

CONJOLA NATIONAL PARK
PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

Part of the Department of Environment and Climate Change NSW

April 2009

This plan of management was adopted by the Minister for Climate Change and the Environment on 18th April 2009

Acknowledgments

This plan of management is based on a draft plan prepared by officers of the South Coast Region of the National Parks and Wildlife Service.

Valuable information and ideas were contributed to the planning process by the South Coast Region Advisory Committee and other members of the community through letters, submissions and at meetings.

Cover photograph by Libby Shields, N.PWS

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For additional information or enquiries about this park or plan, contact the Service's Ulladulla Office at PO Box 72, Ulladulla, NSW 2539 or by phone on (02) 4454 9500.

FOREWORD

Conjola National Park covers 11,060 hectares and lies on the mid south coast of New South Wales, between Sussex Inlet and Lake Conjola.

Conjola National Park protects 18 different vegetation communities, including four endangered ecological communities: Coastal Saltmarsh, Swamp Sclerophyll Forest, Swamp Oak Floodplain Forest and Bangalay Sand Forest. It also contains five threatened plant species and 25 species of threatened fauna.

Conjola National Park also contains a large number of Aboriginal sites, including middens, campsites, rock shelters and grinding grooves, and a number of historic features.

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 Conjola National Park was placed on public exhibition for three months from 21st October 2005 until 20th February 2006. The submissions received were carefully considered before adopting this plan of management.

This plan contains a number of actions to achieve “Better environmental outcomes for native vegetation, biodiversity, land, rivers, and coastal waterways” (Priority E4 in the State Plan) including survey and monitoring for significant species, the rehabilitation of old quarries and other degraded areas, and control of introduced species. The plan also contains a number of actions to help achieve Priority E8 in the State Plan “More people using parks, sporting and recreational facilities, and participating in the arts and cultural activity”, such as upgrading of walking tracks in the park and opportunities for scenic driving, cycling and horse riding on the network of vehicle trails.

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

Carmel Tebbutt MP
Deputy Premier
Minister for Climate Change and the Environment

RESERVE PROFILE

- GAZETTAL:** Reserved in 1994 and significantly enlarged in 2001.
- AREA:** 11060ha.
- LOCATION:** Mid south coast, between Sussex Inlet and Lake Conjola. Shoalhaven City Council LGA.
- LANDFORM:** Gently undulating, but more incised in the upper reaches of creeks. Includes Berrara and Nerrindillah Lagoons and the shores of Swan and Conjola Lakes. Small area of coastline with dunes, headlands and beaches.
- GEOLOGY:** Primarily Permian sandstone, siltstone and shale, with Quaternary dunes along the coastline and alluvial deposits adjacent to the estuaries.
- VALUES:** The park is a biodiversity hot spot with 18 different vegetation communities and a large number of species. Communities include forests, woodlands, rainforest, coastal scrub and wetlands. Areas of four endangered ecological communities - Coastal Saltmarsh, Swamp Sclerophyll Forest, Swamp Oak Floodplain Forest and Bangalay Sand Forest. Five threatened plant species, 2 ROTAP species, 8 regionally rare species and 12 species at or near their southern limit. Twenty five species of threatened fauna and 8 fauna species that are regionally rare or at the edge of their range. High diversity and occurrence of Aboriginal sites including middens, campsites, rock shelters and grinding grooves. A number of historic features including a burial and monument for the 1870 wreck of the Walter Hood.
- VISITOR USE:** Popular with locals and visitors staying in adjacent villages. Low key picnic facilities, walking tracks and water access provided near the coast. Opportunities for scenic driving, cycling and horse riding on the network of vehicle trails.
- ISSUES:** The park is generally in good condition. There are low levels of introduced species but a number of significant weeds are present. Small areas of erosion occur, most notably on the banks of Sussex Inlet. Approximately 90% of the park burnt in a wildfire in 2002 and is recovering. A number of former quarries and tip sites have been reshaped but vehicle use is inhibiting revegetation. A large number of vehicle trails cross the park, with associated habitat fragmentation and siltation of creeks.
- MANAGEMENT:** The primary management emphasis will be conservation of ecological values through survey and monitoring for significant species, introduced species control, closure of unnecessary vehicle trails, quarry rehabilitation and appropriate fire regimes. The Fisherman's Rock Aboriginal site complex will be protected from erosion. The Walter Hood Monument and a former charcoal burning site will be assessed to determine conservation needs. Existing visitor facilities will be maintained and track improvement will be carried out on walking tracks. Driving, cycling and horse riding will be permitted only during dry conditions because of the highly erodible soils.

