks, well-developed picnic and camping areas and safety structures provided. Accommodation and information centres may be provided.
<b>Social interaction</b> Density of users, degree of social interaction and opportunities for solitude.	Little or no contact with others. Generally no shared sites at the destination points.	Small number of brief contacts (<5 per day). Occasional sharing of destinations. (May be higher during peak periods).	Occasional contact with up to 20 small groups per day. Likely to have other groups present at destinations.	Regular contact with others, including large groups. Sharing of destinations highly likely.	Unavoidable and constant contact with other people, including large groups. Inevitable sharing of destination.

Table A5: Recreation management zone characteristics and criteria contd

	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
<i>Social criteria contd</i>					
<b>Degree of self-reliance</b> Level of support services provided.	Visitors must be totally self-reliant. No support services provided. Inform visitors of what is required of them.	Visitors must be almost totally self-reliant. Very few support services available.	Visitors are generally vehicle dependent. Few support services available.	Support services and facilities are provided. May be a perception of self-reliance for novice users.	A low degree of self-reliance is required. A high level of support services and facilities is provided.
<b>MANAGERIAL CRITERIA</b>					
<b>Mechanised access</b> (Also refer to appendix 3 for details).	No motorised surface access. Walking routes and boat access only. Only approved helicopter access.	No public vehicular access. Management access on 4WD tracks but usually at very low levels of use. Boat access	Access usually on unsealed roads and tracks, sometimes 4WD standard only. Boat access. Access restrictions may apply.	All weather roads are provided for a moderate level of recreational use and are well signposted.	Very good all weather road access for all classes of vehicle.
<b>Style of visitor management</b> Level of on-site management, site constraints and regulations. <i>Note:</i> Restrictions may be placed on the number of visitors and length of stay for each zone.	Very little or no on-site management, except for control of introduced species or essential fire protection. Standards of behaviour and visitor expectations will be achieved by off-site means. Permit systems may be used.	Minimal on-site management which may include occasional ranger patrols and some signs. Researchers may be permitted vehicular access under strict controls.	Some on-site management presence which may include ranger patrols and signs. Management of vehicle access may be evident and a permit system may be used when and where necessary.	Moderate level of on-site management and ranger presence. Signs widely used. Focus on establishing appropriate visitor expectations and behaviour. Length of visit may be restricted.	High degree of on-site control including use of physical barriers and on-site staff. Vehicular and pedestrian movement is regimented. Booking may be necessary for accommodation. Length of visit may be restricted.

