



Environment,
Climate Change & Water
National Parks & Wildlife Service



Mimosa Rocks National Park

Plan of Management



MIMOSA ROCKS NATIONAL PARK

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

Part of the Department of Environment, Climate Change and Water

February 2011

This plan of management was adopted by the Minister for Climate Change and the Environment on 2nd February 2011.

Acknowledgments

This plan of management is based on a draft plan prepared by staff of the Far South Coast Region of the NSW National Parks and Wildlife Service (NPWS), part of the Department of Environment, Climate Change and Water.

Aerial photograph by Andrew Brown Photography. Photograph of Aragunnu Beach by Preston Cope, NPWS.

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FOREWORD

Mimosa Rocks National Park covers 5,804 hectares between Tathra and Bermagui on the Far South Coast of NSW. It includes 20 kilometres coastline as well as areas of hinterland forest.

The park conserves three endangered ecological communities, including an area of rainforest at Bunga Head, and provides habitat for three endangered bird species and for 19 vulnerable animals. It also contains fossils from the Devonian period and most of the catchment of Nelson Creek, which is the principal tributary of Nelson Lagoon.

Mimosa Rocks National Park also contains places of cultural significance to local Aboriginal people, and evidence of past pastoral, timber harvesting, gold mining and recreational ventures. A local tradition of philanthropy, in which a number of neighbouring property owners have donated their land to the park, is a unique feature of this park.

The New South Wales *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each national park. A plan of management is a legal document that outlines how an area will be managed in the years ahead.

A draft plan of management for Mimosa Rocks National Park was placed on public exhibition from 6th March until 15th June 2009. The submissions received were carefully considered before adopting this plan.

This plan contains a number of actions to achieve the State Plan priority to “Protect our native vegetation, biodiversity, land, rivers and coastal waterways”, including weed and pest control, surveys of threatened species to determine the effectiveness of conservation measures, and fencing around camping areas to prevent damage to the surrounding vegetation. The plan also contains a number of actions to help achieve “More people using parks”, including the construction of two new picnic areas, the construction of new walking tracks, improved access to Middle Lagoon, and a feasibility study into tourist accommodation at the former Penders property.

This plan of management establishes the scheme of operations for Mimosa Rocks National Park. In accordance with section 73B of the *National Parks and Wildlife Act 1974*, this plan of management is hereby adopted.



Frank Sartor MP
Minister for Climate Change and the Environment

TABLE OF CONTENTS

1	INTRODUCTION	1
2	MANAGEMENT CONTEXT	1
2.1	Location and Regional Setting	1
2.2	Park Reservation	3
2.3	Significance of Mimosa Rocks National Park	5
3	MANAGEMENT FRAMEWORK	7
3.1	Legislation	7
3.2	Strategies and Policies	8
3.3	Local Considerations	8
4	OBJECTIVES OF MANAGEMENT	9
5	MANAGEMENT POLICIES AND ACTIONS	9
5.1	Natural Heritage	9
5.1.1	Climate	9
5.1.2	Geology, Landform, Water and Soils	11
5.1.3	Native and Introduced Plants	15
5.1.4	Native and Introduced Animals	24
5.1.5	Fire Management	29
5.2	Cultural Heritage	33
5.2.1	Aboriginal Heritage	33
5.2.2	Non-Aboriginal Heritage	38
5.3	Public Use	44
5.3.1	Recreational and Tourism Activities	44
5.3.2	Leases and Licences	55
5.3.3	Other Uses	57
5.4	Promotion and Interpretation	59
5.5	Management Facilities and Operations	61
5.6	Boundaries and Adjacent Areas	63
5.7	Research	65
5.8	Monitoring, Evaluation and Reporting	67
6	PLAN IMPLEMENTATION	68
	APPENDICES	
Appendix 1	Walking Track Categories (AS2156.1-2001)	73
Appendix 2	Threatened Animal Species	74
	REFERENCES	76
	TABLES	
Table 1	Park Gazettal History	5

FIGURES

Figure 1	Mimosa Rocks National Park and Surrounds	2
Figure 2	Coastal Protected Areas, Far South Coast of NSW	3
Figure 3	Existing Recreational Sites	45
Figure 4	Road and Management Track Network	end pages

1 INTRODUCTION

This plan of management has been prepared in accordance with the NSW *National Parks and Wildlife Act 1974* (NPW Act) to provide a framework of objectives, policies and actions to guide the long-term management of Mimosa Rocks National Park.

The provisions of the plan are based upon all relevant legislative requirements, government strategies and policies and regional and local planning instruments. They have also been influenced by the significance of the values of the park, and pertinent management issues and opportunities. This information has been gained from a variety of sources including field staff, specialists and members of the community.

This is the second plan of management written for the park and replaces the 1998 plan. It reflects the same underlying management philosophy evident in the earlier document and is directed at refining the conservation and recreation management achievements of the past decade.

A plan of management is a legal document. Once the Minister for the Environment has adopted this plan, no operation may be undertaken within Mimosa Rocks National Park except in accordance with this plan. The plan will also apply to any future additions to the park. Where management strategies or works are proposed that are inconsistent with this plan, a formal amendment will be required.

2 MANAGEMENT CONTEXT

2.1 Location and Regional Setting

Mimosa Rocks National Park is located on the Far South Coast of NSW, approximately 5 kilometres north of the township of Tathra and 22 kilometres south of Bermagui. Covering 5,804 hectares, the park extends northwards along the coast from the mouth of the Bega River for 20 kilometres to the southern shore of Bunga Lagoon. Mean high water mark delineates the seaward and lakeside boundaries of the park. In addition to this coastal strip of land, the park also protects areas of hinterland forest, including most of the catchment of Nelson Creek (refer Figure 1).

The national park is divided into northern and southern sections, separated by Wapengo Lake and a private property with ocean frontage situated on the northern shore of the lake. The inland extension of the park varies considerably, from a mere 100 metres at Picnic Beach to over 9 kilometres in the south at Doctor George Mountain. A cluster of partially-cleared rural blocks at Doctor George Mountain forms an inholding within the park. A second inholding is situated immediately east of the Tathra-Bermagui Road near the village of Mogareeka. This small area is vested in the Bega Valley Shire Council and contains water supply infrastructure for Mogareeka. The rural properties situated at the head of Nelson Lagoon are virtually, though not entirely, enclosed by the park.

State forests border the park along two sections of the southern boundary (Tanja State Forest) and to the north-west (Mumbulla State Forest). Elsewhere, the park adjoins a mixture of forested and cleared freehold land that is primarily used for livestock grazing and a variety of residential and commercial developments on small

rural allotments. Oyster leases exist within Nelson Lagoon and Wapengo Lake, both of which border the reserve.

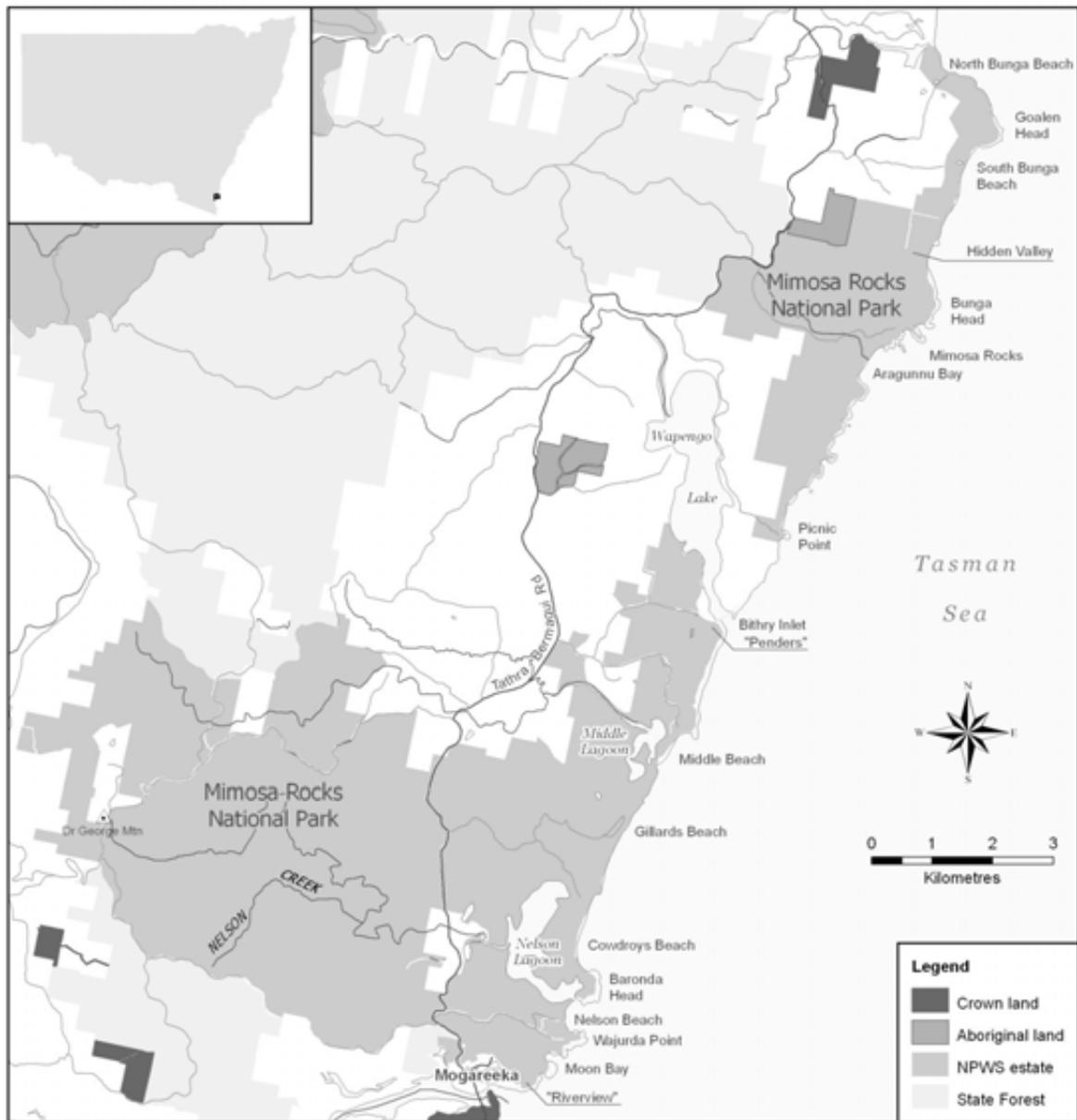


Figure 1 Mimosa Rocks National Park and Surrounds

Mimosa Rocks National Park is one of a series of coastal protected areas that stretch from the NSW/Victorian border almost to the township of Bermagui (refer Figure 2). Together, these reserves protect 153 kilometres or 69% of this section of coastline.

The park is located within the South East Corner Bioregion, which incorporates the coastline and hinterland mountain ranges of south-eastern NSW and Victoria (Thackway and Cresswell 1995). It is situated in the local government area of the Bega Valley Shire and within the boundaries of the Merrimans and Bega Local Aboriginal Land Council areas.

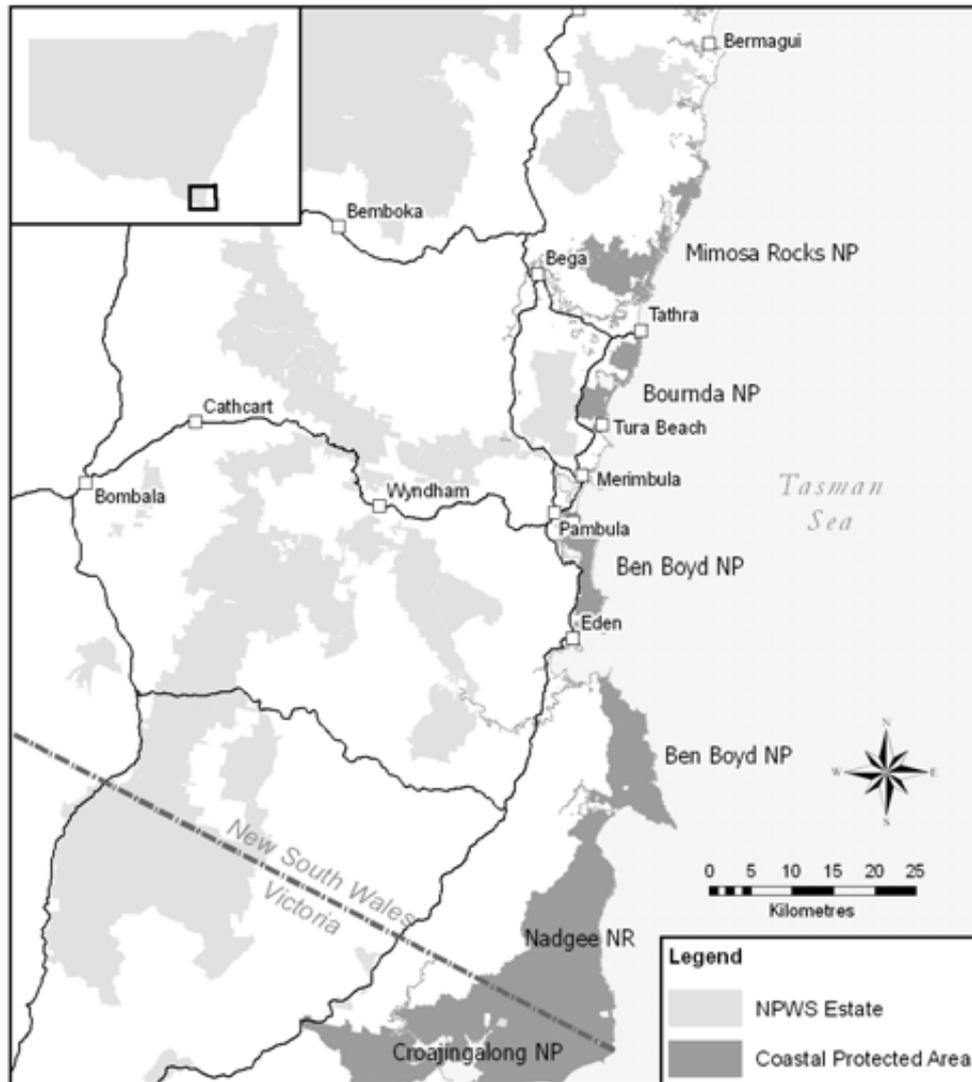


Figure 2 Coastal Protected Areas, Far South Coast of NSW

2.2. Park Reservation

Several small parcels of coastal Crown land were reserved from sale within the first few decades of European settlement of the Tanja district. In 1861, an area between Mogareeka and the southern shore of Nelson Lagoon was declared a water reserve under the provisions of the *Crown Lands Alienation Act 1861*, though this reservation was subsequently revoked in 1893. Land on the southern side of the entrance to Middle Lagoon was dedicated a recreation reserve in 1881. An area at Bunga Head was reserved from sale for public recreation and the preservation of native flora in 1933, while the area previously gazetted as a water reserve at Nelson Lagoon was set aside for public recreation and as a “resting place” in 1939. In 1970, an area between Aragunnu and Picnic Beach was reserved for public recreation.

In the late 1960s, members of the Far South Coast Conservation League, National Parks Association and Coast and Mountain Walkers began campaigning for a coastal national park between Tathra and Bermagui. A proposed tourist cabin development in the Nelson Beach–Wajurda Point–Moon Bay area, which included a lease over the Crown Reserve, created a rift amongst League members. Viewed by the proponent as a means of preventing more extensive development of the reserve, it was

opposed by a number of people who formed a new lobby group, the Bega-Tathra Conservation Society (BTCS). Pre-election lobbying by BTCS members resulted in the State government refusing consent for the lease of the reserve in 1971 (Dunphy 1971; Greenland n.d.). The cabin development was duly shelved, as was a 1972 proposal to establish a quarry at Bunga Head.

The early efforts of conservation groups were rewarded on April 13th 1973 when an area of 628 hectares located between Bunga Head and Picnic Point was gazetted as Mimosa Rocks National Park. This original reservation consisted of an amalgamation of six adjoining parcels of Crown land that had previously been reserved from sale for public recreation, the preservation of native flora or village purposes.

Since this initial modest reservation, the national park has increased almost ten fold in size. Twenty separate additions have been made to the park, consisting of former public reserves, vacant Crown land, trig reserves, state forest, donations of freehold land, and land purchased by the State government (refer Table 1).

The initial park reservation was promptly followed by two generous donations of private land. In 1973, Sir Roy Grounds and Mr Ken Myer offered their property named "Penders" to the government on the basis that it be reserved as national park. The property, covering 220 hectares, included a 2 kilometre frontage to the Pacific Ocean and bushland stretching from Middle Beach to Bithry Inlet. In the same year, Mr David Yencken offered his "Baronda" property, covering 30 hectares at Nelson Lagoon, for the same purpose. These two additions were critical in establishing or consolidating core areas of the national park that would subsequently be added to and joined to create a viable conservation reserve.

Early park additions included the Crown reserve earmarked for the cabin development at Nelson Beach and private land between Middle Lagoon and Gillards Beach which had been acquired by the State government. This latter area had been the site of a proposed high-rise resort development to be known as "Tanja Nova" which was also halted through lobbying by the BTCS and other conservation groups (Greenland n.d.).

Publicity generated by the Bega District Forest Action Council and other conservation groups resulted in the State government establishing the Advisory Committee on South Coast Woodchipping (subsequently known as the Ashton Committee) in 1977. In accordance with the recommendations of the Committee, 3,600 hectares of the Nelson and Middle Lagoon catchments in Tanja State Forest were added to the park in 1982. In the following year, an area of state forest behind Aragunnu Beach was also incorporated into the park.

A number of freehold properties were acquired by the NSW government during the 1990s under the Coastal Lands Protection Scheme which had been established in 1973 to purchase coastal areas that possessed significant cultural or natural heritage values. Properties acquired under the scheme and added to the park included the 16 hectare "Araganui" block at Aragunnu Beach, the 34 hectare "Riverview" property at Mogareeka Inlet, and the 105 hectare "Hidden Valley" property north of Bunga Head.

Other additions to the park during the 1990s included 160 hectares of Mumbulla State Forest at Doctor George Mountain in 1997, and three parcels of Crown land that were incorporated into the park in 1999 as an outcome of the Eden Regional Forestry Agreement.

Gazettal Date	Area (hectares)	Land Description
13th April 1973	628	Between Bunga Head and Picnic Point
25th May 1979	550	"Penders" property; "Baronda" property; Gillards Beach; Wajurda Point
23 rd April 1982	3,660	Nelson Creek catchment; Sandy Creek; Baronda Head
10 th August 1983	15.79	Portion 159 (Tanja)
28 th September 1983	326	West of Aragunnu; behind Gillards Beach
9th December 1983	1.5	Lot 3 DP 535490 (Tanja) northern side of Middle Lagoon
19th July 1988	-2	Kennedy Road Revocation
2nd October 1992	34	"Riverview" property
6th November 1992	17	"Araganui" property
25th November 1994	105.2	"Hidden Valley" property
23rd August 1996	37.2	"Texas" property, Haighs Road
1st January 1997	160	North-west of Doctor George Mountain
10th July 1998	0.41	Portion 179 (Tanja) Nelson Creek catchment inholding
1st January 1999	25	Portion 139 (Tanja) between Middle Beach & Bithry Inlet
1st January 1999	26.86	Lot 303 (Bega) adjoins Mogareeka & west of main road
5th March 1999	39.1	South of Doctor George Mountain
9th July 1999	23.27	Portion 191 (Tanja)
26th November 1999	20.2	Lot 1 DP 535490 (Tanja)
20th July 2001	7.74	Portion 191 (Bega)
2nd November 2001	104	Lot 280 DP 1005736 (Murrh), Goalen Head
6th September 2002	22.94	Lot 72 DP 1027803 (Tanja), Haighs Road
15 th August 2008	1.8	Lot 183 DP752158 (Tanja), Sandy Creek

Table 1 Park Gazettal History

The history of private individuals donating land to the park has continued. The 37 hectare "Texas" property at Tanja, which was added to the park in 1996, was bequeathed by the late Ken Myer, while other neighbours (including Roy Grounds' son, Marr), have donated land that was added to the park in 2001 and 2002.

An area of 104 hectares of land at Goalen Head was purchased under the Coastal Lands Protection Scheme and incorporated into the park in 2001. It added a further 3 kilometres of coastline to the park.

2.3 Significance of Mimosa Rocks National Park

Mimosa Rocks National Park is regionally significant in that it is one of a suite of reserves that together protect more than three-quarters of the coastline of the South East Corner Bioregion. The park has important natural, cultural, scientific, aesthetic and recreational values.

The coastal rock exposures in the park display a range of spectacular large and small-scale features such as folds, faults and intrusions in a variety of rock types.

They contribute to the aesthetic appeal of the place and have considerable educational potential. They also contain fossils of club mosses and fish from the Devonian period, which are of considerable scientific value.

Three vegetation types in the park are listed as endangered ecological communities under the NSW *Threatened Species Conservation Act 1995* (TSC Act) and, as such, are of statewide significance. These are:

- Littoral Rainforest (Bunga Head Rainforest; Coastal Warm Temperate Rainforest);
- Bangalay Sand Forest (Dune Dry Shrub Forest); and
- Themeda Grassland.

Of these, the Bunga Head Rainforest is of special scientific interest as it contains a variety of plants that typically occur in more northerly rainforests. The Bunga Head/Aragunnu area also supports populations of a number of vulnerable or uncommon plant species, as do the forests on Doctor George Mountain at the far western edge of the park.

The park is considered to be of regional significance as a refuge for threatened animal species. Three bird species observed in the park – hooded plovers (*Thinornis rubricollis*), little terns (*Sterna albifrons*) and swift parrots (*Lathamus discolor*) are listed as endangered under the TSC Act. In addition, 19 species listed as vulnerable under the TSC Act have also been recorded in the park. These include nine mammal species and ten bird species, most of which inhabit forest and open woodland communities or the immediate coastal fringe.

For local Aboriginal people, the park contains tangible connections between them and their country, their ancestors, their traditional lifestyles and the stories of creation beings. Particular features are imbued with cultural significance or sensitivities that remain important for people today. Certain communities and families regularly camp within the park and continue to pass on cultural knowledge associated with the area from one generation to the next.

The park also has a rich and varied history of European occupation and use. Evidence remains of pastoral, timber harvesting, gold mining and recreational ventures, with places such as the former “Riverview” property containing features of significance to both Indigenous and non-Indigenous people. Also notable is a local tradition of philanthropy in which a number of neighbouring property owners have donated their land to the park.

The undeveloped and elevated coastline of the park is an important landscape feature that dominates views north from the township of Tathra. The wooded ridges and valleys of the park are also locally significant visual elements, especially in the otherwise cleared landscapes of the Tanja and Wapengo districts where they form aesthetically-appealing backdrops to many properties. At the western end of the park, the coastal range of Doctor George Mountain forms part of the eastern viewfield from the township of Bega.

The park protects most of the catchment of Nelson Creek, which is the principal tributary of Nelson Lagoon. Maintaining high water quality in the creek is vital to the health of the lagoon which is an important oyster-growing area.

The park is a popular recreational venue for local people and visitors from elsewhere in Australia, especially during the summer months, Easter and school holiday

periods. Day visitors and those camping overnight participate in a variety of recreational activities including picnicking, fishing, walking, swimming, surfing, car touring, canoeing and cycling. The relatively undeveloped nature of the park is a key attraction for many visitors.

3 MANAGEMENT FRAMEWORK

3.1 Legislation

The management of Mimosa Rocks National Park is primarily governed by the provisions of the NSW NPW Act. Under this Act, the Director General of National Parks and Wildlife is responsible for the care, control and management of all national parks and various other categories of protected area. The primary responsibilities of the National Parks and Wildlife Service (the Service) under this legislation are the protection and maintenance of natural and cultural values, and the fostering of public appreciation, understanding and enjoyment of those values.

Other key components of the legislative framework which guide the management of the park include the:

- *Threatened Species Conservation Act 1995*. This Act describes the responsibilities of the Service in protecting threatened species, communities and critical habitats in NSW. The legislation provides for the identification of threatened species, populations and communities and key threatening processes, and the preparation and implementation of recovery plans and threat abatement plans; and
- *Environmental Planning and Assessment Act 1979*. This legislation may require the assessment of the environmental impact of activities within the park. The level of assessment required is commensurate with the degree of potential impact and ranges from detailed “environmental impact statements” and “species impact statements” to more concise “reviews of environmental factors”.

Various other NSW statutes govern aspects of park management, including the *Rural Fires Act 1997* (fire), the *Noxious Weeds Act 1993* (introduced plants), the *Rural Lands Protection Act 1998* (introduced animals) and the *Heritage Act 1977* (cultural heritage conservation).

Migratory bird species identified in international agreements approved by the Commonwealth Environment Minister are protected under the provisions of the Commonwealth’s *Environment Protection and Biodiversity Conservation Act 1999* and *Regulations 2000*. Within Mimosa Rocks National Park, these provisions apply to species listed in:

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

3.2 Strategies and Policies

The legislative framework that governs the management of Mimosa Rocks National Park is applied through a number of national and statewide strategies and policies. The most relevant national strategies, together with their state equivalents, are:

- The NSW State Plan;
- The National Strategy for the Conservation of Australia's Biological Diversity/NSW Biodiversity Strategy;
- The National Wetlands Program/NSW Wetlands Management Policy;
- The National Weeds Strategy and Program/NSW Weeds Strategy; and
- The National Tourism Strategy/NSW Tourism Strategy.

Important overarching principles and national consistency are also provided by:

- The Burra Charter (The Australia ICOMOS Charter for Places of Cultural Significance); and
- The Australian Natural Heritage Charter (for the conservation of places of natural heritage significance).

The management of the park is also informed by the work of the World Commission on Protected Areas (part of the IUCN) and by guidelines formulated by the Committee on National Parks and Protected Area Management established under the Natural Resource Management Ministerial Committee. The Committee has prepared a series of best practice reports on aspects of protected area management.

Park management must also be consistent with the statewide policies adopted by the NSW National Parks and Wildlife Service. These are based upon legislative requirements, corporate directions, goals and strategies, and internationally accepted principles of park management. They relate to the management of natural and cultural values, recreation, commercial activities, research and communication.

3.3 Local Considerations

The management of Mimosa Rocks National Park should be informed by the guidelines contained in the Lower South Coast Regional Environmental Plan No.2 and the Bega Valley Local Environmental Plan. The provisions of both of these documents that relate to lands bordering the park are particularly relevant, as they may impact upon park programs and objectives concerning matters such as fire management and wildlife conservation.

Park management should also be guided by the provisions of the Southern Rivers Catchment Management Authority Catchment Action Plan. This plan sets natural resource management goals, standards and targets for biodiversity, rivers, soils, land capability, and coastal/marine environments across the entire region.

The Bush Fire Risk Management Plan prepared by the Bega Valley Shire Bush Fire Management Committee details cooperative fuel reduction, fire trail maintenance and fire detection arrangements across the region, including those relating to the park.

4 OBJECTIVES OF MANAGEMENT

Under the NPW Act, the general objectives guiding the management of national parks are:

- The conservation of biodiversity, the maintenance of ecosystem function, the protection of geological and geomorphological features and natural phenomena, and the maintenance of natural landscapes;
- The conservation of places, objects, features and landscapes of cultural value;
- The protection of the ecological integrity of one or more ecosystems for present and future generations;
- The promotion of public appreciation and understanding of the national park's natural and cultural values;
- Provision for sustainable visitor use and enjoyment that is compatible with the conservation of the national park's natural and cultural values;
- Provision for the sustainable use (including adaptive reuse) of any building or structures or modified natural areas having regard to the conservation of the national park's natural and cultural values; and
- Provision for appropriate research and monitoring.

5 MANAGEMENT POLICIES AND ACTIONS

5.1 Natural Heritage

5.1.1 Climate

The Far South Coast of NSW experiences a warm temperate maritime climate characterised by mild summers and rainfall that is fairly evenly distributed throughout the year.

Climate data specific to the park is unavailable, though Bureau of Meteorology weather stations are located nearby at Merimbula Airport and Bega. Mean monthly maximum and minimum temperatures at Merimbula Airport vary from 24.6°C and 15.4°C in February, to 15.8°C and 4.4°C in July. Corresponding temperatures at Bega range from 27°C and 14.2°C in January, to 16.7°C and 1.4°C in July.

Average annual precipitation varies from 834.6mm at Merimbula Airport to 857.3 mm at Bega. Although considerable precipitation occurs throughout the year, there are distinctive rainfall peaks in summer months due to the prevalence at this time of year of north-east to south-east winds which deliver moist air to the coastal fringe. Mean monthly rainfall is highest in March (91mm at Merimbula Airport and 95.3 mm at Bega). The driest months occur during autumn and winter, with minimum monthly figures for these two stations being 41.2mm in July and 50.4 mm in August respectively. Reflecting this seasonal precipitation pattern, the mean number of raindays varies from 7.3 days in November to 3.5 days in July at Merimbula Airport, with Bega recording 6.4 raindays in November and January and 3.6 raindays in August.

South-westerly to westerly winds prevail during winter months, being replaced by south-easterly winds and north-easterly sea breezes during summer along the coastal fringe.

Key Issues and Opportunities

Anthropogenic climate change is listed as a key threatening process under the *Threatened Species Conservation Act 1995*. Projections of future changes in climate for NSW include higher temperatures, increasingly higher sea levels and water temperatures, and more intense, but possibly reduced, annual average rainfall. On the Far South Coast, increased temperatures are projected to occur in spring and summer, with an annual average warming of 0.2°C – 1.6°C by 2030, and warming by 0.7°C – 4.8°C by 2070. An overall decrease in annual precipitation may be partially offset by increased precipitation during summer months (Hennessy et al 2004).

These changes are likely to result in a greater intensity and frequency of wildfires, more severe droughts, reduced river runoff and water availability, changes to flooding regimes, increased coastal erosion and ocean acidification. They are also likely to cause shifts in species distributions, local extinctions and behavioural changes, with evidence already available that earlier flowering and fruiting of plants in response to warmer temperatures is resulting in earlier reproduction in some amphibian and bird species (DEC 2007).

Rising sea-levels are of particular concern at Mimososa Rocks National Park where they are likely to impact upon:

- Coastal geomorphological features such as beaches, dune systems and lagoons;
- Beach strand and foredune ecological communities and those fringing coastal lagoons, especially saltmarsh and mangrove communities;
- Aboriginal sites located along the coastal fringe; and
- A number of coastal recreational facilities and activities.

Individual species have two possible survival mechanisms in response to climate change – adaptation or migration. Evolutionary responses are likely to be too slow for most species to adapt in the short-term, while the ability of some susceptible species to migrate may be compromised by the lack of suitable habitat. This is likely to be the case for wetland communities fringing sections of the shorelines at Nelson and Middle Lagoons, and strand and foredune communities where beaches are backed by steep slopes.

The coastal zone contains the highest concentration of Aboriginal sites in the park, most of which consist of middens and open campsites. Sites located in dune areas and along the edges of coastal lakes and lagoons are especially vulnerable to disturbance and destruction due to erosion associated with rising sea levels.

Desired Outcome

Stresses on plant and animal species and communities considered under threat from sea level rises associated with human-induced climate change are minimised.

Policies and Actions

- 1 Enhance the protection of those parts of the park likely to be impacted by the effects of rising sea levels (beaches, coastal dunes, fringes of coastal lakes and lagoons) through:**
 - **Reducing adverse effects associated with visitor access, facilities and recreational activities within susceptible areas (Section 5.3.1);**
 - **Ensuring that potential areas for community and species migration are unobstructed by roads or other impediments (Sections 5.3.1 and 5.5);**
 - **Ensuring that susceptible areas receive high priority in weed and pest control and fire protection programs (Sections 5.1.3, 5.1.4 and 5.1.5); and**
 - **Including conditions in all relevant lease and license agreements (eg oyster growers, commercial anglers) that minimise adverse effects associated with their operations on susceptible areas (Sections 5.3.2 and 5.3.3).**

- 2 Identify existing and potential habitat corridors linking the park with nearby areas of native vegetation that may facilitate the migration of species under stress from climate change. Liaise with park neighbours, local landcare groups and the Bega Valley Shire Council concerning the establishment, retention, expansion and protection of these wildlife corridors.**

5.1.2 Geology, Landforms, Water and Soils

Geology

The underlying geology of Mimosa Rocks National Park is dominated by highly-folded and faulted sedimentary rocks such as slate, siltstone, shale and greywacke which were deposited during the Ordovician period (430-490 million years ago). Additional sediments accumulated during the later Devonian period (355-410 million years ago). During this time, coarse-grained granite and gabbro were intruded into the sedimentary rocks at Doctor George Mountain and Goalen Head respectively, while rhyolite was extruded over the top of the older rocks at Bunga Head to a depth of more than 140 metres. This volcanic activity has produced striking coastal formations such as the rock pedestals at Goalen Head, columnar jointing at Bunga Head, and the “castle-like” sea stacks of the Mimosa Rocks at Aragunnu (Packham 1969; TEC 1991).

Poorly-consolidated sediments such as gravels, sands and clays were also deposited at various times during the Tertiary and Quaternary periods (the last 65 million years). Occasionally exceeding 50 metres in thickness, these deposits cover substantial parts of the coastal zone northwards from Gillards Beach where they are being actively undercut by wave action. In places, these sediments grade into gravel beds of water-worn pebbles of quartz and quartzite which may be covered by recently-deposited aeolian sands. They include the so-called “coffee rock” found at Aragunnu Bay and elsewhere, which is probably an eroded podzol that has been hardened by humic groundwater.

The coastal cliffs and rock platforms of the park are formed from a mixture of rock types including rhyolite, gabbro, sandstone, siltstone, conglomerate and metasediments. Many of these rock exposures exhibit spectacular large and small-scale features, such as folds, faults and intrusions. Fossil deposits located in the northern section of the park are noteworthy as they include fossils of the earliest known club mosses found in Australia and of fish from the Devonian period.

Landforms

The rocks of the park have been shaped into a variety of coastal and near-coastal landforms across an altitudinal range that extends from sea level to some 270m above sea level in the hinterland hills.

Adjoining the park, the continental shelf is narrow and steep and has been deeply incised by erosion from high-energy waves. This has created a coastline in the northern and southern sections of the park that is characterised by rocky headlands and short beaches located within coves. North of Middle Lagoon the terrain rises steeply from the coast, reaching over 130 metres in height behind Bunga Head and 110 metres along the ridge that extends from Aragunnu Bay to Picnic Beach. North of Bunga Head, the narrow terrace behind Bunga Beach adjoins a line of abandoned seacliffs that mark the edge of a ridgeline that exceeds 100 metres in height. At the far southern end of the park, the coastline south of Baronda Head is especially indented. Here, the coastal hills are less steep and considerably lower, typically reaching only 50-70 metres in height.

Between the elevated coastlines of the northern and southern parts of the park is a depositional landscape of limited relief. The coastline between Middle Lagoon and Baronda Head consists of a flat to undulating plain dominated by sand and gravel deposits. The seaward edge of this plain is marked by three virtually continuous beaches (Cowdroys, Gillards and Middle Beaches) that together extend for a distance of almost 5 kilometres. Ridges of aeolian sands reaching 11 metres in height occur as narrow strips behind the various beaches of the park, which are separated by coastal cliffs and wave-cut platforms.

Away from the coast, the majority of the park consists of rolling hills with moderate slopes (10-32%). In the south, these hills and ridges rise gradually to the low and broken coastal range of Doctor George Mountain, which reaches over 300 metres in elevation. The western fall of this range, parts of which are included within the park, consists of relatively short and steep ridges and gullies.

Water

Nelson and Sandy Creeks, both of which drain the eastern slopes of Doctor George Mountain, are the only substantial watercourses in the park. By contrast, the creeks that drain the hills and ridges of the coastal zone are of limited length, have small catchments and are ephemeral, only flowing after substantial rainfall events.

The coastline of the park is punctuated by three relatively large waterbodies, all of which represent "drowned" river valleys. All or parts of the shorelines of Nelson and Middle Lagoons and Wapengo Lake are included in the park to high water mark. These three waterbodies are saline or brackish, and all are fringed by mudflats, sandflats and fluvial deltas.

Nelson Lagoon, which is a wave-dominated estuary that is open to the sea, has a surface area of 105 hectares and a catchment area of 2,900 hectares. It is included

in the *Directory of Important Wetlands in Australia* (ANCA 1996) as a good example of a wetland type occurring within the South East Corner Bioregion. Middle Lagoon has a surface area of 38 hectares and a catchment area of 2,800 hectares. The lagoon entrance is usually closed for lengthy periods, only opening in response to flooding rains or high seas. Only a short length of the Wapengo Lake shoreline is included in the park. The lake, which is the largest of the three waterbodies, is permanently open to the sea and has a surface area of 271 hectares and a catchment area of 7,700 hectares. All or parts of the three waterbodies are designated SEPP 14 wetlands.

Many of the creeks of the park are impounded by sand barriers, in places forming small lagoons and swamps across the coastal zone. One such waterbody, Bunga Lagoon, marks the northern boundary of the park.

Earthen dams exist in those parts of the park that were previously farmed. These include the former properties of "Penders" at Bithry Inlet, "Riverview" at Mogareeka, and "Hidden Valley" north of Bunga Head, and cleared lands behind Gillards Beach and at Goalen Head. The legacy of gold mining operations in the Nelson Creek valley includes a number of small dams and water races in varying states of disrepair. The dam adjacent to the Middle Beach carpark was constructed in the early 1970s for the then owner of the area, Sir Roy Grounds.

Soils

The soil that cloaks the various landforms of the park varies in type and depth depending on the parent material and location.

The rolling hills formed from sediments and metasediments that constitute the majority of the park are covered in moderately deep (50-150cm) and well-drained podzolic soils. By contrast, soils of the granite country at Doctor George Mountain consist of shallow (<50cm), well-drained lithosols on the crests and near bedrock outcrops, and moderately deep, well-drained yellow earths, red earths and siliceous sands on the slopes (DLWC 1998).

Along the coast, the volcanic gabbro rock of the Goalen Head area is covered in fertile, moderately deep and well-drained chocolate soils on the crests and slopes, well-drained structured loams near bedrock outcrops, and poorly-drained black earths in drainage lines. Lithosols and yellow podzolic soils of varying depths cover the rhyolite country at nearby Bunga Head.

The sandplains and beach ridges that occur within the coastal zone consist of deep (>150cm), well-drained podzols and siliceous sands, with poorly-drained groundwater podzols occupying the flats and swales. Deep and poorly-drained alluvial sands lie over deep clayey sands along the edges of Nelson Lagoon, Middle Lagoon and Wapengo Lake. An area of Tertiary sediments to the south and west of Middle Lagoon is covered in moderately deep and well-drained lateritic or yellow soloths on the crests, slopes and flats, and moderately deep to deep, poorly-drained brown clays in drainage lines. The former "Texas" property, now within the park, includes a portion of the Sandy Creek floodplain which consists of coarse Quaternary alluvium.

Key Issues and Opportunities

Coastal rock exposures at or near popular visitor destinations within the park have considerable educational potential. While most such sites are robust, increased

visitation to others, such as fossil locations, may result in degradation through collection.

The prevention or control of non-natural or accelerated erosion in streams which flow into and through the park is particularly important in preventing increased sedimentation in estuaries and lagoons, and in protecting the diverse and abundant native aquatic plant and animal communities present. Activities to control and suppress fire, or provide visitor access and facilities, should be designed and located to minimise any potential effects on the soil and catchment values of the park. Steep slopes and areas of deposition such as lake edges, dunes and swales are particularly susceptible to erosion and special care is required when developing recreation and other facilities in these areas. A number of such sites have already suffered unacceptable degradation and now require rehabilitation.

The natural hydrological regimes of various watercourses in the park have been disrupted through the past construction of dams on former farming properties at Goalen Head, Hidden Valley, Bithry Inlet, Mogareeka and Gillards Beach. Reinstatement of natural processes can be achieved through the breaching of these dams, though in some instances the likely impacts associated with the use of earth-moving machinery may rule out such action.

Desired Outcome

All geological and geomorphological features and processes, soil values and water quality in the park are conserved or their condition enhanced.

Policies and Actions

- 1 Provide enhanced protection to rocks, landforms and soils considered to be sensitive to disturbance by human activities, namely:**
 - **Fossil sites;**
 - **Coastal dune and swale systems; and**
 - **Fringes of coastal lakes and lagoons.**

- 2 Do not publicise the locations of known fossil sites within the park. Monitor the physical condition of these sites and actively discourage visitation if warranted by the levels of damage.**

- 3 Reduce the incidence, extent and severity of damage associated with visitor access and recreational activities in coastal dune areas and along the edges of coastal waterbodies through a combination of:**
 - **Obtaining an indication of the quantity of boat traffic on Nelsons Creek downstream of the water-craft launching area by monitoring vehicular traffic to the launching area through the installation of a traffic counter;**

 - **Closing and rehabilitating access roads and tracks that are contributing to the degradation of these areas (Sections 5.3.1 and 5.5);**

 - **Limiting the development of new visitor or management infrastructure in these parts of the park (Sections 5.3.1 and 5.5); and**

- **Repairing or upgrading existing visitor and management infrastructure and sites, as necessary, so as to minimise associated environmental degradation (Sections 5.3.1 and 5.5).**
- 4 Establish and maintain an inventory of human-disturbed sites within the park.**
 - 5 Establish and implement a remediation program for human-disturbed sites. High priority will be given to rehabilitating sites located within coastal dune systems and along the edges of coastal waterbodies. Elsewhere, priorities will be based upon the significance of the values threatened and the potential for rapid deterioration. For culturally significant sites and those required for ongoing recreational or management purposes, the appropriate response may be to manage the disturbance within acceptable limits rather than complete rehabilitation.**
 - 6 Monitor the effectiveness of rehabilitation treatments applied to individual disturbed sites. Undertake additional remedial work, as necessary, in response to monitoring results.**
 - 7 Minimise the creation of new sites of soil disturbance by locating new developments on previously disturbed sites wherever possible.**
 - 8 Rapidly stabilise any newly disturbed sites.**
 - 9 Restrict the amount of soil imported into the park to that required for essential rehabilitation works where local soil is unavailable so as to reduce the likelihood of weed and pathogen introductions.**
 - 10 All soil imported into the park must be from areas free of weeds and pathogens and, as far as possible, be physically and chemically compatible with material in the area into which it is to be introduced.**
 - 11 Identify all dams located within the park and assess their utility and historical associations. Breach and rehabilitate dams without cultural significance unless breaching will result in the creation of unacceptable environmental disturbance in which case these will be retained, as will any dams required for management purposes .**
 - 12 Interpret the geology and geomorphology of Mimosa Rocks National Park with emphasis on the coastal rock exposures and features located near popular visitor nodes (Section 5.4).**

5.1.3 Native and Introduced Plants

Native Plants

Mimosa Rocks National Park is located in a zone of climatic transition where subtropical and warm and cool temperate floras are juxtaposed. The mosaic of native plant communities occurring within the park corresponds with patterns in the topography, geology and soils of the area. Changes in slope, aspect and soil fertility are reflected in gradual or abrupt changes in species composition and vegetation structure. Recurring fires have also influenced the spatial distribution of individual vegetation types over time.

The vegetation of the park was documented by Gilmour in 1984. More recently, Keith and Bedward (1999) have described the vegetation of the area as part of a regional vegetation study. The vegetation classification system they utilised, which is a revision of that produced for the Eden Comprehensive Regional Assessment, has been used in this plan.

The narrow coastal plain of the park supports a mixture of scrub and dry forest communities interspersed with lagoons, estuaries and swamps. Mobile, calcareous beach sands above high water mark support a Beach Strand Grassland characterised by a sparse groundcover of hairy spinifex (*Spinifex sericeus*) and beach fescue (*Austrofestuca littoralis*), combined with scattered carpets of pigface (*Carprobrotus glaucescens*). Adjoining this community on hind dunes and headlands is a patchy groundcover of Coastal Scrub, dominated by coast wattle (*Acacia sophorae*), coast banksia (*Banksia integrifolia*), coastal rosemary (*Westringia fruticosa*) and coastal beard-heath (*Leucopogon parviflorus*).

Sheltered gullies on Bunga Head support wind-sheared thickets of rainforest that extend down to sea level. The unique Bunga Head Rainforest, which is only 7 hectares in extent, has affinities with subtropical and warm temperate rainforests. It consists of a low canopy (<10 metres tall) of lilly pilly (*Acmena smithii*), rusty fig (*Ficus rubiginosa*), sweet pittosporum (*Pittosporum undulatum*) and kurrajong (*Brachychiton populneus*) with emergent trees of bangalay (*Eucalyptus botryoides*). The rainforest understorey includes large shrubs of *Beyeria lasiocarpa*, copper laurel (*Eupomatia laurina*) and large mock-olive (*Notelaea longifolia*), and a diverse range of vines, sedges and grasses. In places this community is reduced to a tangle of vines. An unusual scrub of Port Jackson pines (*Callitris rhomboidea*) and paperbarks (*Melaleuca sp*) adjoins the rainforest-choked gullies on the headland. Isolated stands of Port Jackson pines also grow in places along the ridge that extends from Aragunnu Bay to Picnic Beach.

Littoral rainforest also survives on the abandoned seacliffs to the north of Bunga Head. Prior to being cleared, it is possible that parts of the Goalen Head area supported a similar rainforest community. Today, some of the clay-rich soils of Goalen Head are covered in dense swards of Themeda Grassland dominated by kangaroo grass (*Themeda australis*) and the introduced kikuyu grass (*Pennisetum clandenstinum*) which gives the community the appearance of pasture land. Regrowth thickets of coast banksia and coast wattle are present in places along the seaward edge of the headland. Also present at Goalen Head and at nearby Hidden Valley are some remnant forest red gums (*Eucalyptus tereticornis*), a species that covered much of this area of the park prior to it being cleared.

The verges of the coastal lagoons of the park are lined with a mixture of wetland communities. A Floodplain Wetlands complex of reedlands, herbfields, scrubs and swamp forest occurs along the southern side of Wapengo Lake and other semi-saline flats, as does Estuarine Wetland Scrub dominated by swamp paperbark (*Melaleuca ericifolia*). A narrow fringe of Coastal Saltmarsh, consisting of succulent species such as samphire (*Sarcocornia quinqueflora*), herbs, grasses and sedges, grows along the upper limit of the intertidal zone in Wapengo Lake and around Middle and Nelson Lagoons. River mangroves (*Aegiceras corniculata*) and grey mangroves (*Avicennia marina*), which vary in stature from shrubs to small trees, occur on mudflats within the upper and lower tidal zones respectively. Seagrass Meadows dominated by species such as *Ruppia polycarpa*, *Ruppia megacarpa* and *Zostera capricorni* occur in the subtidal zone in Middle and Nelson Lagoons.

Most of the coastline of the park is backed by a narrow strip of Dune Dry Shrub Forest dominated by bangalay (*E. botryoides*). This community typically occupies sheltered slopes and flats on well-drained calcareous sand dunes and adjacent metasediments within a few hundred metres of the coast. The forest contains a prominent small tree layer of species such as coast banksia, saw banksia (*Banksia serrata*) and tree broom-heath (*Monotoca elliptica*), shrubs such as pine heath (*Astroloma pinifolium*) and burrawangs (*Macrozamia communis*), and a groundcover of bracken (*Pteridium esculentum*), grasses, sedges and forbs. Behind Gillards Beach this community also includes bracelet honey myrtles (*Melaleuca armillaris*), drooping she-oaks (*Allocasuarina verticillata*) and coast wattles.

A small area (20 metres by 40 metres) of Coastal Lowland Heath exists behind the northern end of Gillards Beach. This restricted community is dominated by shrubs of bracelet honey myrtle, teatree (*Leptospermum continentale*) and sedges such as *Schoenus brevifolius* and *Lepidosperma concavum*. Other species present include common heath (*Epacris impressa*), swamp banksia (*Banksia paludosa*), swamp she-oak (*Allocasuarina paludosa*) and needlebush (*Hakea teretifolia*) (Graham-Higgs 1997).

Away from the immediate coastal fringe, the vegetation of the park primarily consists of a variety of shrubby eucalypt forests. Coastal Foothills Dry Shrub Forest grows on the metasediment and mudstone ridges in the catchments of Nelson and Sandy Creeks. The forest consists of a tall tree layer (to 25 metres) of species such as woollybutt (*Eucalyptus longifolia*), yellow stringybark (*E. muelleriana*), ironbark (*E. tricarpa*), blue-leaved stringybark (*E. agglomerata*), silvertop ash (*E. sieberi*) and rough-barked apple (*Angophora floribunda*) over an open shrub layer. On the near-coastal hills, spotted gum (*Corymbia maculata*) is abundant over an open understorey dominated by burrawangs.

Coastal Gully Shrub Forest occurs in gullies formed in metasediments throughout the park, with large stands located south of Middle and Nelson Lagoons and in the Nelson Creek catchment. This community has a variable tree layer that includes woollybutt, yellow stringybark, coast grey box (*E. bosistoana*), monkey gum (*E. cypellocarpa*) and white stringybark (*E. globoidea*). It has an open small tree layer that includes rainforest elements, a mesophyllous shrub layer and a rich groundcover. Lower gullies and alluvial flats are covered in Lowland Gully Shrub Forest dominated by rough-barked apple, with monkey gum, white stringybark and brown stringybark (*E. baxteri*). This forest has a tall semi-continuous groundcover dominated by bracken, grasses and sedges.

Sheltered slopes on ridges in the Bunga Head/Picnic Beach area support stands of Inland Intermediate Shrub Forest. This tall forest (to 30 metres) of messmate (*E. obliqua*) and silvertop ash has a relatively dense shrub layer and a tall semi-continuous groundcover similar to that present in Lowland Gully Shrub Forest.

The dry granite ridges of Doctor George Mountain are covered in Mumbulla Dry Shrub Forest and Coastal Dry Shrub Forest. Both of these communities are dominated by silvertop ash and blue-leaved stringybark (to 20 metres tall) and have sparse shrub and ground layers.

Wet forests, with their tall straight eucalypts and dense understories of ferns, mesophyllous shrubs and forbs, are restricted to fire-protected slopes, gullies and creeklines. Hinterland Wet Fern Forest occurs on east and south-facing slopes in the upper reaches of Nelson Creek and along Aragunnu Creek. Dominated by monkey gums (>30m tall), this forest has one or two open strata of shrubs including hazel

pomaderris (*Pomaderris aspera*) and a dense groundcover of ferns. Hinterland Wet Shrub Forest of yellow stringybark and monkey gum grows along protected reaches of Nelson and Sandy Creeks, on the eastern side of the coastal ridge south of Aragunnu Bay, and to the west of Bunga Head. The understorey of this community includes prominent small tree and shrub layers and a groundcover dominated by forbs and grasses.

Numerous small patches of Coastal Warm Temperate Rainforest occur on south-facing slopes in steep gullies draining the ridge behind Bunga Head and in the upper reaches of Nelson and Sandy Creeks. This community has a dense canopy (>15 metres tall) dominated by lilly pilly and sweet pittosporum. Lianas and epiphytes are present, as are tree ferns (*Dicksonia antarctica*, *Cyathea spp*) and a variety of groundcover ferns.

Significant Communities and Species

Mimosa Rocks National Park contains three vegetation types that are listed as Endangered Ecological Communities under the *Threatened Species Conservation Act 1995* (TSC Act). These are:

- Littoral Rainforest (Bunga Head Rainforest; Coastal Warm Temperate Rainforest);
- Bangalay Sand Forest (Dune Dry Shrub Forest); and
- Themeda Grassland.

In addition, the following two listed Endangered Ecological Communities occur on land adjoining the park:

- Floodplain Wetlands; and
- Coastal Saltmarsh.

The following two significant flora species also occur within the park:

- *Maytenus silvestris* (narrow-leaved orangebark). A small colony of this shrub (less than 10 plants) is present on top of Bunga Head. This is disjunct by more than 200 kilometres from the nearest reported population in the Shoalhaven.
- *Ozothamnus turbinatus*. The colony of this daisy shrub at the mouth of Middle Lagoon (on dunes and coastal cliffs) is at its northern recorded limit .

The Littoral Rainforest at Bunga Head is of special scientific interest as it contains various plants typically found in more northerly rainforests. Species in the Bunga Head/Aragunnu area that are at, or near, their southern limit of geographic distribution include sassafras (*Doryphora sassafras*), small-leaved fig (*Ficus obliqua*), scentless rosewood (*Synoum glandulosum*), koda (*Ehretia acuminata*), brittlewood (*Claoxylon australe*), pointed boobialla (*Myoporum acuminatum*), large mock olive (*Notelaea longifolia*), orange thorn (*Citriobatus pauciflora*), sweet sarsaparilla (*Smilax glycyphylla*), elk horn (*Platynerium bifurcatum*), birdsnest fern (*Asplenium australasicum*) and climbing fishbone fern (*Nephrolepis sp*). The rhyolite ridges of the area also support populations of the chef's hat correa (*Correa baeuerlenii*), listed as a vulnerable species in Schedule 2 of the TSC Act, the rare plant *Myoporum bateae*, the uncommon yellow wood (*Acronychia oblongifolia*) and *Zieria sp*, and an unusual community of cypress pines and melaleucas mixed with orchids and species usually found in wet gullies.

The strip of Bangalay Sand Forest (Dune Dry Shrub Forest) protected in the park is especially significant given that much of the original extent of this vegetation community between Bermagui and the NSW/Victorian border has been cleared. Half of the surviving 600 hectares of bangalay forest along this stretch of coastline remains unprotected.

The Themeda Grassland at Goalen Head, although highly disturbed, is significant due to the very restricted distribution of this community within the region. Remnant patches of this grassland are found atop seacliffs and headlands, often covering less than one hectare in extent. On the Far South Coast of NSW, many of these areas have been subdivided for residential housing or are used for agricultural production.

The surviving Floodplain Wetland complexes within or adjacent to the park are significant as most of these high-fertility parts of the landscape were cleared in the early years of European settlement. Very few of the remnant wetlands remain in good condition, with most subjected to ongoing livestock damage, draining, infilling or weed invasion. Within the region, less than 10% of the original extent of this vegetation type is protected in reserves.

As with Floodplain Wetlands, areas of intact Coastal Saltmarsh on the Far South Coast are rare. Mimosa Rocks National Park makes an important contribution to the conservation of this vegetation type, protecting 215 hectares (26%) of the remaining 828 hectares of saltmarsh in the region (Graham-Higgs 1997).

The patch of Coastal Lowland Heath at the northern end of Gillards Beach is considered to be regionally significant, as this community is very uncommon north of the township of Eden. Noteworthy plant species in this heathland include *Polymeria calycina*, a small twiner, and the shrub *Cryptandra propinqua*, both of which are close to their known southern limit of distribution.

A few cabbage palms (*Livistona australis*) are located near Middle Beach while a further two individuals occur near the Aragunnu camping area. The species also occurs immediately to the north of Bunga Head in Hidden Valley. These occurrences, together with small populations known from three localities outside the park, represent the southern limit for this species in NSW. Cabbage palms are regarded as regionally uncommon (McPherson 1997).

A number of rare or endangered species occur in the vicinity of Doctor George Mountain. These include two endemic species, the vulnerable Doctor George Mountain wattle (*Acacia georgensis*) and the rare *Eucalyptus spectatrix*. Other rare plants found in this part of the park include the vulnerable *Leionema carruthersii*, *Leionema ralstonii* and *Haloragodendron sp.* Wet forests growing on fire-protected aspects of Doctor George Mountain contain the vulnerable species upright pomaderris (*Pomaderris virgata*).

The park protects the most southerly occurrence of the spotted gum/burrawang association.

Condition

The forests of the park have been selectively logged since the early years of European settlement. Timber harvesting intensified from 1948 onwards, and in the following 30 years some 37% of the future park (then state forest) was logged. Integrated harvesting for sawlogs and pulpwood occurred between 1976 and 1978 in the Nelson Creek catchment utilising a system of alternate coupe logging that left a

mosaic of cut and uncut patches of forest. The varied appearance, structure and composition of the forest communities of the park are, in large part, legacies of this logging history. So too is the scarcity of mature eucalypt forest.

Away from the hinterland forests, various parts of the coastal fringe of the park were previously cleared for agriculture. Land at Gillards Beach, Bithry Inlet, Mogareeka, Hidden Valley and Goalen Head has been highly disturbed through past clearing, grazing and exotic pasture establishment. All such areas are gradually revegetating through natural re-invasion by native species, though since 1993 the Service has initiated a number of revegetation projects at these sites utilising plants propagated from locally-sourced seeds. Revegetation work has also been undertaken around the camping areas at Aragunnu, Picnic Point, Gillards Beach and Middle Beach.

Most of the Goalen Head area remains cleared. Apart from the Themeda Grassland, which survives in a modified form, virtually no evidence remains of the native vegetation communities that formerly grew in this area. These are believed to have included Bega Dry Grass Forest, Coastal Scrub, Bunga Head Rainforest, Coastal Warm Temperate Rainforest, Dune Dry Shrub Forest and Coastal Foothills Dry Shrub Forest (Cameron and Peel 2002).

Introduced Plants

Previously cleared areas within the park harbour significant infestations of exotic species. Kikuyu grass (*Pennisetum caldestinum*) is the dominant groundcover species in the former grazing paddocks at Gillards Beach. Other exotic species present include Parramatta grass (*Sporobolus indicus*), quaking grass (*Briza maxima*), Yorkshire fog (*Holcus lanatus*), hare's tail grass (*Lagurus ovatus*), fireweed (*Senecio madagascariensis*), catsear (*Hypochaeris radicata*), clover (*Trifolium sp*) and lesser hawkbit (*Leontodon taraxicoides*) (Graham-Higgs 1997).

In addition to agricultural species, the former "Penders" property at Bithry Inlet contains plantations of Sydney blue gum (*Eucalyptus saligna*), turpentine (*Syncarpia glomulifera*) and flooded gum (*E grandis*). Also present are regularly spaced avenues of ornamental trees, a small grassed golf course and the remains of orchards and vegetable gardens. The former "Texas" property, which adjoins Sandy Creek, also contains timber plantations.

The former "Riverview" property at the far southern end of the park contains more than 80 exotic plant species. These include prominent avenues of golden cypress pines (*Cupressus macrocarpa*), ornamental shrubs, and the remains of orchards and vegetable gardens. Invasive species that have escaped into the surrounding native vegetation include periwinkle (*Vinca major*), Cape ivy (*Delairea odorata*), black-eyed susan (*Thunbergia alata*), red hot poker (*Kniphofia sp*) and passionflower (*Passiflora sp*). Potentially invasive species include cassia (*Senna pendula*), privet (*Ligustrum spp*), radiata pine (*Pinus radiata*) and giant reed (*Arundo donax*). The area contains minor infestations of pampas grass (*Cortaderia sp*), blackberry (*Rubus sp*), spear thistle (*Cirsium vulgare*) and wandering jew (*Tradescantia albifolia*) (Hamilton 1999).

The cleared land at Hidden Valley is dominated by kikuyu grass. Other notable exotic plants present include fireweed, blackberries and Arum lilies (*Zantedeschia aethiopica*). Nearby at Goalen Head, kikuyu grass blankets much of the landscape. Other exotic species present include fireweed, blackberry, spear thistles, black nightshade (*Solanum nigrum*), coral trees (*Erythrina sykesii*), African boxthorn (*Lycium ferrocissimum*) and golden dodder (*Cuscuta campestris*) (Cameron and Peel 2002).

Elsewhere in the park, the occurrence of introduced plant species is relatively low. In the strand environment, infestations of sea spurge (*Euphorbia paralias*) and sea rocket (*Cakile maritima*) are present at several locations, most notably along Cowdroys Beach and beaches in the Goalen Head area. Occasional plants of bitou bush (*Chrysanthemoides monilifera*) are still detected at the southern end of the park, African lovegrass (*Eragrostis curvula*) is present at Middle Beach, spear thistle and passionflower occur in the Tommys Bay (Middle Lagoon) area, while blackberries persist at Baronda Head. Small infestations of *Aloe vera*, originating from the dumping of garden refuse, are present along Nelson Lake Road and the Bermagui-Tathra Road near Mogareeka.

Weed management in the park is guided by the provisions of an annually updated Weed Management Plan for the reserve. Control priorities are based upon a set of criteria that indicate a measure of the conservation threat levels posed by particular weed species and the likelihood of control programs succeeding. High priority is given to the control of noxious weed species such as bitou bush, blackberry, bridal creeper and fireweed. Medium priority species for control are sea spurge, African lovegrass, kikuyu, pampas grass, thistles, African boxthorn and arum lily, while low priority species include coral trees and aloe vera.

Key Issues and Opportunities

Recreational activities pose threats to a number of significant plant communities in the park, most notably those of the coastal zone and lagoon edges. At camping and picnic areas, in particular, the surrounding coastal vegetation can be damaged through trampling, the creation of informal campsites, campfire escapes, the introduction of weeds and pathogens, and firewood collection. The need to closely manage visitor activities is most critical at Aragunnu where a number of highly significant plant species and communities exist.

Visitor management should also aim to avoid the development of additional infrastructure within the endangered Bangalay Sand Forest community which may also be degraded through the application of inappropriate fire regimes and weed invasions. The endangered Floodplain Wetlands, particularly ephemeral swamps, are also highly weed-prone due to their moist and relatively fertile soils.

Off-road vehicle use and pedestrian traffic pose threats to the endangered Coastal Saltmarsh communities which fringe Nelson and Middle Lagoons and Wapengo Lake. These communities, which are highly susceptible to climate change-induced sea level rises, may also be degraded by disruptions to tidal flushing, water-borne pollution, nutrient enrichment from catchment runoff, weed invasion, damage by feral animals, and altered fire regimes. The rate of recovery of these communities is extremely slow.

Most previously cleared parts of the park are regenerating naturally, with introduced pasture species generally unable to persist under a vigorous native shrub layer. Despite this, infestations of numerous weed species remain, as do exotic ornamental plantings, orchards and timber plantations. Some of these plantings are of cultural or horticultural significance and may have interpretive value.

In the absence of active management, the endangered Themeda Grassland community at Goalen Head is likely to be rapidly colonised by shrub species. Uncontrolled vehicular access in this area is likely to facilitate the spread of weed species through the grassland.

As other areas of forest throughout the region are subject to logging operations, the park is becoming increasingly important as a place in which mature vegetation communities can develop. A number of native animal species are reliant upon the maintenance of older successional vegetation to survive.

Desired Outcome

The full suite of native plant communities and species present in the park is conserved.

Policies and Actions

- 1 Reduce the threats to Littoral Rainforest and other significant vegetation communities and species in the park by:**
 - Improving the fencing at Middle Beach Camping Area to protect the remnant Littoral Rainforest gully;
 - Limiting the provision of new visitor infrastructure in the Aragunnu area to replacement facilities on previously disturbed sites (Section 5.3.1);
 - Fencing the Aragunnu camping areas perimeters where required to prevent further vegetation damage through informal expansion of the camping areas (Section 5.3.1);
 - Fencing around cabbage palms to prevent people walking near them (facilitating species germination) (Section 5.3.1); and
 - Not promoting Bunga Head as a recreational destination (reducing the risk of weed and pathogen introductions and the collection of ferns and orchids) (Section 5.3.1).
- 2 Prohibit the development of new visitor or management infrastructure within areas of Bangalay Sand Forest.**
- 3 Map the distribution of Themeda Grassland within the park. Restrict vehicular traffic in these areas to that required for essential management purposes.**
- 4 Reduce the threats to Floodplain Wetlands and Coastal Saltmarsh by:**
 - Closing and rehabilitating access roads and tracks that are contributing to the degradation of these areas (Sections 5.3.1 and 5.5);
 - Prohibiting the development of new visitor or management infrastructure in these parts of the park (Sections 5.3.1 and 5.5); and
 - Repairing or upgrading existing visitor and management infrastructure, as necessary, so as to minimise associated environmental degradation (Sections 5.3.1 and 5.5).
- 5 Map the Coastal Lowland Heath community at the northern end of Gillards Beach. Do not develop visitor or management infrastructure within this area.**

- 6 Map the distribution of significant plant species in the Doctor George Mountain area. Do not develop visitor or management infrastructure within this area.**
- 7 Manage fire in accordance with the provisions of the Fire Management Strategy for the park in order to:**
 - Enhance the long-term viability of all endangered ecological communities and other significant plant communities and species;
 - Enhance the biodiversity of all vegetation communities present;
 - Protect existing stands of old growth vegetation; and
 - Promote a diversity of successional vegetation stages (Section 5.1.5).
- 8 Implement the relevant provisions of the threatened species priorities action statement and recovery plans for all plant communities and species in the park that are listed under the *Threatened Species Conservation Act 1995*.**
- 9 Monitor the progress of revegetation of those parts of the park that were previously cleared at:**
 - Gillards Beach;
 - Penders (Bithry Inlet);
 - Riverview (Mogareeka);
 - Hidden Valley; and
 - Goalen Head.
- 10 Investigate and pursue opportunities to actively revegetate those parts of the park dominated by exotic species, such as the Goalen Head area.**
- 11 Use native plant species of local provenance in all revegetation projects.**
- 12 Continue to manage, and where possible eradicate, pest plant species in accordance with the provisions of the Weed Management Plan for the park.**
- 13 Review the Weed Management Plan to ensure that high priority is given to the control of weed species within areas likely to be significantly impacted upon by sea level rises (beaches, coastal dunes, fringes of coastal waterbodies), endangered ecological communities and other significant vegetation types.**
- 14 Obtain silvicultural advice on the future management of the timber plantations on the former ‘Penders’ and ‘Texas’ properties. Depending on this advice, manage the plantations in the short to medium term as cultural artefacts with the aim of harvesting them in the longer term. Revegetate harvested areas with endemic species.**
- 15 Remove all exotic plantings that have little or no cultural, horticultural, amenity or interpretive value (Section 5.2.2).**
- 16 Promote public understanding and appreciation of the plant communities and species of the park (Section 5.4).**

- 17 Provide copies of relevant vegetation maps and maps within this plan at a larger scale for viewing at the NPWS Narooma and Merimbula offices and on the internet.

5.1.4 Native and Introduced Animals

Native Animals

The diverse range of plant communities present in the park provides habitats for a large number of native animal species. Comprehensive fauna surveys conducted between 1979 and 1984, together with more recent investigations, have recorded a total of 215 native animal species in the park. These include 39 species of mammals, 115 bird species, 21 reptile species and 12 different amphibians.

Ground-dwelling mammals present include the ubiquitous red-necked wallabies (*Macropus rufogriseus*), swamp wallabies (*Wallabia bicolor*), eastern grey kangaroos (*Macropus giganteus*), common wombats (*Vombatus ursinus*) and short-beaked echidnas (*Tachyglossus aculeatus*). Of the smaller mammals, bush rats (*Rattus fuscipes*) inhabit coastal scrub and forests with dense groundcover, as do brown antechinus (*Antechinus stuartii*). By contrast, long-nosed bandicoots (*Perameles nasuta*) have been recorded in coastal forest and woodland communities with sparse groundcover.

Forest and woodland communities are also inhabited by a range of arboreal mammals including common brushtail possums (*Trichosurus vulpecula*), common ringtail possums (*Pseudocheirus peregrinus*) and a variety of gliders - feathertail gliders (*Acrobates pygmaeus*), greater gliders (*Petauroides volans*), yellow-bellied gliders (*Petaurus australis*) and sugar gliders (*Petaurus breviceps*). The eleven species of bats that have been recorded in the park include the chocolate wattled bat (*Chalinolobus morio*), the lesser long-eared bat (*Nyctophilus geoffroyi*), Gould's long-eared bat (*Nyctophilus gouldi*) and the large forest bat (*Vespadelus darlingtoni*).

The winter-flowering of banksias and eucalypts provides an important food source for possums, bats and birds. Coast banksias, spotted gums and ironbarks attract large numbers of honeyeaters, lorikeets and other bird species to the area in winter. The rich diversity of forest and woodland birds includes various species of cockatoos, currawongs, cuckoos, cuckoo-shrikes, pigeons, ravens, wattlebirds and rosellas. A large number of small forest birds are also present including fantails, whistlers, thornbills, pardalotes, wrens, finches, flycatchers and robins.

A suite of resident and migratory shorebirds forage and roost along shoreline habitats. These include gulls, terns, cormorants, plovers and oystercatchers. Behind the immediate shoreline, the estuaries and lagoons of the park provide habitats for a range of common waterbirds including white-faced herons (*Ardea novaehollandiae*), great egrets (*Egretta alba*), black swans (*Cygnus atratus*), royal spoonbills (*Platalea regia*), straw-necked ibis (*Threskiornis spinicollis*), black ducks (*Anas superciliosa*) and chestnut teals (*Anas castanea*).

The bountiful food resources of the park support fifteen species of birds of prey. Four owl species are present – southern boobook (*Ninox boobook*), powerful owl (*Ninox strenua*), masked owl (*Tyto novaehollandiae*) and sooty owl (*Tyto tenebricosa*), as are white-bellied sea eagles (*Haliaeetus leucogaster*), wedge-tailed eagles (*Aquila audax*), osprey (*Pandion haliaetus*) and various kites and goshawks.

The 21 species of reptiles recorded in the park include nine types of lizards ranging from a variety of skinks to the frequently observed lace monitors (*Varanus varius*) and common bluetongues (*Tiliqua scincoides*). Six species of snake are present – the diamond python (*Morelia spilota*), southern death adder (*Acanthopis antarcticus*), Master's snake (*Drysdalia rhodogaster*), tiger snake (*Notechis scutatus*), red-bellied black snake (*Pseudechis porphyriacus*) and eastern brown snake (*Pseudonaja textilis*).

Frogs found in the park include Peron's tree frog (*Litoria peronii*), the Jervis Bay tree frog (*Litoria jervisiensis*), the common eastern froglet (*Crinia signifera*) and the striped marsh frog (*Limnodynastes peronii*).

Little has been recorded about the fish or invertebrate fauna of the park.

Significant Species

The park is home to three endangered animal species and 20 vulnerable species as listed under Schedules 1 and 2 of the *Threatened Species Conservation Act 1995* (TSC Act).

The three endangered species found in the park are birds. Of these, the swift parrot (*Lathamus discolor*) has been observed along the coast near Middle Lagoon between March and October where it feeds on winter-flowering species such as spotted gums. Hooded plovers (*Thinornis rubricollis*) prefer to breed on broad, flat, sandy ocean beaches, while the endangered little terns (*Sterna albifrons*) and vulnerable pied oystercatchers (*Haematopus longirostris*) breed on sand spits and sand islands within or adjacent to estuaries. Recorded breeding sites within the park for these three shorebird species for the period 2001 to 2006 were:

- Bunga Beach (hooded plovers);
- Bengunnu Beach (hooded plovers);
- Aragunnu Beach (hooded plovers, pied oystercatchers);
- Bithry Inlet (pied oystercatchers);
- Middle Beach (little terns, hooded plovers, pied oystercatchers);
- Tommys Bay (hooded plovers);
- Gillards Beach (hooded plovers);
- Cowdroys Beach (hooded plovers, pied oystercatchers); and
- Nelson Lagoon (pied oystercatchers) (Jarman and Keating 2006).

Of the vulnerable mammals, spotted-tailed quolls (*Dasyurus maculates*) are known from the forests of the upper to middle reaches of the Nelson Creek valley. In a koala (*Phascolarctos cinereus*) survey in coastal forests to the north-east of Bega in 2007-9, koala distribution in approximately 22,000 hectares was assessed, including parts of Mimosa Rocks National Park (Allen 2009). A small, low density koala population was identified, with the core areas of activity in Mumbulla State Forest which adjoins the park and extending northwards to the Bermagui River. Although no koala evidence was identified in the park, it is possible that outlying koala activity cells do occur there and that additional areas of the park may become occupied by koalas should effective strategies be implemented to enable the recovery of the population. Of particular interest is whether koalas will return to the forest red gum (*Eucalyptus tereticornis*) dominated communities that occur in the park as this species is identified as a primary koala browse species and these communities are now rare, fragmented and often degraded.

Long-nosed potoroos (*Potorous tridactylus*) have been recorded in the upper and lower reaches of Sandy Creek and in the Gillards Beach area in coastal forests with

dense understoreys, while white-footed dunnarts (*Sminthopsis leucopus*) occupy a variety of coastal vegetation types.

Yellow-bellied gliders (*Petaurus australis*) have been observed in mature eucalypt forests in the Tanja area. The coastal forests are also utilised by the three vulnerable bat species known from the park: grey-headed flying foxes (*Pteropus poliocephalus*); golden-tipped bats (*Kerivoula papuensis*) and eastern bentwing bats (*Miniopterus schreibersii oceanensis*).

While the park does not contain any breeding or regular haul-out sites for Australian fur seals (*Arctocephalus pusillus doriferus*), individuals are occasionally encountered along the shoreline.

Five of the fifteen species of birds of prey recorded for the park are listed as vulnerable. Of these, powerful owls, masked owls and sooty owls inhabit tall mature forests where they nest in tree hollows. Square-tailed kites (*Lophoictinia isura*) are birds of the open forest and woodland, building nests in tree boughs, while ospreys (*Pandion haliaetus*) are fishers that nest on cliff faces or in trees of the coastal fringe.

The vulnerable gang gang cockatoo (*Callocephalon fimbriatum*), glossy black cockatoo (*Calyptorhynchus lathamii*) and brown treecreeper (*Climacteris picumnus*) are all forest or woodland birds that are reliant upon the availability of tree hollows for nesting, while the eastern ground parrot (*Pezoporus wallicus wallicus*) utilises the grasslands of Goalen Head. Threatened species recorded in the park are listed in Appendix 2.

Mimosa Rocks National Park is also visited by a number of bird species that are listed under international bilateral treaties concerned with the conservation of migratory birds. Under 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), the Australian government is obliged to protect listed species and take appropriate measures to preserve and enhance the environments they utilise. JAMBA-listed species that occur in the park are:

- short-tailed shearwaters (*Puffinus tenuirostris*);
- bar-tailed godwits (*Limosa lapponica*);
- eastern curlews (*Numenius madagascariensis*);
- whimbrels (*Numenius phaeopus*);
- crested terns (*Sterna bergii*); and
- little terns (*Sterna albifrons*).

Similar obligations are associated with the *Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment* (CAMBA). Birds listed under CAMBA that have been recorded in the park are:

- great egrets (*Egretta alba*);
- white-bellied sea eagles (*Haliaeetus leucogaster*);
- whimbrels (*Numenius phaeopus*);
- eastern curlews (*Numenius madagascariensis*);
- bar-tailed godwits (*Limosa lapponica*);
- little terns (*Sterna albifrons*); and
- white-throated needletails (*Hirundapus caudacutus*).

Three rainforest bird species are notable for being at the southern limit of their distribution in the park – the topknot pigeon (*Lopholaimus antarcticus*), brown pigeon (*Macropygia amboinensis*) and yellow-throated scrubwren (*Sericornis citreogularis*). The park also marks the known southern limit of distribution for the variegated wren (*Malurus assimimilis*).

Introduced Animals

Six introduced mammal species have been recorded in the park. Of these, wild dogs (*Canis familiaris*), red foxes (*Vulpes vulpes*) and cats (*Felis catus*) are likely to be widespread. Small and isolated populations of rabbits (*Oryctolagus cuniculus*) exist on previously disturbed sites at Picnic Point, Gillards Beach and Goalen Head, and behind Nelson Beach. Most of these populations are expected to decrease in size as previously cleared areas progressively revegetate, though rabbits will most likely remain where grassed camping areas are maintained. House mice (*Mus musculus*) can reach plague proportions in recently burnt areas of forest but are uncommon or rare in unburnt areas. Deer (*Cervus spp*) are occasionally sighted in the Nelson Creek catchment and Goalen Head area.

Little is known of the introduced bird and insect fauna of the park, though it is assumed that European honeybees (*Apis mellifera*) are present.

Feral animal control within the park is undertaken within the context of the Feral Animal Management Plan for the reserve (NPWS 2007). Control priorities are based upon a set of criteria that indicate a measure of the conservation threat levels posed by particular feral species and the likelihood of control programs succeeding. Within Mimosa Rocks National Park, foxes and wild dogs are regarded as the highest priority to control, cats and rabbits receive medium priority, and deer control is a low priority.

Key Issues and Opportunities

The maintenance of a range of critical habitat attributes is essential if park management is to fulfil its wildlife conservation objectives. The large number of endangered and vulnerable animal species present across the bioregion is a measure of the extent of habitat loss and degradation, as are recorded declines in forest and woodland bird species and some ground-feeding insectivores and grassland birds (Sattler and Creighton 2002).

Within the park, there is a shortage of mature trees used by hollow-dependant bird and glider species due to past logging of the area. Fire management should be cognisant of the need to protect and promote older successional stages of vegetation and to exclude fire from moist gully forests which support high concentrations of wildlife (Lunney 1982). Fauna research in the park has found that species such as the black rock skink (*Egernia saxatilis*) and red-bellied black snake (*Pseudechis porphyriacus*) are excluded from forests by fire and their re-establishment is dependent upon recolonisation from unburnt areas. By contrast, the presence of the white-footed dunnart appears to be dependent on areas of sparse ground cover as present immediately after fire or many years post-fire. These findings point to the need to retain some unburnt areas and recognise that frequent and/or extensive fires reduce the recovery chances of some animal species.

Bell miner (*Manorina melanophrys*) colonies are known to be causing localised damage to vegetation in at least two places in the park, behind Nelson Beach and behind Bithry Inlet. Bell miner associated dieback (BMAD) is widespread throughout

NSW and considerable effort is being made to establish the causes and suggest possible ameliorating action.

Work in recent years has seen the number and distribution of beach-nesting shorebird species in the park stabilised or increased. Remaining threats to vulnerable species such as little terns, hooded plovers and pied oystercatchers include inundation, sand coverage or accidental trampling of nests by visitors, and predation by foxes, wild dogs, ravens and gulls (Jarman 2006).

The park plays an important role in providing a refuge for animal species which may become locally extinct in neighbouring areas due to habitat disturbance. The value of the park as a wildlife corridor and source of dispersal is partially reduced due the narrowness of the reserve in places and the presence of Nelson and Middle Lagoons and Wapengo Lake, which may impede movement by mammals and other animals incapable of crossing large waterbodies.

Desired Outcome

The long-term viability of populations of all native animal species found in the park, particularly threatened species, is maintained or enhanced.

Policies and Actions

- 1 Implement the relevant provisions of the threatened species priority action statement and recovery plans for all listed threatened animal species.**
- 2 Undertake targeted surveys of threatened animal species on a periodic basis to evaluate the effectiveness of the conservation measures employed and impacts on species viability due to lack of adequate wildlife corridors. Alter species management, as necessary, in response to survey results and future research outcomes.**
- 3 Manage fire in accordance with the provisions of the Fire Management Strategy for the park in order to:**
 - Maintain or create a representative range of successional vegetation stages and age classes, including the retention of mature vegetation;**
 - Protect moist gullies from fire; and**
 - Provide the requirements of species that are known to be reliant on particular fire regimes for the maintenance of key habitat attributes such as tree hollows and fallen wood debris.**
- 4 Continue to undertake pest control programs in accordance with the provisions of the Feral Animal Management Plan for the park.**
- 5 Review the Feral Animal Management Plan to ensure that programs within areas likely to be significantly impacted upon by rising sea levels (beaches, coastal dunes, fringes of coastal waterbodies) and those directed at protecting listed threatened animal species receive high priority.**
- 6 Promote public understanding and appreciation of the native animals of the park (Section 5.4).**

- 7 Monitor the park for areas of bell miner associated dieback. If they are expanding in size or number, investigate options for reducing their adverse effects.**

5.1.5 Fire Management

Fire has had a significant influence on the biota of the area now included in Mimosa Rocks National Park for tens of thousands of years. Occasional fires ignited by electrical storms and those lit by Aboriginal people have largely shaped the pattern of plant species and communities present and their interdependent fauna.

Fire History

Documentary evidence of Aboriginal use of fire in the forests of the South Coast region is extremely limited. Several early European accounts note that fire was used by Aboriginal people for hunting, either as a means of moving game or for smoking animals out of trees (Sullivan 1982). It was also used for signalling, the promotion of new growth to attract game to an area, and to clear undergrowth for easier walking along pathways and around living areas. Early records indicate that such fires often burnt large tracts of forest. Deliberately or inadvertently, these fires resulted in the containment of rainforest communities to fire-protected sites and the maintenance of more productive open forest types across large parts of the landscape.

The likely Aboriginal fire regime of relatively frequent low-intensity fires changed with the arrival of European settlers in the Tanja district in the 1840s. Clearing of the foothills and valley floors for agriculture was accompanied by intensive use of fire. It is likely that these fires also burnt large areas of forest beyond the valley confines. With the cessation of Aboriginal burning practices and the scaling back of land clearing activities, the fire regime in the hinterland forests became characterised by infrequent but intense conflagrations. The earliest known report of a large wildfire in the Tanja area dates from 1884 (Russell 1978).

The fire history of the park area up until 1978 is not well documented. For a number of years prior to their inclusion in the park, the hinterland areas were regularly but lightly burnt as part of silvicultural practices aimed at promoting productive commercial forests. Coastal areas were also frequently burnt, either through arson fires or as part of wildfire control measures.

A total of 38 wildfires was recorded in the park between 1978 and 2007. Only five of these fires burnt more than 100 hectares, though a single wildfire during the 1981/82 summer season burnt a third of the park. Since the gazettal of the park, there have been three severe fire seasons. During the 1980/81 summer, wildfires burnt approximately 1000 hectares in the Baronda Head/Wajurda Point area, behind Gillards Beach and in the catchments of Nelson and Sandy Creeks. In the following fire season, 1700 hectares of the Nelson Creek catchment were burnt, including the ridges and slopes southwest of Doctor George Mountain. Almost 1000 hectares of the northern section of the Nelson Creek catchment were burnt during the 1986/87 summer. Arson has been the most common cause of wildfires in the park (NPWS 2004).

Wildfires have most commonly occurred during spring, with 13 separate fires (41%) recorded in September, a further 7 fires (22%) in October and 4 fires (13%) in August (NPWS 2004). Spring wildfires are typically associated with a combination of strong

northerly or westerly winds and high temperatures, conditions that can produce intense fires. High fire danger days during summer months are associated with similar conditions though the winds at this time of year, which are typically from the north-east to south-east, bring in moist maritime air (McCarthy et al 1988).

The spate of large wildfires during the early 1980s prompted the introduction of a hazard reduction burning program aimed at using frequent, low-intensity fires to reduce fuel loads. From 1985 onwards, prescribed burns have been used within the Nelson and Sandy Creek catchments and a number of near-coastal sites to reduce the risk of future wildfires burning out large parts of the park and threatening neighbouring properties.

Fire Risks

Fire is recognised as a natural feature of the park environment and essential to the ongoing survival of certain plant and animal species and communities. Conversely, too frequent burning can result in the extinction of particular plants and animals. A variety of fire regimes – fire frequencies, intensities and seasonality - is necessary in order to conserve floristic and habitat diversity. Fire management aims to maintain or enhance this diversity by restricting planned and, if possible, unplanned fires to only a portion of the distribution of a vegetation type at any one time. The desired result of this approach is a mosaic of age classes for each of the vegetation types present in the park.

Consistent with this aim, the Service has attempted to exclude fire from some sensitive locations. These include rainforest communities and coastal dune and headland vegetation. Natural values in the park that are especially at risk from inappropriate fire regimes include:

- The numerous small patches of warm temperate rainforest;
- The unusual rainforest and scrub communities at Bunga Head;
- The moist gully forest communities;
- Stands of saw banksia (*Banksia serrata*);
- The rare and threatened plant species growing on Doctor George Mountain; and
- Animal species that are reliant upon particular fire regimes or habitat attributes, such as tree hollows, that may be destroyed by fire.

Fire can also damage or destroy certain Aboriginal sites and historic features. Cultural heritage values in the park that are at risk from fire include:

- Aboriginal scarred trees;
- Historic buildings and related infrastructure such as fences;
- Eucalypt plantations; and
- Ornamental and agricultural plantings of heritage significance.

Fire also poses a threat to visitors and to various camping and picnic facilities within the park, such as toilet blocks, boardwalks, viewing platforms, signs, interpretive shelters, bollards and park furniture. Most such facilities are concentrated within the coastal zone at destinations such as Gillards, Middle and Nelson Beaches, Picnic Point and Aragunnu Bay, all of which are adjacent to areas of high fuel hazard.

Potential ignition sources within the park include arson, campfires, escaped hazard reduction burns and lightning strikes. Broadscale fires burning on adjacent

agricultural or forested lands also pose a fire threat to the park. In particular, fires originating in the Bega Valley may threaten the Doctor George Mountain area.

Although there have not been any recorded incidences of damage to buildings on neighbouring properties from fires originating in the park, large number of dwellings are located nearby. Six areas within and adjacent to the park are considered to be at an intermediate or relatively high risk from bushfires:

- The village of Mogareeka;
- Dwellings located to the north of Doctor George Mountain;
- Communications infrastructure on Doctor George Mountain;
- Dwellings in the Sandy Creek area;
- Dwellings in the Nelson Creek area;
- The Service depot and nearby houses at Tanja; and
- The leased areas at Bithry Inlet and Nelson Lagoon.

Fire Planning

All aspects of fire management within Mimosa Rocks National Park are governed by the Fire Management Strategy for the reserve. Initially prepared in 2004 and updated annually, the strategy details:

- Optimal fire regimes for maintaining or enhancing biodiversity;
- Hazard reduction burning programs;
- The required fire trail and fire break network;
- Fire suppression support features such water points, helipads, landing grounds and refuge areas;
- Education, cooperation and enforcement measures; and
- Required fire research and monitoring.

The Fire Management Strategy (NPWS 2004) divides the park into a number of zones serving different fire management roles. Strategic Fire Advantage Zones are managed so as to reduce the impact of unplanned fires and prevent the spread of fires within, from and into the park, primarily through the application of fuel reduction burning. Within Heritage Area Management Zones, the key fire management objective is to protect natural and cultural values, with prescribed burns only used for the maintenance of biodiversity. Fire Exclusion Zones generally include fire-intolerant vegetation communities, such as rainforest, and fire-sensitive cultural features.

Effective fire management in the park requires a cooperative regional approach that is not constrained by land tenure and property boundaries. To this end, Service representatives are actively involved in the Bega Valley Shire Bush Fire Management Committee established under Section 50 of the *Rural Fires Act 1994*. In accordance with the Act, the committee has developed a District Bush Fire Risk Management Plan that covers the park as well as other land in the region. This plan details cooperative fuel reduction, fire trail maintenance and fire detection arrangements across the region.

Key Issues and Opportunities

The management of fire in the park is an important and complex task that is directed at conserving the values of the area and protecting life and property within and adjacent to the reserve. While the Fire Management Strategy details the means by

which these underlying objectives can be met, it does not address ways of reducing the incidence of wildfire ignitions within the park.

Arson has been the principal source of wildfires originating within the park. The frequency and location of arson fires is typically related to vehicular access, with arsonists commonly lighting fires alongside infrequently-used tracks. Prohibiting or restricting private vehicle use along such tracks represents one of the few means of reducing arson-related fires in the park.

Campfire escapes represent the other potential ignition source that can be influenced by management. Fires lit in camping areas located in forested settings such as Aragunnu, Picnic Point and Middle Beach represent the highest risk to visitors and the environment. Of these, the potential for campfire escapes from the Aragunnu camping area is of special concern given the highly significant vegetation communities in the area and nearby Bunga Head.

Climate change may lead to increases in the frequency and intensity of wild fire and the changing fire regimes may change the Park's biodiversity (see also Section 5.1.1).

Desired Outcome

Fire is managed so as to achieve the ongoing protection of life and property within and adjoining the park and the long-term conservation of natural and cultural values.

Policies and Actions

- 1 Continue to manage fire within the context of the Fire Management Strategy for the park.**
- 2 Future reviews of the Fire Management Strategy will ensure that, as far as possible:**
 - Strategic fuel reduction measures are prescribed such that the likelihood of loss of human life and damage to infrastructure within and beyond the park is minimised;**
 - The likelihood of a single wildfire burning out large parts of the park is minimised;**
 - Ecological communities and species likely to be impacted by the effects of climate change are considered in reviews of the fire management strategy (Section 5.1.1);**
 - Geodiversity values, catchment stability and water quality are not impaired by the impacts of fire and fire operations (Section 5.1.2);**
 - Fire is used to protect or enhance the biodiversity values of the park, especially all endangered ecological communities and threatened or otherwise significant plant and animal species (Sections 5.1.3 and 5.1.4);**
 - Fire management in the park is based upon the most up-to-date scientific research concerning ecological fire thresholds; and**
 - All heritage places and objects are protected from the adverse effects of fire and fire operations (Sections 5.2.1 and 5.2.2).**

- 3 Maintain roads included in the fire trail network, as defined in the Fire Management Strategy, to an appropriate standard (Section 5.5).**
- 4 Assess the operational utility of new fire trails, fire breaks and water points resulting from suppression operations as soon as practicable after a fire. Rehabilitate these works unless they are assessed as being required for ongoing use.**
- 5 Reduce opportunities for arsonists to ignite fires within the park by limiting public vehicular access to those roads that serve a recreational function and closing and rehabilitating management trails that are no longer required (Sections 5.3.1 and 5.5).**
- 6 Permit campfires at the Aragunnu, Middle Beach, Picnic Point and Gillards Beach camping areas only in the fireplaces provided.**
- 7 Prohibit the use of solid fuel fires whenever warranted by fire danger conditions.**
- 8 Formulate a regional policy on campfire management and monitor environmental impacts associated with campfire use as a matter of priority. Alter campfire management within the park, as necessary, in accordance with the regional policy and monitoring results.**

5.2 Cultural Heritage

5.2.1 Aboriginal Heritage

Pre-European Occupation and Use

Mimosa Rocks National Park lies within the country of the Yuin people, which extends southwards from the Shoalhaven River to near the Victorian border and inland to the eastern edges of the tablelands. Archaeological records indicate that the Yuin have inhabited this region for at least 20 000 years, though occupation sites recorded within the park date from only the last 6000 years, reflecting the period in which the sea has stabilised at its present level.

Oral tradition and physical evidence suggest that prior to the arrival of Europeans, the Yuin maintained a thriving society that incorporated sophisticated exchange patterns and rich social and ceremonial lives. The coastal fringe provided plentiful and readily-accessible marine resources, with people using lagoons, bays and river mouths, shallows close to shore, and the deeper waters of the open sea. The food resources available from these coastal environments included fish, shellfish, stranded whales, dolphins, seals, crabs, freshwater eels, birds and their eggs (Byrne 1983).

Rock exposures along the coast also provided raw materials for tool production. The rhyolite cobbles along the beaches south of Bunga Head and the veins of quartz commonly present in the Ordovician metasediments were especially important sources of stone, as was the gabbro at Goalen Head (Byrne 1983; Oakley 2003).

The seafood resources of the coastal strip supported relatively large populations of people. The bountiful Mogareeka Inlet at the mouth of the Bega River was an

especially popular camping place and the endpoint of an important travel route from the Monaro Tableland to the coast. The northern headland of the Bega River mouth was also an important ceremonial site that attracted people from distant places. Travelling through the district in 1844, George Augustus Robinson noted the presence of a fish trap on the lower Bega River, pointing to the productivity of the area. He also reported a large gathering of people camped at Goalen Head (Byrne 1983).

People inhabiting the coastal zone practised a diverse economy that also included terrestrial resources. The open forests bordering the coast provided a variety of products such as fruits, seeds, tubers and honey, and animals such as kangaroos, wallabies, possums, wombats, bandicoots, lizards, birds and grubs. The forests were also a source of materials from which to fashion tools, weapons, utensils and shelters, or to use as bonding agents, decoration, or for medicinal and ceremonial purposes. The presence of cycads, a predictable and manageable food resource that could be stored, may have enabled groups of people to remain in the one place for longer periods of time or at higher population densities than in places where cycads were absent.

Evidence indicates that forests within range of the coast were commonly visited from base camps located up to 3 kilometres inland. These hinterland trips were probably undertaken by small parties for short periods of time and in pursuit of particular raw materials or types of food to supplement available coastal resources. Such trips are most likely to have been undertaken during autumn and winter when coastal food groups were less abundant and available. Areas utilised and routes taken would have been largely governed by the availability of fresh water. Nelson Creek, with its supplies of drinking water, freshwater fish and crustaceans, and numerous flat areas suitable for camping is likely to have served as a base from which to access the forest environment.

It is likely that the hinterland forests were also utilised by small family groups that ranged widely throughout the region. Localised movement throughout this forested landscape was largely, though not exclusively, along ridgelines or riverside flats.

Disruption and Decline

Prior to the arrival of European settlers in the region in the 1830s, Yuin society was already seriously disrupted. The smallpox epidemic of 1789 and outbreaks of influenza and other introduced diseases had already decimated Aboriginal populations along the east coast.

The spread of European settlement across and beyond the Bega valley was accompanied by violent altercations and rapid disruption of Aboriginal cultural practices and social structures. Although Aboriginal people continued to follow a modified form of their traditional lifestyle, by the 1850s their lives had become closely entwined with those of the new settlers. Apart from the whaling industry which had become dependant on an Aboriginal workforce, Aboriginal people on the South Coast were also employed picking beans, gathering maize and potatoes, herding cattle and sheep, stripping bark, shearing, as domestic labourers and as police trackers.

The passage of the *Crown Lands Alienation Act 1861* resulted in closer and more intensive settlement. The ramifications of this for the Yuin people were further restrictions on their ability to reside on, travel over and utilise the resources of their country. From this time onwards, the displacement of the Yuin from their country and

culture was further entrenched as many people migrated, or were forcibly moved, to government reserves such as the one established at Wallaga Lake in 1891.

Despite resettlement, the separation of family members, the forced abandonment of traditional practices and a great loss of cultural knowledge, the Yuin people of the area have retained important strands of their culture, including a sense of identity and belonging.

Surviving Evidence and Significance

The type, size and location of the archaeological sites recorded within Mimosa Rocks National Park reflect the previous patterns of Aboriginal use of the area. The majority of sites consist of middens and open campsites and are situated in the once heavily utilised coastal zone.

Middens are the most common type of archaeological site recorded in the park. Most are located close to rock platforms, commonly on the north-eastern side of nearby headlands or clifflines where they are sheltered from the prevailing winds. Many such sites are adjacent to creek mouths or hind-dune water sources. Estuarine middens are typically located on flat, elevated ground along the edges of rivers, lakes and lagoons while small low-density middens are frequently exposed in dune swales (Byrne 1983).

Open campsites, consisting of scatters of flaked local and introduced stone, exist throughout the landscape and are the most common type of archaeological site in hinterland areas. They are most likely to occur on elevated, level, well-drained ground adjacent to fresh water sources, and along the crests of ridgelines and other areas used as travel routes (Byrne 1983a).

Evidence of the significance of the Mogareeka-Moon Bay area remains in the form of a Bunan ground, which consists of raised rings of stones used in male initiation ceremonies. A rock shelter with occupation deposits is located nearby (Byrne 1983). Other types of archaeological sites recorded or likely to be present include burials, which are typically found when exposed in aeolian sands. Isolated stone artefacts can occur anywhere in the landscape and may represent the random loss or deliberate discard of artefacts, or the remains of dispersed artefact scatters. Scarred trees may still occur in areas containing vegetation which contains trees of sufficient age.

The suite of archaeological sites recorded in the park is likely to represent only a small proportion of those present due to the limited survey work undertaken to date and restricted ground visibility. Many sites are also likely to have been destroyed during past logging activity and the clearing and cultivation of land at places such as Gillards Beach, Bithry Inlet, Mogareeka, Goalen Head and Hidden Valley (Oakley 2003). Material from the once extensive middens at Moon Bay was carted away and crushed by early settlers for use in building construction.

For contemporary Aboriginal people, the park contains tangible connections between them and their country, their ancestors, their traditional lifestyles and the stories of creation beings.

The natural-appearing landscapes of the park represent the state of the country occupied and used by their ancestors prior to the arrival of European settlers, while specific archaeological sites provide material links with their forebears and insights into their use and management of the area. Particular features are imbued with

cultural significance or sensitivities that remain important for people today. Some represent episodes within the great travels and adventures of creation beings, whereas others such as initiation or fertility sites are places linked to traditional cultural practices.

Places within the park have also been the scenes of innumerable experiences for Aboriginal people, some of which have been handed down through communities from one generation to the next, others of which reside in the memories of particular families or individuals. People continue to camp and fish at places used by generations of their families. Some have retained the traditional knowledge of the seasonal movement and schooling behaviour of fish, and still use the Yuin words for different fish and shellfish species.

Key Issues and Opportunities

While the coastal fringe contains the highest concentration of archaeological sites in the park, it is also the focus of recreational activity. Vehicle and pedestrian traffic in coastal locations may result in damage or destruction of Aboriginal sites, some of which are also at risk from erosion due to sea level rises associated with human-induced climate change.

A number of features within the coastal strip of the park are especially significant to Aboriginal people. The sensitive nature of these places should be respected by not developing or promoting them as visitor attractions and by ensuring that visitor infrastructure is sited so as not to encourage exploration of these areas.

Opportunities to assist local Aboriginal people in fulfilling their cultural aspirations and connections exist within the park. The establishment of a culture camp at which elders can teach younger members of the Aboriginal community traditional skills and knowledge is one such opportunity. The Department has previously made a formal commitment to support the creation of such a camp within the park. Another opportunity may be facilitating local Aboriginal communities in the development of cultural tourism enterprises in which they can gain financial and employment benefits through sharing their knowledge of the park environment with visitors.

Desired Outcome

The Aboriginal cultural values of the park are conserved and managed in partnership with the local Aboriginal community.

Policies and Actions

- 1 Manage all aspects of Aboriginal cultural values within the park in association with the Bega and Merrimans Local Aboriginal Land Councils, and relevant Aboriginal families and individuals.**
- 2 Undertake targeted surveys to identify and record Aboriginal sites and objects that are most likely to be significantly impacted upon by the effects of rising sea levels (coastal dunes, fringes of coastal lakes and lagoons) and those that are sensitive to disturbance by visitor activities.**
- 3 Investigate the cultural significance of landscape features within the park and manage culturally sensitive places in appropriate ways as guided by the Aboriginal community.**

- 4** Develop and implement an Aboriginal sites maintenance and monitoring program to protect, wherever possible, the integrity of sites and objects currently impacted upon by human activities or natural deterioration. Conservation work priorities will be based upon levels of cultural significance and the immediacy and degree of threats to site integrity.
- 5** Do not publicise the locations of Aboriginal sites:
 - Without the consent of the appropriate Aboriginal people; and
 - Prior to the implementation of management measures designed to protect sites from impacts associated with visitation.
- 6** Consult with relevant Aboriginal organisations, families and individuals regarding ways in which management of the park can contribute to the cultural, social and economic wellbeing of the local Aboriginal community, which may include:
 - Establishment of a single culture camp; and
 - Support for appropriate cultural tourism enterprises.
- 7** If it is still the desire of the local Aboriginal Community to establish a culture camp as referred to in Action 6, then the location and ongoing operation of a culture camp in the park will be subject to:
 - The provisions of the *National Parks and Wildlife Act 1974* and all relevant departmental policies;
 - The findings of an environmental impact assessment of the proposal;
 - A formal agreement between the Service and representatives of the Aboriginal community concerning management conditions and protocols;
 - Any culture camp will be a basic camping area with facilities similar to other basic camping areas in the park; and
 - The results of an impact monitoring program and ongoing reviews of operation.

Candidate sites for the proposed culture camp should:

 - Not include areas likely to be significantly impacted upon by the effects of human-induced climate change;
 - Not include endangered ecological communities or significant plants or animal species habitat;
 - Previously have been cleared or significantly modified and require little, if any, disturbance of native vegetation;
 - Not be visible from the coastal edge of the park;
 - Afford a high degree of privacy, and be separated from existing camping areas and screened from areas frequented by other visitors; and
 - Not include places that are currently popular visitor destinations.
- 8** Promote research and information gathering to develop a better understanding of Aboriginal cultural values within the park. Ensure the recording of oral histories and knowledge (where appropriate) of

members of the Aboriginal community receives high priority, especially where important cultural knowledge is held by only a small number of individuals.

- 9 Promote public understanding and appreciation of the Aboriginal cultural heritage values of the park (Section 5.4).**

5.2.2 Non-Aboriginal Heritage

For more than 150 years, the land now included in Mimosa Rocks National Park served a variety of very different functions. The entire coastal fringe was partitioned and sold, with suitable parcels of land cleared for grazing or the establishment of orchards and gardens. The hinterland forests were logged for railway sleepers and later pulpwood and sawlogs, the native wildlife was hunted, and the creeklines were scoured for gold. Here and there, holiday houses replaced huts and farmhouses.

Evidence of these various activities abounds across the landscapes of the park. Former farms are marked by clearings or regenerating bushland, fencelines or dams, weeds or ornamental plantings. The legacy of logging includes roads and wharf remains, while former mines are marked by shafts and adits, mullock heaps and machinery. Houses survive in some places, though in others they persist only as ruins or memories.

Pastoral activity

Within a decade of the establishment of cattle properties in the Bega Valley during the 1830s, grazing land had been selected within and adjacent to the future park. Fred Moon settled at the mouth of the Bega River in 1843, on what later became known as “Riverview”, having landed sheep at the nearby bay that would soon bear his family name. Soon afterwards in 1846, George Nelson and Jack Hayden constructed a hut at Nelson Lagoon with the aim of establishing a cattle grazing operation. At the time the area consisted of fairly open country covered with kangaroo grass and was considered to be well suited to cattle farming (Russell 1978).

The passage of the *Crown Lands Alienation Act 1861* resulted in closer and more intensive settlement. Between 1861 and 1878, more than 50 people selected land in the Nelson area and beyond. By the 1890s, virtually all of the coastal land between the Bega River and Goalen Head had been surveyed into portions and sold. At Bithry Inlet and on the better soils around Goalen Head, the land was cleared and converted to dairy farms. Elsewhere, blocks such as those behind Gllards Beach and Aragunnu Bay were probably initially cleared for the agistment of working bullocks, teams of which carted sleepers, wattle bark, tallow and wool throughout the district. Small holdings were cleared, gardens were established and huts were built at various other sites throughout the bush.

Closer settlement triggered the need for accurate surveying and mapping of the district. This required the establishment of trigonometric stations on prominent hill tops and ridgelines, one of which was erected on Bunga Head in 1897. A trig station was also constructed on the headland immediately north of Middle Beach.

Timber harvesting

Selected land was cleared through a combination of ringbarking, burning and logging. Timber that was not used by early selectors for the construction of dwellings and fences was shipped out at Moon Bay. Prior to the construction of a wharf at Tathra in 1860, the bay fulfilled the role of a regional shipping port, though ships also collected timber and dairy produce from nearby Nelson Bay. Further north at Aragunnu Bay, timber was dragged out to sea from the southern end of the beach by a boat with a winch before being transferred to one of the many steamers working the coast. Some of the sawn timber loaded along the Mimosa Rocks coast was destined to be used as railway sleepers in India.

Numerous small timber mills were established within the district between 1874 and 1915. The first of these was sited at Sandy Creek before being shifted to the Hellhole area and then back to the original mill site. Relocating mills closer to the areas being worked was commonplace, with the Middle Lagoon mill moved to Aragunnu Bay, and the Tanja mill re-erected at Mogareeka. Small bush mills were also sited at places such as Monkey Dung, Clarkes Gully, Nelson Flat, Gillards Beach and Wapengo Lake. There was little effective control over these early cutting operations, with the Forest Guard required merely to inspect sleepers presented at port and to obtain royalty payments from sleeper cutters.

The passage of the *Forestry Act 1916* was intended to regulate the commercial use of forests in NSW. The Crown lands of the Nelson Creek catchment were gazetted as Tanja West and Tanja State Forests, while the forests to the north of Doctor George Mountain were incorporated into Mumbulla State Forest. Various additions were subsequently made to each of these state forests, with land in the Wajurda Point/Nelson Lagoon area added to Tanja State Forest in 1922, 1938 and 1956, and part of the Aragunnu Creek catchment included in Mumbulla State Forest in 1917. These forests were selectively logged under the supervision of the Forestry Commission up until 1977 when integrated logging for sawlogs and pulpwood commenced. Logging operations were based out of a forestry camp located beside the Dr George Mountain Road within Tanja State Forest.

In addition to native forest logging, the park contains five plantations of native hardwood species - Sydney blue gum (*Eucalyptus saligna*), turpentine (*Syncarpia glomulifera*) and flooded gum (*E grandis*) – that together total 20ha. These plantations were established in the 1960s on the former “Penders” and “Texas” properties then owned by Roy Grounds and Ken Myer.

Mining

In 1872, the discovery of half an ounce of gold in a gully at Nelson Creek by H. Cowdroy and John Conneley triggered a frenetic, albeit localised, goldrush. The valleys of Nelson and Sandy Creeks were quickly covered in mining claims and small quantities of alluvial gold were found. Sandy Creek, which proved to be the richest source of alluvial gold, became the focus of small-time miners up until the turn of the century. In the headwaters of Nelson Creek (also known as Diggers Creek), the miners excavated a race that diverted the flow of the creek, allowing the actual bed of the creek to be dug up in the search for gold. The activity in the district was sufficient for the Tanja/Nelson Goldfield to be declared the Dromedary Gold Field Extension South in 1879 (Jacques 2005).

Flurries of mining activity continued, though the heyday of alluvial mining at Tanja had passed by the time of Federation. Subsequent reef mining ventures were

characteristically short-lived, with most of the shafts sunk at places such as Kings Ridge yielding little of value. Jack Hawkin's New Hope Mine, located just west of Kings Ridge Road, proved to be more resilient and was worked for several decades. Although the discovery of gold at Clarke's Gully near Mogareeka in 1904 temporarily sparked renewed interest in the area, the ore body uncovered later in the same year at nearby Chinnock's Creek (outside the park) would prove to be the only substantial reef deposit located on the goldfields. Named the Vimy Ridge Mine after the site of the first significant Allied victory of the Great War, this deposit was mined sporadically up until 1960 when its closure marked the end of gold mining in the district (Jacques 2005).

After the Second World War, a proposal was made to mine alluvial sand deposits at Goalen Head. The venture did not proceed.

Other Uses

In the 1850s, a road was constructed along the northern side of the Bega River to Moon Bay to enable builders to access the Aboriginal middens there. The shell deposits of the middens were crushed and burnt to produce lime for use in the mortar required to satisfy the building boom occurring in the recently gazetted township of Bega.

The early reliance of the region on shipping transport is reflected in the number of shipwrecks scattered along the coastline of the park. The sea stacks of Mimosa Rocks are named after the paddle steamer *Mimosa* which was wrecked at Aragunnu in 1863 with the loss of two lives. Elsewhere, the remains of an unknown vessel, most likely dating from the late 1800s, is occasionally exposed in the sands at Nelson Beach, while ships were also wrecked off the entrance of Wapengo Lake in 1880, at Bunga Head in 1908, and at Picnic Point in 1932. In 1932 a second vessel also went aground on Aragunnu Beach.

The second half of the nineteenth century saw many thousands of koalas shot for their skins in the hinterland forests of the district, including the park area. Koalas were previously widespread, as evidenced by the locality name of Monkey Dung, "monkey" being a local term for "koala". The park area was also a popular venue for hunting as a sport and as a means of supplementing people's diets. Local shooters commonly took vacationers from nearby Tathra on kangaroo and wallaby hunting trips. The shooting of native species was officially encouraged, with open seasons declared on kangaroos, swamp wallabies and red-necked wallabies as late as 1945. Large numbers of animals were shot and proudly displayed.

In 1886, the first oyster lease was issued for Nelson Lagoon. Although an area at the northern end of Aragunnu Bay was reserved from sale in 1933 for the purpose of establishing a village, settlement of the area never eventuated. Instead, in the late 1960s and early 1970s members of the Melbourne establishment purchased a series of properties along the Mimosa Rocks coastline for the development of holiday houses. To this end, "Penders" at Bithry Inlet was bought by Sir Roy Grounds and Mr Ken Myers, land at Nelson Lagoon was purchased by Professor David Yencken, and the "Araganui" property at Aragunnu Bay was acquired by Mr Kenneth Begg. At about the same time, the "Ness" property on the northern side of the mouth of Wapengo Lake was purchased as a holiday retreat by Professor Manning Clark. Several of these new landowners initiated a local tradition of philanthropy in which they donated their lands to the park (refer Section 2.2.2).

Surviving Evidence and Significance

Twenty-four historic sites have been recorded within the park. As systematic heritage surveys have yet to be conducted, it is likely that many more historic sites remain unrecorded.

The legacy of a century or more of farming at places such as Gillards Beach, Hidden Valley and Goalen Head includes paddocks that have been cleared and sown with introduced pasture species, fences, dams and vehicular tracks.

“Riverview” is one of the most significant of the former farming properties now incorporated into the park. Situated on a prominent headland overlooking Mogareeka Inlet, since it was initially selected in 1843 the property has been used by a succession of owners for a variety of agricultural enterprises including sheep and cattle grazing, dairy farming and the planting of vegetable gardens and orchards. Under a government-sponsored scheme, the last owner, Mr Noel Ford, cultivated part of the property to grow drugs used in the manufacture of pesticides. The past uses of the property are reflected in the extant buildings and structures that include sheds, aviaries, pens, stockyards, coops, cages, fences, and ornamental plantings (NPWS 1998).

At nearby Moon Bay, the rusted stubs of mooring rings, grooves in the cliff face and a cutting are all that remains of the log slide and mooring site where timber and farm produce were loaded onto barges for transfer to ships. Elsewhere, evidence of timber harvesting consists of a network of roads, bush clearings associated with mills, log dumps and ramps, tree stumps and logging regrowth. The site of a timber cutter’s hut at Aragunnu Bay is marked by the foundations of the building and broken bottles. Although no longer maintained, the early stone and timber trigonometric station atop nearby Bunga Head remains.

The most obvious remains associated with gold mining are the stone chimney of Jim Preo’s hut near Nelson Creek and the large number of shafts, adits, trenches and mullock heaps marking former mine workings in the valleys of Sandy and Nelson Creeks.

Evidence of the holiday house era persists at Nelson Lagoon and Bithry Inlet. The cantilevered timber “Baronda House” constructed at Nelson Lagoon for Professor David Yencken remains in sound structural condition. The house was designed by Graeme Gunn, one of Melbourne’s best known architects. At Bithry Inlet, the house built for Mr Ken Myer survives, as do a number of buildings designed by the important Melbourne architect Sir Roy Grounds. Of these, the “Barn” which is a nine-sided tepee-like structure built in 1965 is especially significant and is listed by the National Trust of Australia. It displays Grounds’ belief in the logic of geometry as the basis for rational design and his wish for a harmonious union between the built and natural environments at the site (JSHC 2002). Other extant structures associated with the Grounds and Myer ownership of this property include the remains of a windmill tower, a covered orchard, dams, a golf course, tennis court, avenues of trees, and sculptures by Roy Grounds and his son Marr.

The Grounds and Myer lands also include five plantations of native hardwood species. These have some significance as they represent early examples of eucalypt plantation management in Australia. Apart from Grounds and Myer, the plantations are also associated with Lindsay Pryor, the Foundation Professor of Botany at the Australian National University.

Conservation management plans have been prepared for the “Penders” property at Bithry Inlet (JSHC 2002) and for “Riverview” at Mogareeka Inlet (NPWS 1998), and a heritage assessment has been undertaken for the “Araganui” property (JSHC 1999).

Key Issues and Opportunities

Although conservation planning has been undertaken for a number of key heritage sites within the park, there is a need to establish and maintain condition recording and maintenance schedules for these and all other recorded heritage places and items to ensure that their cultural significance is retained. Systematic heritage surveys are also required so as to obtain a more thorough understanding and appreciation of the heritage resources of the park.

To date, the management of highly-modified cultural landscapes within the park, such as cleared farmland and timber plantations, has included a combination of natural and active revegetation. A key issue to be addressed in this plan is the future management of the leaseback areas at Bithry Inlet and Nelson Lagoon both of which contain modified landscapes and features of cultural significance. Local community members have long expressed a range of strongly-held views on the future of these sites (refer Section 5.3.2).

Considerable scope exists within the park for the on-site interpretation of historical land uses such as farming (Riverview), timber harvesting and transportation (Nelson Creek catchment; Moon Bay) and gold mining (Nelson Creek catchment). Opportunities also exist to interpret more contemporary stories associated with the park including the early efforts to protect the area (Nelson Beach, Gillards Beach) and the tradition of local philanthropy in which neighbouring landowners have donated areas to the park (Bithry Inlet, Nelson Beach).

Desired Outcome

The non-Aboriginal cultural heritage values of the park are conserved.

Policies and Actions

- 1 Conserve non-Aboriginal cultural heritage values in accordance with the provisions of the Australia ICOMOS (International Council on Monuments and Sites) Charter for the Conservation of Places of Cultural Significance (Burra Charter) and its guidelines.**
- 2 Promote research into the history of the park. Ensure the recording of oral histories and local knowledge receives high priority, especially where important historical information is held by only a small number of individuals.**
- 3 Continue to identify, record and assess the significance of historical landscapes, sites and objects located within the park.**
- 4 Ensure the management of significant heritage places and items is guided by the provisions of conservation management plans or related heritage documents.**
- 5 Implement the provisions of the conservation plan (1998) for the former “Riverview” property. These include the conservation and protection of the remains of the 1890s house and the Moon Bay mooring rings. (Refer**

to Section 5.3.1 for walking track development and Section 5.4 for interpretation of the site.)

6 Amend the provisions of the existing conservation management plan (2002) for the leaseback area of the former “Penders” property at Bithry Inlet so that upon cessation of the lease, the management of cultural values will entail:

- **Ongoing conservation of the “Barn” and investigation into the financial viability of its adaptive re-use as paid holiday accommodation . If shown not to be viable, adaptive re-use of the structure as the key interpretive node for the site (Section 5.4);**
- **Adaptive re-use of the Myer house, and supporting infrastructure such as the tennis court, as paid holiday accommodation pending the findings of a feasibility study. This study will also include investigations into the environmental (natural and cultural values), social equity (opportunities for community use at a lower rent for short periods of the year), financial and site security implications of such re-use, and its compatibility with use of the area by other visitors;**
- **The site of the two buildings to be adequately secured, with a preference for an on-site presence;**
- **The site to be made available at fixed times each year for use by community groups;**
- **Recording followed by removal of all other built structures, with building foundations retained for interpretive purposes (Section 5.4);**
- **Breaching and rehabilitation of the existing dams without cultural significance unless breaching will result in the creation of unacceptable environmental disturbance, in which case these will be retained as will any dams required for management purposes (Section 5.1.2);**
- **Allowing the golf course to naturally revegetate;**
- **Recording and removal of the gardens and orchards; and recording and interpretation of remaining miscellaneous items (Sections 5.3.1 and 5.4).**

7 Undertake a study of the “Baronda” leaseback area at Nelson Lagoon that includes recording and assessments of cultural significance and the identification of environmental, social and financial constraints concerning the future management of the site (Section 5.3.2).

8 Develop and implement a targeted historic sites maintenance and monitoring program to maintain or enhance, wherever possible, the integrity of heritage sites and objects currently impacted upon by human activities or natural deterioration. Within this program, conservation work priorities will be guided by:

- **Levels of cultural significance; and**
- **The immediacy and degree of threats to site integrity; and**
- **Particular management approaches as described in adopted conservation documents.**

- 9 Do not publicise the locations of heritage sites prior to the implementation of management measures designed to protect the cultural values of places and the safety of visitors.
- 10 Identify and manage exotic plant species of cultural significance in accordance with site-specific conservation plans. Decisions concerning the replacement of senescent plants or the re-establishment of historic gardens or plantings will be made on a case-by-case basis within the context of conservation management plans or related heritage documents.
- 11 Confine or remove any culturally significant plantings that are invasive.
- 12 Invite people with historical associations with the park to be involved in public education and interpretation programs.
- 13 Promote public understanding and appreciation of the heritage values of the park including past land-uses and the history of conservation of the area (Section 5.4).

5.3 Public Use

5.3.1 Recreational and Tourism Activities

Mimosa Rocks National Park is a popular recreational destination, attracting some 140,000 visitors annually. Many of these visitors are residents of the Far South Coast region of NSW, though the park also attracts significant numbers of holidaymakers from throughout south-eastern Australia and further afield.

Visitation to the park is highly seasonal, with peak periods corresponding with school and Easter holiday breaks. Almost one third of the annual visitation to the park occurs during the summer school holidays in the month of January.

Most visitor activity is concentrated in the coastal zone of the park at the following ten visitor sites, listed from north to south (refer Figure 3):

- North Bunga Beach;
- South Bunga Beach;
- Aragunnu;
- Picnic Point;
- Bithry Inlet;
- Middle Beach;
- Gillards Beach;
- Cowdroys Beach;
- Nelson Lagoon and Beach; and
- Wajurda Point/Moon Bay.

Vehicle access is available to all of these destinations via a series of roads which branch off the Tathra-Bermagui Road. Traffic counters installed on these roads indicate that during 2006/07, the Nelson Beach/Moon Bay area was visited by almost 35,000 people, Gillards Beach by 29,000, Middle Beach by 25,000 and Aragunnu by

more than 21,000 people. The overall trend for all of the key recreational destinations in the park is one of steadily increasing visitation.

Mimosa Rocks National Park offers a range of natural or natural-appearing coastal recreational settings which include sandy and rocky beaches, headlands, rock platforms and coastal lakes. Activities undertaken within the coastal zone include camping, picnicking, walking, fishing, swimming, surfing, canoeing, vehicle-based sightseeing, cycling, and simply relaxing.

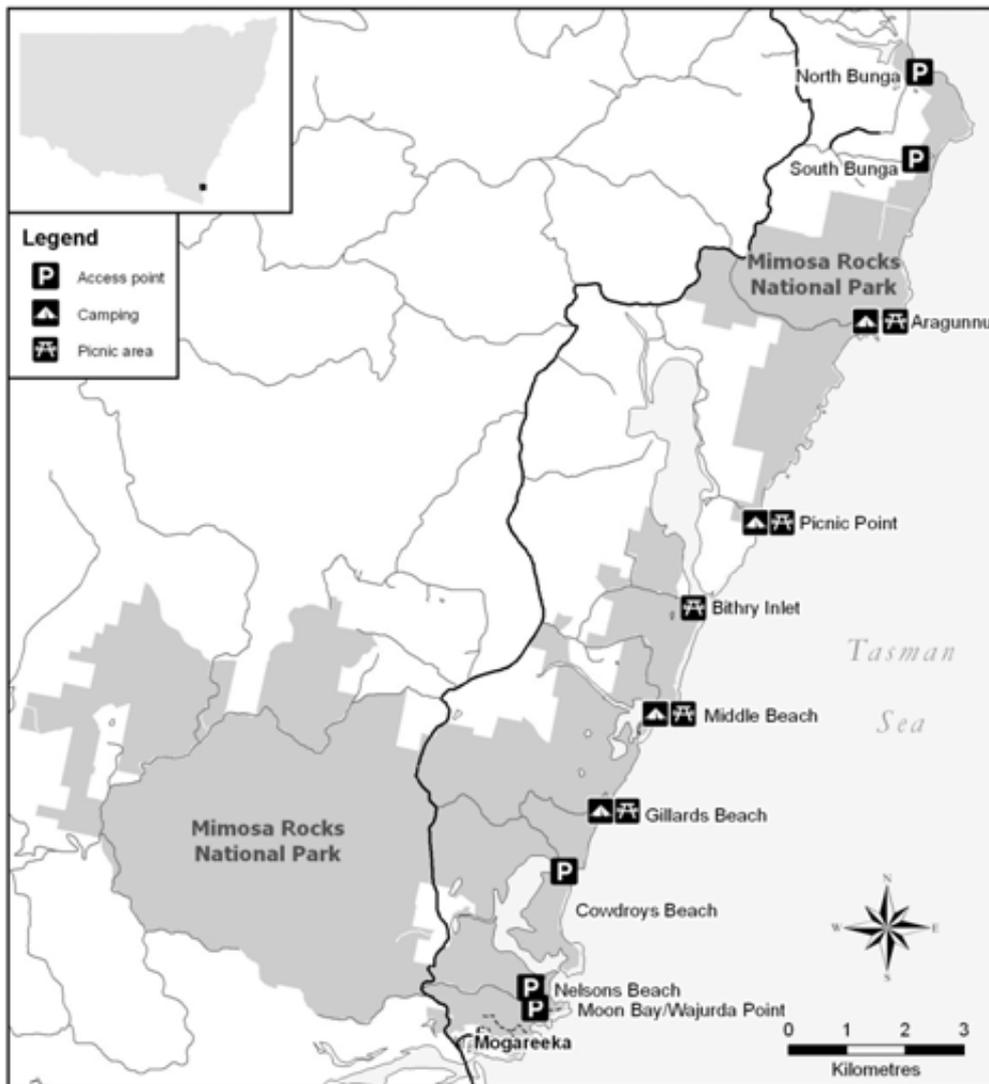


Figure 3 Existing Recreational Sites

Camping

Many visitors return to the park year after year to camp in their favourite locations. Vehicle-based camping areas have been developed at Aragunnu, Gillards Beach and Picnic Point, and a walk-in camping area is sited a short distance from the carpark at Middle Beach. A maximum stay of two weeks is permitted at these camping areas during school holiday periods, with stays of up to four weeks allowed at other times of the year. Advance campsite bookings are not taken and camping fees are collected

on-site. Firewood is supplied at all of the camping areas, as are composting or pit toilets, wood and/or gas barbecues, rubbish and recycling bins, and lookouts and beach access steps where required. Potable water is not provided.

The Aragunnu camping area contains approximately 45 campsites in a forested setting. The area is favoured by people seeking a degree of privacy and includes drive-on and non drive-on sites. By contrast, the camping area at Gillards Beach consists of 70 campsites which occupy a large open area, parts of which are suitable for use by large groups. In addition to camper trailers and tents, this is the only camping area in the park suitable for caravans. The Picnic Point camping area comprises 17 campsites, five of which are drive-on sites. The camping area is favoured by visitors seeking a low-key and private stay. The Middle Beach camping area, which has space for 8 to 12 tents, offers visitors an opportunity to camp a short distance away from the sight and sounds of vehicles.

During 2006/07, the most popular camping area in the park was Gillards Beach which received 13,440 person nights of use, followed by Aragunnu (6,215), Picnic Point (3,513) and Middle Beach (885). The relative popularity of each of these areas partly corresponds with their differing capacities. Despite minor fluctuations in use over the years, the overall camping trend is one of increasing use at all of these locations.

Remote area camping is uncommon though it is permitted throughout the park except at Bunga Head or within 500 metres of public access roads, picnic areas, camping areas, lagoons or wetlands.

Day Use and Walking

The four camping areas also incorporate separate day-use areas at which facilities such as toilets, picnic tables, gas barbecues, information displays and car parking spaces are provided. Similar day use facilities are also present at Bithry Inlet, while only toilets and carparking are provided for day visitors at Nelson Beach and Moon Bay. At North and South Bunga, Cowdroys Beach and Mogareeka only carparking is provided.

Within the park, walking is most commonly undertaken along beaches and around rocky headlands in the vicinity of key visitor destinations. There are no lengthy walking tracks in the park, though a number of short walks have been developed.

At Aragunnu, paved paths lead to several lookouts and a 200 metre-long boardwalk which is wheelchair accessible. This boardwalk, which terminates at a rocky cove with views of the Mimosa Rocks, is the only interpretive walk in the park. Elsewhere at Aragunnu, sand and earth tracks link camping and day use areas. An informal track, which is not signposted or promoted because of cultural sensitivities, leads from the camping area across Bunga Head to Hidden Valley.

At Middle Beach, a 30 metre-long paved path which is suitable for wheelchairs extends from the carpark to a lookout, while a signposted 700 metre-long sand track provides walking access to the shoreline and mouth of Middle Lagoon.

Two signposted walking tracks commence at the Wajurda Point/Moon Bay carpark. A 500 metre-long step-free track leads to a lookout on the end of Wajurda Point and a 250 metre-long track descends steeply via steps to the northern end of Moon Bay. Moon Bay can also be accessed from the carpark at the end of Bay Drive at Mogareeka Inlet. From here, a 600 metre-long track which is closed to vehicular

traffic leads to the site of the former “Riverview” farmhouse. Disused tracks can be followed for a further 700 metres to a signposted walking track which descends to the southern end of Moon Bay.

Short tracks also lead from the Bithry Inlet carpark to the shores of the Inlet, from Cowdroys Road to Cowdroys Beach and Green Gully, and from the Nelson Beach carpark to Nelson Beach and Lagoon. In the far northern end of the park, former farm tracks provide walking access between North and South Bunga Beaches across Goalen Head and to Hidden Valley.

Recreational fishing is regulated by the NSW Department of Primary Industries and requires payment of an annual fee. Fishing is commonly undertaken along the beaches and rock platforms of the park. It also regularly occurs in Nelson and Middle Lagoons and Wapengo Lake, with Nelson Lagoon being a declared recreational fishing haven. Canoeing and boating also take place on these three coastal waterbodies, while sea kayaking is becoming increasingly popular along sections of the park coastline.

Visitors commonly swim at the park’s ocean beaches which are unpatrolled, and in the sheltered waters of Bithry Inlet which offers a safer swimming location for visitors of all ages. Surfing is a popular activity at a number of places accessed through the park.

Car-based sightseeing opportunities are available along the park road network which consists of:

- All Weather 2WD roads;
- Dry Weather 2WD roads;and
- All Weather 4WD roads.

Most driving is confined to the 2WD roads that provide access to coastal visitor destinations. Other less popular recreational activities include cycling, which is permitted on public access roads and management trails, and horse riding which is restricted to public access roads only.

At the time of writing, one commercial tour operator is licensed to operate within the park. The operator organises and manages a series of school outdoor activity camps each year based either at Gillards Beach or Picnic Point camping areas.

Tourism

Mimosa Rocks National Park is part of the ‘Australia’s Coastal Wilderness National Landscape’ under the National Landscape Program (Tourism Australia and Parks Australia). NSW DECCW supports the National Landscape initiative which is regionally managed by a steering committee that includes membership from parks agencies including the Department of Environment, Climate Change and Water, local government and tourism bodies from the area covered by Bega Valley, East Gippsland and Bombala Shires. It identifies branding and marketing objectives for both the ‘the ‘Australia’s Coastal Wilderness National Landscape’ and the identified target market, the ‘International Experience Seeker’.

Key Issues and Opportunities

As already noted, the concentration of recreational activities in the coastal zone of the park poses threats to a number of significant vegetation communities (Section 5.1.3), populations of threatened shorebird species (Section 5.1.4), and Aboriginal archaeological sites (Section 5.2.1).

Changes associated with sea level rises may eventually impact upon the integrity of certain visitor facilities at places such as Bithry Inlet, Aragunnu Bay, Nelson Beach and Gillards Beach, and affect activities such as fishing, swimming, boating and walking along the coastal strip.

The increasing popularity of the camping areas within the park means that impacts associated with overcrowding at these sites during peak visitation periods are likely to worsen. Overcrowding results in the creation of new campsites in bush on the edges of camping areas and the lighting of campfires in unregulated and potentially unsafe situations.

Beyond the need to minimise environmental degradation, the siting of new visitor infrastructure should also be guided by the need to retain or improve scenic quality. This is particularly important within the coastal zone where facilities such as car parks should be screened from the view of people visiting the adjoining coastline.

There is considerable scope to develop additional short to medium-length walking tracks to enable visitors to readily gain first-hand experience of more aspects of the park environment. Opportunities also exist to enhance the experiences offered to visitors through the construction of additional interpretive walks (refer Section 5.4).

Although horse-riding is not a common activity within the park, it is currently permitted on park roads. It is proposed to continue to permit this activity with provision to address any arising safety issues where warranted.

A draft Tourism Master Plan was prepared for Australia's Coastal Wilderness in 2009 (Tourism Australia, 2009). This plan identifies a number of tourism opportunities for the region, including:

- **Development of tourism/commercial facilities:** such as accommodation development on or near the park, encouraging more guided tours to establish through longer term permits and engaging the Indigenous community in further product development.
- **Linking the development of experiences:** The Coastal Wilderness Way is a new concept of creating a braided trail, linking existing and emerging walks and trails to link Bermagui to Lakes Entrance along the coast for those wishing to explore the region without their own motor vehicle (e.g. walking, bike, canoe and sea kayak trails connected by alternative transport mechanisms including public transport and transport provided by commercial operators).

Desired Outcome

The role of the park in providing nature-based tourism experiences is recognised, with an appropriate range of recreational opportunities being catered for consistent with the protection of the natural and cultural values of the park.

Policies and Actions

General

- 1** Manage existing and new recreational activities and facilities so as to minimise impacts upon the natural and cultural values of the park, in particular:
 - Those parts of the park likely to be significantly impacted upon by the effects of rising sea levels (Sections 5.1.1 and 5.1.2);
 - Listed endangered ecological communities (Section 5.1.3);
 - Populations of threatened and otherwise significant plant and animal species (Sections 5.1.3 and 5.1.4);
 - Places that contain culturally-sensitive Aboriginal sites or values (Section 5.2.1); and
 - Cultural heritage features that are vulnerable to disturbance (Sections 5.2.1 and 5.2.2).
- 2** Manage the park to provide tourism experiences, visitor information and interpretation facilities and services that are appropriate to the park and consistent with its inclusion in the 'Australia's Coastal Wilderness National Landscape' and the identified target market, the 'International Experience Seeker'.
- 3** Encourage opportunities to develop the Mimosa Rocks section of The Coastal Wilderness Way, being part of a 'braided' network to create linkages of walking, bike, canoe and sea kayak trails to link Bermagui to Lakes Entrance.
- 4** Investigate the adaptive re-use of the Penders site to provide a standard of accommodation that facilitates the Australia's Coastal Wilderness distinctive experiences to the experience seeker target market (see section 5.2.2).
- 5** Do not promote recreational use of areas containing potentially hazardous sites (eg mining adits and shafts).
- 6** Ensure that all existing and proposed visitor sites and facilities are sited and designed so as to minimise their impact upon the scenic quality of the coastal zone.
- 7** As far as possible, locate all new visitor facilities on previously disturbed sites.
- 8** Do not construct any additional unsealed pit toilets. Progressively replace existing unsealed pit toilets with sealed toilet systems that do not result in localised groundwater contamination.

Vehicular Access

- 9 **Permit public vehicular use along the following access routes only (refer Figure 4):**
 - **Aragunnu Road;**
 - **Cowdroys Road;**
 - **Gillards Road;**
 - **Goats Knob/Quarry Road;**
 - **Lagoon Trail (also known as Nelson Creek Trail);**
 - **Middle Beach Road;**
 - **Mogareeka Village Trail;**
 - **Mumbulla Creek Road;**
 - **Nelson Beach Road;**
 - **Goalen North Road;**
 - **Penders Road;**
 - **Picnic Point Road;**
 - **Kings Ridge Trail;**
 - **Mount Peter Trail; and**
 - **Goalen South Road.**

- 10 **Manage park roads to All Weather 2WD standard thoroughfares except for Goats Knob/Quarry Road, Kings Ridge Trail, Mount Peter Trail and Cowdroys Road which will be maintained to All Weather 4WD standard.**

- 11 **Construct vehicle pull-off bays at strategic locations and widen park roads, where necessary, to improve the safety of motorists.**

- 12 **Minimise the clearing of vegetation along the verges of park roads to that regarded as essential for driver safety.**

- 13 **Liaise with the Roads and Traffic Authority regarding the application of conservative speed limits to park roads, where appropriate, to reduce the risk of vehicle accidents.**

- 14 **Relocate the existing carpark at the end of Goalen North Road to a site approximately 100 metres back from the beach adjacent to the eastern verge of the road. Plant vegetation to screen the new carpark and vehicles.**

- 15 **Extend the Goalen South Road into the park to terminate at a new carpark sited approximately 150 metres south of the northern end of South Bunga Beach. Plant vegetation to screen the new carpark and vehicles.**

- 16 **Continue to prohibit recreational driving of vehicles on beaches.**

Camping

- 17 Continue to provide for three types of camping experience within the park:
 - Vehicle-based Camping – With basic facilities and vehicle parking either immediately adjacent to tent sites or drive-on sites (Aragunnu, Picnic Point, Gillards Beach);
 - Walk-in Camping – With basic facilities and centralised vehicle parking a short distance from campsites (Hidden Valley, Middle Beach); and
 - Pack Camping – With no facilities or services provided, generally associated with overnight bushwalking trips.

- 18 Continue to provide the following facilities at Aragunnu, Picnic Point and Gillards Beach camping areas:
 - car parking spaces;
 - walking track access between separate camping areas (Aragunnu and Gillards Beach only);
 - picnic table(s);
 - toilet(s);
 - information display(s)/sign(s);
 - rubbish and recycling station(s); and
 - fireplaces.

- 19 Continue to provide the following facilities at Middle Beach and Hidden Valley camping areas:
 - car parking spaces (at a distance from camping areas);
 - walking track access to camping areas;
 - toilet(s); and
 - fireplace(s).

- 20 Replace the existing Hidden Valley toilet with a sealed toilet unit.

- 21 Continue to provide rubbish and recycling collection services at Aragunnu, Picnic Point, Gillards Beach and Middle Beach camping areas as far as practicable.

- 22 Continue to prohibit the collection of firewood from within the park. Provide firewood and permit campfires in designated fireplaces only.

- 23 Continue temporary campfire bans as required during periods of assessed fire risk.

- 24 Periodically assess the safety risk posed by trees at all camping areas. Where risks cannot be sensitively managed, the use of areas with a high tree fall risk may need to be modified or discontinued.

- 25 Initiate a monitoring program to measure environmental impacts associated with campfire use in the park. Alter campfire use, as necessary, based upon monitoring results and the regional campfire policy (Section 5.1.5).

- 26 Continue to permit caravans at Gillards Beach camping area only.

- 27 Construct fencing at Aragunnu, Picnic Point, Middle Beach and Gillards Beach camping areas, where required, to delineate the maximum extent of each camping area and prevent further expansion of camping into adjoining bushland.
- 28 Allow for an increase in the number of campsites available at Gillards Beach through the staged development of the previously-cleared land located to the west of the existing camping area. Details for Gillards camping expansion will be addressed through a detailed site plan which will be exhibited for public comment.
- 29 Maintain the existing building at the Hidden Valley walk-in camping area as a public shelter with a rainwater tank.
- 30 Introduce a campsite booking system for peak visitation periods, initially for Gillards Beach and incrementally to other camping areas as required. Consider setting aside an area at one or more of the camping areas for short-stay campers on a first-come basis.
- 31 Continue to limit camping at any one camping area to a maximum of two weeks continuous occupation during peak visitation periods and four weeks continuous occupation at all other times of year.
- 32 Continue to permit pack camping throughout the park except in the Bunga Head area or within 500 metres of public access roads, picnic areas, camping areas, lagoons or wetlands.

Picnicking

- 33 Maintain existing day-use areas at:
 - Aragunnu (northern and southern);
 - Picnic Point;
 - Bithry Inlet;
 - Gillards Beach; and
 - Middle Beach.
- 34 Establish new day-use areas at:
 - North Bunga Beach (alongside new carpark); and
 - South Bunga Beach (alongside new carpark).
- 35 Provide some or all of the following facilities at day-use areas:
 - car parking spaces;
 - gas barbecue(s);
 - picnic table(s);
 - toilet(s); and
 - information display(s)/sign(s).
- 36 Periodically assess the safety risk posed by trees at all day-use areas. Where risks cannot be sensitively managed, the use of areas with a high tree fall risk may need to be modified or discontinued.
- 37 Retain a toilet near the Nelson Beach carpark.

- 38 Retain the existing toilet at the northern end of Moon Bay until the end of its service life then remove.
- 39 Provide a toilet at or near the Wajurda Point/Moon Bay trailhead.

Walking

- 40 Retain and maintain existing beach access steps and/or walkways at:
- Aragunnu;
 - Picnic Point;
 - Bithry Inlet;
 - Middle Beach;
 - Gillards Beach;
 - Cowdroys Beach (northern end); and
 - Nelson Beach.
- 42 Adopt the Australian Standard for Walking Tracks (AS2156.1-2001) (refer Appendix 1).
- 43 Retain the following walking tracks and upgrade or maintain to the following standards:
- Mimosa Rocks Walk (from northern Aragunnu day-use area) (Class 1);
 - Middle Beach Lookout Walk (from Middle Beach day-use area) (Class 1);
 - Middle Lagoon Walk (from Middle Beach day-use area, permitting a loop walk back along the beach) (Class 3);
 - Green Gully/Southern Cowdroys Beach Walk (incorporated into Baronda Walk) (Class 3);
 - Nelson Lagoon Walk (loop walk from Nelson Beach carpark to Nelson Lagoon and Nelson Beach) (Class 3);
 - Moon Bay Walk (from Wajurda Point/Moon Bay trailhead) (Class 3);
 - Wajurda Point Walk (from Wajurda Point/Moon Bay trailhead) (Class 1);
 - Old Moon Bay Road – Moon Bay Walk (Class3); and
 - Riverview – Moon Bay Walk (from Bay Drive carpark at Mogareeka) (Class 3 except for that section incorporated into Riverview heritage walk).
- 44 Retain the Aragunnu – Hidden Valley walking track but do not promote or signpost it due to the culturally sensitive nature of the Bunga Head area. Confine maintenance of this track to essential environmental protection and visitor safety works only.
- 45 Construct or formalise the following new walking tracks to the following standards:
- North Bunga Beach Access (from new North Bunga Beach carpark to North Bunga Beach) (Class 3);

- **South Bunga Beach Access (from new South Bunga Beach carpark to South Bunga Beach) (Class 3);**
- **Goalen Head Walk (linking North and South Bunga Beach carparks) (Class 3);**
- **Hidden Valley Walk (from new South Bunga Beach carpark utilising existing vehicular track behind South Bunga Beach to Hidden Valley walk-in camping area, creating a loop walk back along the beach) (Class 3);**
- **Penders Heritage Walk (interpretive loop walk from Bithry Inlet day-use area through Penders leaseback land. To be developed upon expiry of lease, Sections 5.3.2 and 5.4) (Class 2);**
- **Tommy's Bay Walk (from Gillards Beach day-use area utilising former vehicular track, creating a loop walk back along the coast) (Class 3);**
- **Gillards Forest Walk (from Gillards Beach camping area, utilising closed vehicular track through to carpark at northern end of Cowdroys Beach, creating a loop walk back along the beach. Linked with Baronda Walk) (Class 3);**
- **Baronda Walk (loop walk from carpark at northern end of Cowdroys Beach, along the shoreline of Nelson Lagoon to Green Gully then back along Cowdroys Beach) (Class 3);**
- **Riverview Heritage Walks – from Bay Drive carpark at Mogareeka, utilising Fords Trail to the Riverview farm complex. Two linked loop walks interpreting aspects of the site, Section 5.4. One of the loop walks incorporates a section of the existing walking track to Moon Bay) (Class 2);**
- **Link Walk (between former carpark at eastern end of Old Moon Bay Road and Bay Drive carpark utilising Mogareeka Village Fire Trail) (Class 3); and**
- **Bithry Inlet – Middle Beach Walk (linking Bithry Inlet and Middle Beach day-use areas) (Class 3).**

Other Activities

- 46 **Initiate discussions with staff of NSW Maritime with the aim of establishing boating controls to ensure that recreational watercraft use does not result in bank erosion, for protection of sea grass, and to minimise conflict with other users, for example canoe or kayak users, where the noise impact of motorised boats can significantly detract from the enjoyment of that use. Monitor the impact of boating along Nelsons Creek for damage to the creek banks and floodplain wetlands. Liaise with the Maritime Authorities to address and reverse the impact where it is found to be occurring.**
- 47 **Develop and implement a site plan for a car park and boat launching facility terminus at the eastern end of the Lagoon Trail with relevant agencies and interested users.**
- 48 **Investigate alternate access options for small watercraft (canoeists) and commercial anglers to Middle Lagoon, behind the current works depot, and provide as appropriate.**

- 49 **Continue to permit bicycle riding on park roads (as listed in provision 5.3.1.9) and on management tracks (as listed in provision 5.5.4) with the exception of the Depot and Hidden Valley Trails. Cycling on Penders Access Tracks will not be permitted until after expiry of the Penders lease. Permit cycling on the following existing and/or proposed walking tracks and install appropriate 'shared use' signage:**
- **Old Moon Bay Road – Moon Bay Walk;**
 - **Riverview – Moon Bay Walk (from Bay Drive carpark at Mogareeka);**
 - **Goalen Head Walk;**
 - **Hidden Valley Walk;**
 - **Gillards Forest Walk; and**
 - **Link Walk.**
- 50 **Permit horse riding within the park on the public road network and management tracks only. Review where horse riding is allowed and the conditions under which horse riding can be undertaken within Mimosa Rocks National Park should there be unacceptable environmental damage and/or safety hazards to horse riders and other park visitors. Undertake such a review in consultation with interest groups.**

5.3.2 Leases and Licences

Under the *National Parks and Wildlife Act 1974*, it is a requirement that all works, facilities and operations owned or undertaken by an individual or organisation other than the department be covered by a lease, licence or easement.

The donation of 220 hectares of land at Bithry Inlet by Sir Roy Grounds and Mr Kenneth Myer in 1976 was accompanied by a leaseback arrangement for the continued private use of about 20 hectares consisting of Portion 106 and part of Portion 107, Parish of Tanja. The area contains the houses and living areas of the Grounds and Myer families. The initial lease was signed by the two donors and the Minister administering the *National Parks and Wildlife Act 1974* on 9th November 1976. It commenced on 20th December 1976 and expired on 1st January 2001. A ten year extension was granted under a supplemental deed of lease signed by the successors of the original donors and the Minister. This is due to expire on 1st January 2011.

A similar lease agreement was made between Mr David Yencken and the Minister on 23rd December 1976 over the exclusive use of 2 hectares of the land at Nelson Lagoon that he had donated to the park. As at Bithry Inlet, the leaseback area (part of Portion 171, Parish of Tanja) contains the donor's house. The lease commenced on 7th March 1977 and expires on 1st January 2011.

A single apiary site is located within the park. Allocation of the site, which is situated off Penders Road, pre-dates the inclusion of the area in the park. It is licensed by the Service under Clause 16(2) of the *National Parks and Wildlife (Land Management) Regulation 1995*.

Three power lines cross sections of the park, one near the junction of Aragunnu Road and the Tathra-Bermagui Road, the second near Bunga Lagoon and a third to the north of Haighs Road. Vehicular tracks that provide access for maintenance crews run parallel to these lines. None of these power lines are licensed.

Within the park, underground phone lines extend to the leased residential areas at Bithry Inlet and Nelson Lagoon, along a section of Neilson Firetrail to properties in the Nelson Creek area, and east of the Tathra-Bermagui Road between Mogareeka and Nelson Creek. None of these lines are licensed. Inactive underground lines remain in situ to the former Aragunui and Riverview properties, while the overhead power lines to the former Hidden Valley and Riverview properties were removed after these areas were added to the park.

The Bega Valley Shire Council has an easement across a section of the park to residences at Mogareeka that contains an underground water pipeline and associated vehicular access from their reservoir inholding. An easement has also been granted for private property access on the southern side of Goat's Knob Road under Section 153C of the *National Parks and Wildlife Act 1974*.

One commercial tour operator is currently licensed to operate within the park.

Key Issues and Opportunities

All operations and infrastructure within the park, other than those belonging to the Service, need to be regulated through appropriate leases, licenses or easements to ensure that impacts upon park values are minimised. All such infrastructure should be adequately surveyed, mapped and documented.

The expiry of the two leases at Bithry Inlet and Nelson Lagoon in 2011 provides opportunities to redevelop these areas for public recreation. Both leaseback areas contain features of cultural significance, and both have considerable interpretive potential (refer Section 5.4).

Desired Outcome

All operations and authorised uses in the park are covered by a lease, licence or other formal consent or agreement.

Policies and Actions

- 1 Ensure all operations and authorised uses in the park are covered by a lease, licence or other formal agreement.**
- 2 Require all relevant lessees, licensees and other authorities operating in the park to develop and implement an environmental management plan for the ongoing management of their activities or infrastructure. All environmental management plans will be required to be consistent with the provisions of this plan of management and approved by the Service.**
- 3 Create and maintain a park register of all leases, licences, consents and agreements.**
- 4 Ensure all infrastructure located in the park is appropriately documented within the department's asset management system.**

- 5 **Upon expiry of the “Penders” lease at Bithry Inlet, manage the leaseback area for conservation, public recreation and paid holiday accommodation (subject to Sections 5.2.2, 5.3.1 and 5.4).**

- 6 **Support a ten-year extension of the “Baronda” lease at Nelson Lagoon to the original donor. Upon expiry of this extension, manage the leaseback area for conservation and public recreation. Decisions concerning the retention or demolition of “Baronda House” at this time will be informed, in part, by the findings of the study prescribed in Section 5.2.2.**

- 7 **Assess requests to license commercial recreational activities against the following criteria:**
 - **Potential impacts on natural and cultural values;**
 - **Potential impacts on other visitors, including the degree to which the proposed activity is likely to dominate a particular place or unreasonably exclude or restrict the recreational opportunities of other people;**
 - **Ability to introduce visitors to the natural and cultural values of the park;**
 - **Safety of participants and other visitors; and**
 - **Recovery of appropriate commercial returns and any costs to the Service.**

In determining the impact of a proposal on natural and cultural values, particular attention will be given to the likely effects upon:

 - **Those parts of the park likely to be significantly effected by rising sea levels (coastal dunes, fringes of coastal waterbodies);**
 - **Listed endangered ecological communities;**
 - **Listed threatened species and otherwise significant species; and Culturally sensitive places.**

- 8 **Regularly monitor the environmental management plan compliance of all lessees, licensees and parties to formal consents or agreements within the park. Consider altering or revoking leases, licences or agreements in response to compliance failures.**

5.3.3 Other Uses

Commercial anglers licensed by the Department of Primary Industries occasionally fish along North Bunga Beach and in Bunga Lagoon. Government policy permits these fishermen to access these locations by vehicle. Elsewhere in the park, commercial anglers also occasionally fish in Middle Lagoon, with access provided via a management track.

Oyster leases licensed by the Department of Primary Industries are located in the Nelson Lagoon area. Eight growing leases are present within Nelson Lagoon with an additional four leases situated in Nelson Creek (Clarkes Bay). Two catching leases exist at the mouth of the lagoon. All of these lessees have vehicular access through the park to their lease areas. Various materials associated with the Nelson Lagoon growing leases are located within the park, as is a loading ramp at Nelson Creek.

None of these facilities or the vehicular access arrangements are currently covered by leases or licences.

A geodetic station (TS 1273) is sited atop Bunga Head. Although the station is partially collapsed and has not been used for many years, the Land and Property Management Authority is permitted to use the site for essential surveying work subject to various environmental protection conditions. By contrast, the trigonometric station located to the north of Middle Beach is in good condition but is no longer required by the Authority.

Key Issues and Opportunities

The creation of access and use agreements with individual commercial anglers would provide a means of minimising any adverse effects of their operations on park values and visitor experiences.

Arrangements with the Land and Property Management Authority concerning the future use of Bunga Head geodetic station need to include stringent conditions designed to protect the highly significant natural and cultural values of the area. They should also include measures directed at conserving and maintaining the trig, itself, which has historic value.

Desired Outcome

Agreements are in place with commercial anglers, aquaculture lessees and the Department of Lands that are designed to minimise impacts associated with their activities.

Policies and Actions

- 1 Ensure all operations and authorised uses in the park are covered by a lease, licence or other formal agreement.**
- 2 Work with commercial anglers and aquaculture lessees to ensure that their activities are undertaken in ways that minimise impacts upon the values of the park and the experiences of park visitors.**
- 3 Limit ongoing use of the geodetic station on Bunga Head to essential surveying work where there is no practical alternative, subject to the following conditions:**
 - Foot access only will be permitted;**
 - Vegetation clearing will be limited to that required for line of sight only;**
 - Cleared vegetation will be allowed to regrow; and**
 - All clearing operations will be supervised by Service staff.**
- 4 Seek support from the Land and Property Management Authority concerning heritage conservation works on the Bunga Head trig (Section 5.2.2).**

5.4 Promotion and Interpretation

The coastline of Mimosa Rocks National Park, with its undeveloped beaches, headlands and lagoons, is a popular tourist destination on the Far South Coast of NSW. The park, together with other coastal reserves such as Bournda National Park, Ben Boyd National Park and Nadgee Nature Reserve, features prominently in the “Sapphire Coast” promotional material produced by the Bega Valley Shire Council. It is also a key marketing attraction for tourism-related businesses in neighbouring townships such as Tathra, Bermagui and Bega.

The Service promotes the park through its webpage, statewide parks booklet, a regional brochure and a park-specific leaflet. This material is publicly available from the Service’s offices in Narooma and Merimbula and from various visitor centres and tourism outlets across the region. Media releases and articles are also periodically produced by the Service to promote particular events, programs or values associated with the park. Such information is used to enhance public appreciation, understanding and enjoyment of the values of the park and the recreational opportunities available, and to encourage safe and appropriate visitor behaviour. It can also assist in fostering custodial attitudes towards the reserve, and support for park management programs amongst neighbours and the broader community.

Within the park, interpretive displays are located at Aragunnu Bay, Bithry Inlet and Middle Beach. The boardwalk that extends northwards from Aragunnu to a number of lookouts is the only interpretive walk so far developed in the park. Orientation displays, featuring maps and site information, are present at all camping areas. Distance and directional signs are located at key intersections with the Tathra-Bermagui Road, along internal roads and at trailheads. Park entrance signs are sited alongside public roads at, or near, where they enter the park.

Key Issues and Opportunities

Visitor understanding and appreciation of the values of the park are likely to be enhanced through the provision of additional interpretive walks and on-site display material. Potential exists to interpret a range of different natural and cultural themes at places and in ways that together capture the essence of what makes the park special. Such information may also be used to encourage minimal impact recreational behaviour and a custodial attitude towards the park.

The construction of information pull-in bays along the Tathra-Bermagui Road may assist people in making informed choices about where to visit in the park.

Desired Outcome

Information is provided to visitors which enhances their understanding, appreciation and enjoyment of the park.

Policies and Actions

- 1 Develop two visitor orientation pull-in bays along the Tathra-Bermagui Road so as to cater for both north and south-bound motorists. Provide information displays at these sites that include summaries of the recreational opportunities available at the various visitor sites within the park.**

- 2 In addition to the displays at Aragunnu, Bithry Inlet and Middle Beach, provide park interpretive displays at:
- North Bunga Beach day-use area;
 - South Bunga Beach day-use area;
 - Picnic Point camping/day-use area;
 - Gillards Beach camping/day-use area;
 - Nelson Beach trailhead;
 - Wajurda Point/Moon Bay trailhead; and
 - Bay Drive trailhead.
- 3 In addition to the Mimosa Rocks walk at Aragunnu, develop the following interpretive walks:
- Wajurda Point (utilise upgraded existing walking track);
 - Penders Heritage Walk; and
 - Riverview Heritage Walks (2).
- 4 Ensure that existing and new information provided at individual interpretive displays and as part of interpretive walks is integrated across the park. Together the interpretive material presented within the park should address the following general themes:
- Coastal geology and geomorphology;
 - Significant flora and fauna values;
 - Climate change and the coastal fringe;
 - Aboriginal cultural values; and
 - Post-contact history.
- In addition to these parkwide themes, the following interpretive stories may be addressed at the following locations:
- North and South Bunga Beach day-use areas – *Aboriginal cultural values, former land use, future revegetation;*
 - Aragunnu (including Mimosa Rocks walk) – *Aboriginal cultural values and significant vegetation in Aragunnu/Bunga Head area, Mimosa shipwreck, holiday house era, timber cutting;*
 - Bithry Inlet (including Penders heritage walk) – *Philanthropy, Grounds and Myer holiday retreat era;*
 - Gillards Beach – *Former land use, Tanja Nova resort proposal and early conservation efforts;*
 - Nelson Beach (including Wajurda Point) – *Aboriginal cultural values, philanthropy, early conservation efforts; and*
 - Bay Drive trailhead (including Riverview heritage walks) – *Aboriginal cultural values, former land uses of area including Moon Bay.*
- 5 Expand the website description for Mimosa Rocks National Park to provide information about recreation, tourism and educational experiences offered by the park as part of the internet development strategy associated with the Australia's Coastal Wilderness initiative.
- 6 Develop physical signage in the Mimosa Rocks National Park to integrate with and complement information provided on the website.

5.5 Management Facilities and Operations

Management infrastructure located within the park, other than visitor facilities (as described in Section 5.3.1), is confined to a works depot, gravel pits and an extensive network of management tracks.

The Tanja works depot is located on the southern side of Haighs Road on the former "Texas" property. The depot, which is the operational centre for Mimosa Rocks National Park and nearby reserves, incorporates an office, storage sheds, maintenance facilities and hardstand areas. The depot compound is not open to the public and is enclosed by security fencing.

The park contains a network of management tracks that together total 30 kilometres in length. These tracks are closed to public vehicular use and are primarily retained for fire management and pest control purposes, though some are used by commercial fishing and aquaculture interests and by power line maintenance staff. The Service also maintains the Bithry Inlet, Middle Beach and Nelson Beach Roads, though all or parts of these roads are located within road reserves that do not form part of the park. The Tathra-Bermagui Road, Doctor George Road and part of Mumbulla Creek Road are also excluded from the park. The maintenance of these thoroughfares is the responsibility of the Bega Valley Shire Council.

Two gravel pits remain in use. The larger of the two pits is located immediately to the east of the Tathra-Bermagui Road in the northern end of the park, while the second pit is situated on Quarry Road at the southern end. Material from these pits is primarily used by the Service in the maintenance of the park road system and visitor area surfaces.

Boundary fencing only exists along the park interface with certain private holdings, such as those in the Goalen Head area. The responsibility for maintaining these fences lies with the owners of adjoining land. With the exception of Tanja depot, internal park fencing is limited to that required for visitor management and rehabilitation purposes at camping areas and other visitor destinations.

The ranger responsible for Mimosa Rocks National Park is based at the Service's Narooma office. The key role of this position is the planning and oversight of all aspects of park management, including neighbour relations. Field staff operate from the Tanja depot.

Key Issues and Opportunities

All Service operations within the park must be consistent with the policies, actions and priorities identified in the plan of management and undertaken in ways that demonstrate rigorous environmental practice.

Sound management of all Service infrastructure requires the establishment of an asset inventory, regular condition assessments, and maintenance and replacement schedules.

Desired Outcome

All Service infrastructure and operations are consistent with the provisions of this plan of management and are managed in ways that demonstrate vigorous environmental practice.

Policies and Actions

- 1** Incorporate actions and priorities outlined in this plan of management into area operational plans and annual work programs.
- 2** Assessments of the likely impact of any proposed activity or development will include consideration of all values identified in this plan. In determining the impact of a proposal, particular attention will be given to the likely effects upon:
 - Those parts of the park likely to be significantly effected by impacts associated with rising sea levels (beaches, coastal dunes, fringes of coastal waterbodies);
 - Listed endangered ecological communities;
 - Listed threatened species and otherwise significant species; and
 - Culturally sensitive places.
- 3** Maintain the works depot located at the former “Texas” property at Tanja.
- 4** Maintain the following vehicular tracks for management purposes (refer Figure 4):
 - Depot Fire Trail;
 - Doctor George Fire Trail;
 - Fords Trail;
 - Hell Hole Fire Trail;
 - Hidden Valley Fire Trail;
 - Middle Ridge Fire Trail;
 - Neilsen Fire Trail;
 - Penders Access Tracks;
 - Powerline Access Track;
 - Oyster Lease Access Track;
 - Sandy Creek Fire Trail;
 - Tommys Bay Access Track; and
 - Watertank Fire Trail.

Maintain these vehicular tracks to a minimum standard of All Weather 4WD roads.
- 5** Maintain and define appropriate vehicular access within the Goalen Head section of the park for management purposes.
- 6** Vehicular use of the management tracks listed in provisions 5.5.4 and 5.5.5 will only be permitted:
 - For necessary management operations undertaken by, or on behalf of, the Service;
 - Where essential for undertaking research licensed by the Service;
 - Where vehicular access to professional fishing areas or oyster leases is essential, and where such access existed prior to park reservation and no suitable alternative access exists; and

- Where essential for the performance of legal obligations by other individuals or organisations.
- 7 Prevent unauthorised vehicular use of management tracks through the erection of appropriate signs and the installation of locked gates as required.
 - 8 Close all roads and tracks that are not listed in provisions 5.3.1.9, 5.5.4 and 5.5.5 in ways that prevent public vehicular use.
 - 9 Assess all roads and tracks to be closed to determine:
 - Which roads and tracks are to be passively managed and allowed to naturally revegetate; and
 - Those roads and tracks requiring active rehabilitation works (these will include Lagoon Trail and Cowdroys Road beyond the northern carpark).
 - 10 Implement a rehabilitation program for those roads and tracks identified as requiring active treatment (Section 5.1.2).
 - 11 Maintain mapped records of dormant tracks which are not maintained but may be opened if required for fire control or other emergency purposes. Dormant tracks that are opened are to be rehabilitated as soon as possible after the emergency incident.
 - 12 Limit the construction of additional management tracks to the following situations:
 - Realignment of an existing track to a more environmentally acceptable location, combined with rehabilitation of the original route; and
 - Construction of temporary tracks in emergency situations such as wildfire control (such tracks are to be rehabilitated as soon as possible after the emergency incident).
 - 13 Continue to permit extraction from the two active gravel pits in the park for park management purposes only in accordance with existing gravel extraction plans.
 - 14 Progressively rehabilitate sections of the gravel pits following removal of useable gravel.

5.6 Boundaries and Adjacent Areas

Mimosa Rocks National Park currently consists of two separate parcels of land that are separated by a 1.5 kilometre-long section of privately-owned coastline immediately north of the mouth of Wapengo Lake.

The seaward and lakeshore boundaries of the park extend to mean high water mark, with the beds of the three main waterbodies, Nelson Lagoon, Middle Lagoon and Wapengo Lake, excluded from the reserve. The landward edge of the park follows a combination of roads and cadastral boundaries.

The western portion of the reserve, which incorporates most of the Nelson Creek catchment, primarily adjoins state forest as does the western boundary of the Bunga Head/ Aragunnu Creek area. Elsewhere, the coastal sections of the park are abutted by a mixture of forested and cleared private holdings. A cluster of private properties in the vicinity of Doctor George Mountain form an enclave within the park, while a second group of properties in the lower reaches of Nelson Creek is virtually surrounded by the reserve.

All or parts of the Bithry Inlet Road, Middle Beach Road and Nelson Beach Road are located within road reserves that are excluded from the park, as are a small number of undeveloped road reserves in the Hidden Valley area and elsewhere in the park.

Key Issues and Opportunities

If and when the opportunity arises, the acquisition of the coastal strip of private land stretching from the northern shore of Bithry Inlet to Picnic Point would permit consolidation of the park into one contiguous area and allow public access and enjoyment of the entire 20 kilometre-long stretch of coastline between the Bega River mouth and Bunga Lagoon. (Note: This area is zoned Coastal Lands Acquisition under the Bega Valley Local Environmental Plan 2002.)

The conservation values of the park would also be enhanced through:

- Incorporation of the beds of Nelson and Middle Lagoons into the park;
- The possible addition of land at Doctor George Mountain; and
- Extension of the reserve to low water mark.

The de-gazettal of redundant road reserves and their incorporation into the park is required, as is the rationalisation of land tenure and maintenance responsibilities for all park access roads.

Desired Outcome

Conservation outcomes are optimised through the incorporation of certain areas into the park and the adoption of appropriate management regimes for land adjoining the park.

Policies and Actions

- 1 Promote the recognition and protection of natural and cultural values on land adjoining and close to the park irrespective of land tenure and use.**
- 2 Liaise with appropriate authorities to ensure that state environmental planning policies, regional environmental plans and local planning instruments encourage the sympathetic management of areas adjoining the park.**
- 3 Encourage the owners of land adjoining the park to adopt voluntary conservation mechanisms for their properties such as:**
 - **Conservation Agreements;**
 - **Wildlife Refuge status; or**
 - **Land for Wildlife agreements.**
- 5 Pursue the incorporation of the beds of Nelson and Middle Lagoons into the park.**

- 6 **Pursue extension of the park to mean low water mark.**
- 7 **Initiate discussions concerning the de-gazettal of redundant road reserves and their incorporation into the park.**
- 8 **Seek to have the road reserves covering all or parts of the Bithry Inlet, Middle Beach and Nelson Beach Roads de-gazetted and the areas incorporated into the park to reflect current road maintenance responsibilities and ensure consistent application of the NPW Act and Regulations.**

5.7 Research

A thorough understanding and appreciation of the suite of values present in the park is required for well informed decision-making and effective management. The lack of knowledge of particular values, such as the presence of a particular species or a cultural feature, may result in them being inadvertently damaged or destroyed through the application of inappropriate management regimes or simple neglect.

To date, research specifically within or about the park has been limited to:

- **Botanical:** parkwide vegetation survey (1984); Gillards Beach/Tommys Bay vegetation survey (1997); introduced garden plants assessment at former “Riverview” property (1999); Goalen Head vegetation survey and revegetation report (2002);
- **Zoological:** Five Forests Study (1979 – present); surveys of endangered and vulnerable shorebird species (2001 – present);
- **Aboriginal Cultural Heritage:** parkwide survey of archaeological sites (1983); Goalen Head archaeological survey (2003); and
- **Non-Aboriginal Cultural Heritage:** conservation plans/heritage assessments for the former “Riverview” (1998), “Aragunui” (1999) and “Penders” (2002) properties; documentary research into the Tanja goldfields (2005); oral history recordings relating to early conservation efforts in the Mimosa Rocks area (2007).

Key Issues and Opportunities

There is much still to be learnt about the natural and cultural values of the park, their significance and their management needs. Significant knowledge gaps include the lack of systematic surveying of native animals, including most threatened species, and detailed information on the presence, distribution and impacts of weeds and feral animal species in the majority of the park. Only limited information has been collected on the tangible and intangible cultural heritage values of the park.

The department has only limited resources available for conducting research. Opportunities exist to undertake collaborative research projects with relevant organisations and academic institutions, other State government agencies, local government, and community groups and individuals.

While research contributes to better management, it may also result in environmental damage. For this reason, research proposals are subject to animal ethics and

environmental assessment scrutiny. Research that is likely to impact upon park values is usually only permitted if it addresses timely and significant park management research questions and it cannot be undertaken elsewhere.

Desired Outcome

Research into the values of the park, their significance and their management needs informs park management decision-making.

Policies and Actions

- 1 Prepare a regional prospectus of preferred research and survey projects for the park. Priority projects will include research into:**
 - **The distribution and management requirements of significant plant communities and species;**
 - **The presence, distribution, abundance and management needs of threatened animal species; and**
 - **The cultural heritage values of the park.**
- 2 Ensure the recording of oral histories and knowledge of people with long-standing connections to the area receives high priority, especially where particular cultural or historical knowledge is likely to be held by only a small number of individuals.**
- 3 Encourage the involvement of relevant research institutions, other government agencies, community groups and individuals in undertaking Service-identified research priorities. Wherever possible, provide in-kind support for approved research projects.**
- 4 Support research in the park which aims to:**
 - **Increase knowledge of the park's values and their significance;**
 - **Improve knowledge about natural and human-induced processes and threats;**
 - **Understand the nature and rate of any changes in condition of park values;**
 - **Improve knowledge about visitor characteristics, needs, experiences, visitation patterns and visitor impacts;**
 - **Develop a better understanding of the recreational, social and economic benefits of the park to local communities; and**
 - **Improve management practices for natural and cultural resource conservation.**
- 5 Ensure that the results of research conducted within or relevant to the park inform future reviews of this plan of management (Section 5.8).**

5.8 Monitoring, Evaluation and Reporting

Management of the park can never be based upon a complete understanding of the values of the area or the implications of individual decisions and actions. Monitoring changes in the condition of the values of the park over time is essential for gauging the success or otherwise of the policies and actions being used to achieve the stated park management objectives.

Understanding the nature and rate of change in the condition of values allows the effectiveness of chosen management regimes to be evaluated, adapted and improved. Regular reporting on changes in the condition of park values provides transparency and public accountability.

Key Issues and Opportunities

Currently, an understanding of the extent to which management strategies are successfully conserving the values for which the park was declared is hindered by the absence of:

- A regular and systematic monitoring program across a range of park values; and
- An evaluation process for reviewing and reporting on the effectiveness of management strategies.

Desired Outcome

The results of monitoring programs guide the management of the park.

Policies and Actions

- 1 Develop and implement a monitoring program for the park within the context of the Service's Ecologically Sustainable Forest Management system and State of the Parks reporting requirements. Limit the selection of performance indicators to those that can be readily utilised to measure:**
 - **Short and long-term changes in the condition of significant values under threat;**
 - **The effectiveness or otherwise of weed and feral animal control programs; and**
 - **Environmental impacts associated with recreational infrastructure and activities.**
- 2 Change or refine management strategies as necessary based upon monitoring results so as to achieve desired management objectives.**
- 3 Commence a full review of this plan of management approximately ten years after adoption of the final plan by the Minister for the Environment. This plan will remain in force until such time that a new plan is adopted.**

6 PLAN IMPLEMENTATION

The implementation of this plan will be undertaken within the annual programs of the Service's Far South Coast Region. Priorities, determined in the context of Branch and Regional strategic planning, will be subject to the availability of necessary staff and funds and to any special requirements of the Director-General or Minister.

Regional programs are subject to ongoing review, within which, works and other activities carried out in Mimosa Rocks National Park are evaluated in relation to the objectives laid out in this plan.

Section 81 of the *National Parks and Wildlife Act 1974* requires that this plan will be carried out and given affect to, and that no operations shall be undertaken in relation to Mimosa Rocks National Park unless they are in accordance with the plan. However, if after adequate investigation, operations not included in the plan are found to be justified, this plan may be amended in accordance with section 73B of the Act.

As a guide to the implementation of this plan, relative priorities have been assigned to actions in the plan as summarised below. The following criteria have been used to allocate priorities:

<i>High</i>	Imperative to achievement of the management objectives for the park. Must be undertaken in the near future to avoid significant deterioration in the condition of natural, cultural or recreational values.
<i>Medium</i>	Necessary to achieve the management objectives for the park but not urgent.
<i>Low</i>	Desirable to achieve management objectives but can be deferred until resources become available.

(Note: Policies and those actions that are undertaken in the course of day to day park management duties are not necessarily listed below.)

Action	Plan Reference
High Priority	
Establish and maintain an inventory of human-disturbed sites.	5.1.2.4
Establish and implement remediation program for human-disturbed sites.	5.1.2.5
Construct perimeter fencing at Aragunnu (including around cabbage tree palms), Picnic Point, Middle Beach and Gillards Beach camping areas.	5.1.3.1/5.3.1.27
Implement relevant provisions of the threatened species priority action statement and recovery plans for threatened plant and animal species.	5.1.3.8/5.1.4.1
Continue to manage weed species in accordance with the weed management plan for park.	5.1.3.12
Review priorities in weed and feral animal management plans.	5.1.3.13/5.1.4.5
Survey threatened animal species to determine effectiveness of conservation measures. Alter management as necessary.	5.1.4.2

Continue to undertake pest control programs in accordance with the feral animal management plan for park.	5.1.4.4
Review fire management strategy to ensure it is achieving natural and cultural conservation and protection objectives.	5.1.5.2
Formulate a regional policy on campfire management and initiate campfire monitoring program. Alter campfire use as necessary.	5.1.5.8/5.3.1.25
Consult with Aboriginal community about establishment of a culture camp and cultural tourism opportunities.	5.2.1.6
Record oral histories of Aboriginal and non-Aboriginal people associated with the park.	5.2.1.8/5.2.2.2
Apply conservative speed limits to park roads.	5.3.1.13
Relocate existing carpark at end of South Goalen Road.	5.3.1.15
Introduce campsite booking system for peak visitation periods for Gillards Beach camping area and then to other camping areas.	5.3.1.28
Ensure all operations and authorised uses in the park are covered by a lease, licence or other formal agreement.	5.3.2.1/5.3.3.1
Ensure all relevant lessees, licensees and other authorities operating in the park develop and implement environmental management plans for their activities or infrastructure. Monitor compliance	5.3.2.2/5.3.2.8
Create and maintain a register of park leases, licences, consents and agreements.	5.3.2.3
Prevent unauthorised vehicular use of management tracks through installation of signs and/or locked gates.	5.5.7
Close all roads and tracks no longer required so as to prevent ongoing vehicular access.	5.5.8
Assess rehabilitation requirements for all road and tracks to be closed and implement rehabilitation program.	5.5.9/5.5.10
Medium Priority	
Monitor condition of fossil sites, coastal dune and swale systems, fringes of coastal water bodies, and use Nelsons Creek. Discourage visitation if required.	5.1.2.1/5.1.2.3/5.2.1.2
Monitor rehabilitation of disturbed sites and undertake additional work as needed	5.1.2.6
Monitor revegetation progress at previously cleared sites and actively revegetate other areas such as Goalen Head.	5.1.3.9/5.1.3.10

Place copies of plan of management maps and vegetation maps on view at NPWS offices and on internet	5.1.3.17
Monitor park for bell miner associated dieback. Investigate options for reducing adverse effects.	5.1.4.7
Undertake targeted Aboriginal site surveys of areas most at risk.	5.2.1.2
Investigate cultural sensitivity of landscape features and manage appropriately.	5.2.1.3
Develop and implement an Aboriginal sites maintenance and monitoring program.	5.2.1.4
Amend provisions of the “Penders” conservation management plan including:	
- conserving and re-using the “Barn”;	
- re-using the Myer house for holiday accommodation pending a feasibility assessment and other study findings;	
- recording and removing other built structures;	
- breaching and rehabilitating dams;	
- allowing the golf course to naturally revegetate;	
- recording, removing and rehabilitating the gardens and orchards;	
- recording and interpreting miscellaneous items.	5.2.2.6/5.3.1.4
Develop and implement a targeted historic sites maintenance and monitoring program.	5.2.2.8
Progressively replace pit toilets with sealed toilet units.	5.3.1.8
Construct vehicle pull-off bays at strategic locations along park roads.	5.3.1.11
Replace Hidden Valley camping area toilet.	5.3.1.20
Assess and manage tree risk threats at camping and day-use areas.	5.3.1.24/5.3.1.36
Establish new day use areas at North Bunga and South Bunga Beaches.	5.3.1.34
Provide a toilet at or near the Wajurda Point/Moon Bay trailhead.	5.3.1.39
Upgrade or undertake maintenance of existing walking tracks.	5.3.1.40
Construct new walking tracks at North Bunga and South Bunga Beaches, Goalen Head, Hidden Valley, Penders, Tommys Bay, Gillards Forest, Baronda, Riverview, Mogareeka and Bithry Inlet.	5.3.1.45/5.4
Develop and implement a plan for boat launching at end of Lagoon Trail.	5.3.1.47
Investigate options for access to Middle Lagoon behind works depot and provide as appropriate.	5.3.1.48
Install shared use signs of walking tracks that may be used for cycling.	5.3.1.49
Develop two visitor orientation pull-in bays along Tathra-Bermagui Road.	5.4.1

Provide new park interpretive displays at various specified locations.	5.4.2/5.4.6
Expand website description of the park.	5.4.5
Develop and implement a monitoring program for the park within the context of the Service's ESFM and SoP system.	5.8.1

Low Priority

Identify habitat corridors linking the park with neighbouring areas.	5.1.1.2
Identify dams in park and assess their utility and historical associations. Breach and rehabilitate dams as appropriate.	5.1.2.11
Map distribution of <i>Themeda</i> grasslands.	5.1.3.3
Map Coastal Lowland Heath community at Gillards Beach.	5.1.3.5
Map distribution of significant plant species at Dr George Mountain.	5.1.3.6
Investigate and pursue opportunities to revegetate cleared parts of park.	5.1.3.10
Obtain silvicultural advice on future management of timber plantations.	5.1.3.14
Revegetate harvested timber plantations with endemic species.	5.1.3.14
Remove exotic plantings with little or no cultural, horticultural, amenity or interpretive values.	5.1.3.15
Promote research into Aboriginal cultural values in park.	5.2.1.8
Implement provisions of the "Riverview" conservation management plan.	5.2.2.5
Promote research into the history of the area now within the park.	5.2.2.2
Continue to identify, record and assess cultural significance of places in the park.	5.2.2.3
Undertake study of "Baronda" leaseback area.	5.2.2.7/5.3.2.6
Identify and manage exotic plant species of cultural significance.	5.2.2.10
Encourage involvement of people with historical associations with the park to be involved in public education and interpretation programs.	5.2.2.12
Develop and exhibit a plan for increasing campsites at Gillards Beach.	5.3.1.28
Initiate discussions with NSW Maritime regarding management of Nelson Lagoon.	5.3.1.46
Remove toilet at northern end of Moon Bay.	5.3.1.38
Review impacts/hazards of horse riding and conditions if necessary.	5.3.1.50
Liaise with commercial anglers regarding management agreements.	5.3.3.2

Seek support from Land and Property Management Authority concerning use and conservation works on the Bunga Head trig.	5.3.3.4
Ensure use of existing gravel pits is in accordance with extraction plans and progressively rehabilitate sections of gravel pits no longer required.	5.5.13/5.5.14
Encourage adoption of voluntary conservation agreements for appropriate land adjoining the park.	5.6.3
Pursue incorporation of beds of Nelson and Middle Lagoons into park.	5.6.5
Pursue extension of the park to mean low water mark.	5.6.6
Seek de-gazettal of redundant road reserves and their incorporation into the park.	5.6.7
Seek de-gazettal of road reserves covering all or parts of Bithry Inlet, Middle Beach and Nelson Beach Roads and their incorporation into the park.	5.6.8
Prepare a regional research prospectus.	5.7.1

APPENDICES

APPENDIX 1 WALKING TRACK CATEGORIES (AS2156.1-2001)

Class 1: *General Description:* Provides opportunities for large number of visitors, including those with reduced mobility, to undertake walks which are provided with a high level of interpretation and facilities. Users can expect abundant opportunities to learn about cultural and natural values through interpretive signs or brochures. Users can expect frequent encounters with others.

Key Track Characteristics: Generally a broad, hard surfaced track suitable for wheelchair use. Steps allowed only with alternative ramp access. Width: 1200mm or more. Well maintained with minimal intrusions. Facilities along the track may include lookout platforms, seats and barrier rails. Users need no previous experience and are expected to exercise normal care regarding their personal safety.

Class 2: *General Description:* Provides opportunities for high numbers of visitors to undertake walks which may be provided with a high level of interpretation and facilities. Users can expect moderate to abundant opportunities to learn about cultural and natural values through interpretive signs or brochures. Users can expect frequent encounters with others.

Key Track Characteristics: Generally a modified or hardened surface. Width: 900mm or more. 1:10 maximum gradient. Minimal use of steps. Well maintained with minimal intrusions. Facilities along the track may include lookout platforms, seats and barrier rails. Users need no previous experience and are expected to exercise normal care regarding their personal safety.

Class 3: *General Description:* Provides opportunities for visitors to undertake walks requiring a moderate level of fitness and where the provision of interpretation and facilities is infrequent. Users can expect opportunities to experience the environment with only limited provision of interpretive signs. Users can expect occasional encounters with others.

Key Track Characteristics: Generally an unmodified surface, sections may be hardened. Width: variable and generally less than 900mm. No steeper than 1:10 preferred but may exceed this gradient for short lengths. Steps may be common. Kept mostly clear of intrusions and obstacles. Visitor facilities such as seating generally not provided. Users need no bushwalking experience and a minimum level of specialised skills. Users may encounter natural hazards such as steep slopes, unstable surfaces and minor water crossings. They are responsible for their own safety.

APPENDIX 2 THREATENED ANIMAL SPECIES

Endangered Species	
Brush-tailed Rock-wallaby	<i>Petrogale penicillata</i>
Green and Golden Bell Frog	<i>Litoria aurea</i>
Hooded Plover	<i>Thinornis rubricollis</i>
Little Tern	<i>Sterna albifrons</i>
Pied Oystercatcher	<i>Haematopus longirostris</i>
Southern Brown Bandicoot (eastern)	<i>Isodon obesulus obesulus</i>
Southern Giant Petrel	<i>Macronectes giganteus</i>
Swift Parrot	<i>Lathamus discolor</i>
Wandering Albatross	<i>Diomedea exulans</i>
Vulnerable Species	
Australasian Bittern	<i>Botaurus poiciloptilus</i>
Australian Fur-seal	<i>Arctocephalus pusillus doriferus</i>
Barking Owl	<i>Ninox connivens</i>
Black-breasted Buzzard	<i>Hamirostra melanosternon</i>
Black-browed Albatross	<i>Thalassarche melanophris</i>
Blue-billed Duck	<i>Oxyura australis</i>
Brown Treecreeper	<i>Climacteris picumnus</i>
Diamond Firetail	<i>Stagonopleura guttata</i>
Eastern Bentwing-bat	<i>Miniopterus schreibersii oceanensis</i>
Eastern Ground Parrot	<i>Pezoporus wallicus wallicus</i>
Flame Robin	<i>Petroica phoenicea</i>
Flesh-footed Shearwater	<i>Puffinus carneipes</i>
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>
Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>
Golden-tipped Bat	<i>Kerivoula papuensis</i>
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>
Koala	<i>Phascolarctos cinereus</i>
Lesser Sand-plover	<i>Charadrius mongolus</i>
Little Eagle	<i>Hieraaetus morphnoides</i>
Little Lorikeet	<i>Glossopsitta pusilla</i>
Long-nosed Potoroo	<i>Potorous tridactylus</i>
Magpie Goose	<i>Anseranas semipalmata</i>
Masked Owl	<i>Tyto novaehollandiae</i>
Northern Giant-Petrel	<i>Macronectes halli</i>
Olive Whistler	<i>Pachycephala olivacea</i>
Osprey	<i>Pandion haliaetus</i>
Pink Robin	<i>Petroica rodinogaster</i>
Powerful Owl	<i>Ninox strenua</i>
Providence Petrel	<i>Pterodroma solandri</i>
Scarlet Robin	<i>Petroica boodang</i>
Shy Albatross	<i>Thalassarche cauta</i>
Sooty Owl	<i>Tyto tenebricosa</i>
Sooty Oystercatcher	<i>Haematopus fuliginosus</i>
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>
Square-tailed Kite	<i>Lophoictinia isura</i>
Squirrel Glider	<i>Petaurus norfolcensis</i>
Superb Fruit-Dove	<i>Ptilinopus superbus</i>

Varied Sittella	<i>Daphoenositta chrysoptera</i>
White-footed Dunnart	<i>Sminthopsis leucopus</i>
White-fronted Chat	<i>Epthianura albifrons</i>
Yellow-bellied Glider	<i>Petaurus australis</i>

(Species recorded as at 25/06/2010)

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