CONTENTS

	Page
1. MANAGEMENT CONTEXT	1
1.1 Legislative and Policy Framework	1
1.2 Management Purposes and Principles	1
2. THE PLANNING AREA	2
2.1 Location, Gazettal and Regional Setting	2
2.2 Landscape Context	3
3. VALUES AND MANAGEMENT DIRECTIONS	4
3.1 Values of the Area	4
3.2 Management Directions	7
4. CONSERVATION OF NATURAL AND CULTURAL HERITAGE	8
4.1 Geology and Landform	8
4.2 Native Vegetation	9
4.3 Native Animals	11
4.4 Aboriginal Heritage	13
4.5 Historic Heritage	15
5. PARK PROTECTION	17
5.1 Erosion, Water Quality and Catchment Management	17
5.2 Introduced Species	18
5.3 Fire Management	21
6. VISITOR OPPORTUNITIES AND EDUCATION	26
6.1 Provision of Information	26
6.2 Recreation and Tourism Opportunities	27
7. OTHER USES	34
8. MONITORING AND RESEARCH	36
9. NPWS MANAGEMENT FACILITIES AND OPERATIONS	38
10. PLAN IMPLEMENTATION	39
REFERENCES	43
MAP	Centre pages

1. MANAGEMENT CONTEXT

1.1 LEGISLATIVE AND POLICY FRAMEWORK

The management of national parks in NSW is in the context of a legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act), the NPW Regulation, the *Threatened Species Conservation Act 1995* (TSC Act) and the policies of the National Parks and Wildlife Service (NPWS). The matters to be considered in the preparation of a plan of management are listed in Section 72AA of the NPW Act. NPWS policies relate to nature conservation, cultural heritage conservation, recreation, fire management, commercial use, research and communication.

Other legislation, international agreements and charters may also apply to management of the area. In particular, the *Environmental Planning and Assessment Act 1979* (EPA Act) requires the assessment and mitigation of the environmental impacts of any works proposed in this plan.

The Southern Regional Forest Agreement covers the park and provides for, amongst other things, ecologically sustainable forest management. Regional Forest Agreements are one of the principal means of implementing the National Forest Policy Statement of 1992, under which Commonwealth, State and Territory governments agreed to work towards a shared vision for Australia's forests.

The plan of management is a statutory document under the NPW Act. Once the Minister has adopted a plan, the plan must be carried out and no operations may be undertaken within the area covered except in accordance with the plan. The plan will also apply to any future additions to the park. Should management strategies or works be proposed in the future that are not consistent with the plan, an amendment to the plan will be required.

1.2 MANAGEMENT PURPOSES AND PRINCIPLES

National parks are reserved under the National Parks and Wildlife Act to protect and conserve areas containing outstanding or representative ecosystems, natural or cultural features or landscapes or phenomena that provide opportunities for public appreciation and inspiration and sustainable visitor use.

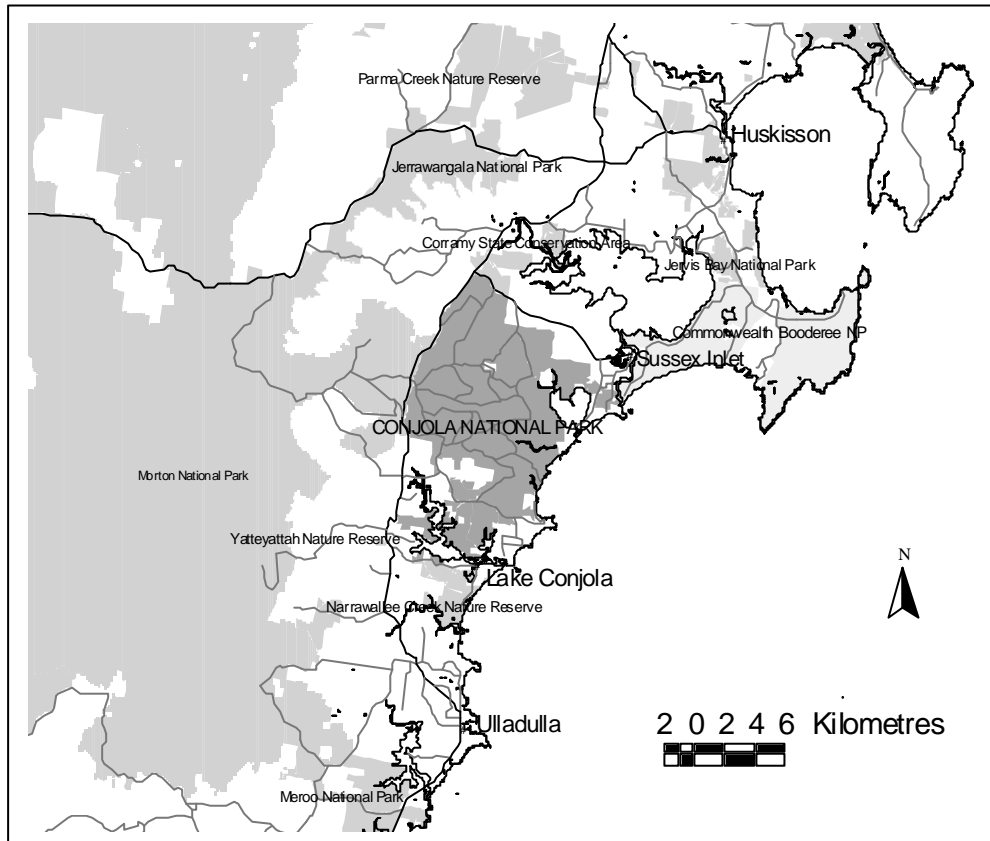
Under the Act, national parks are managed to:

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

2. THE PLANNING AREA

2.1 LOCATION, GAZETAL AND REGIONAL SETTING

Conjola National Park is located on the mid south coast of New South Wales, between Sussex Inlet and Lake Conjola (see map below). It is adjacent to the small coastal settlements of Swanhaven, Cudmirrah, Berrara, Bendalong and Manyana.



Conjola National Park was reserved in 1994, along with the then nearby Cudmirrah National Park. Both were formed from Crown land, except for part of Cudmirrah National Park which had been dedicated as Cudmirrah Nature Reserve in 1959. On 1 January 2001 the two national parks were joined together as a result of reservation of Conjola State Forest as part of the Southern Forest Agreement, taking the total size to approximately 11060 hectares. Cudmirrah National Park was then merged with Conjola through the process of a name change in 2003.

The park consists of extensive areas of undulating terrain in the catchments of Conjola Lake, Berringer Lake, Swan Lake, Berrara Creek lagoon and Nerrindillah Creek lagoon, and includes an area of coastline south of Berrara down to High Water Mark. Princess Island and Conjola Island in Conjola Lake are also part of the national park.

This plan of management also covers an area of Crown land on Farnham Headland (40 hectares) that is expected to be added to the park in the near future (excluding

the lease area for the Inlet Holiday Cottages). In addition the plan covers several roads that are vested in the Minister for the Environment on behalf of the Crown under Part 11 of the NPW Act. These roads do not currently form part of the gazetted area of the park. They were created by the *National Parks Estate (Southern Region Reservations) Act 2000* (NPE Act) to ensure that essential access arrangements which existed immediately before the 2001 park additions could continue. The NPE Act provides that, following assessment, these roads must be either added to the park or excluded from the park.

As well as the above, the southern section of Corramy State Conservation Area, which lies adjacent to Conjola National Park, is being considered for addition to it. Should this land be added to the park, it will be managed in a similar manner to the present arrangements and in accordance with the management principles for national parks.

There are several private property inholdings that are located within the national park boundaries but are not part of the park.

The surrounding district is a popular holiday destination that provides a range of accommodation and recreation opportunities.

2.2 LANDSCAPE CONTEXT

The park protects a diverse landscape consisting primarily of three distinct environments: the coast, the estuaries and inland sandstone country. The area contains an array of important plant and animal communities and is valued for its beauty and recreation opportunities.

Natural and cultural heritage and on-going human use are strongly inter-related and together form the landscape of an area. The geology, landform, climate and plant and animal communities of the park, in addition to their location, have determined how the area has been used by humans. Aboriginal people have utilised the resources of the area for at least 20,000 years, especially the lakes and coastline, as is indicated by the abundance of archaeological sites such as middens and artefact scatters. Non-indigenous people have used the area for industry and recreation since the 1800s, particularly logging in the forests, fishing and informal camping and beach activities along the coast. These uses have had a substantial impact on the vegetation structure and resulted in the existing network of roads and trails.

Both Aboriginal and non-Aboriginal people place cultural values on natural areas, including aesthetic, social, spiritual, recreational and other values. Cultural values may be attached to the landscape as a whole or to individual components, for example to plant and animal species used by Aboriginal people. Cultural values may consist of both physical remains and non-physical manifestations such as knowledge, stories and memories. This plan of management aims to conserve both natural and cultural values. For reasons of clarity and document usefulness, natural and cultural heritage, non-human threats and on-going use are dealt with individually, but their inter-relationships are recognised.

3. VALUES AND MANAGEMENT DIRECTIONS

3.1 VALUES OF THE AREA

Landform

The park contains a large variety of landforms and environments including beaches and headlands, lowlands covered in woodland and heath, ridges, wetlands, lake foreshores and sand dunes. The dunes at Farnham Head (on Crown land to be added to the park) are the highest on the South Coast (Benson et al, 1986).

Much of the catchments of several estuaries – Conjola Lake, Berringer Lake, Swan Lake, Berrara Creek, Nerrindillah Creek and Tullarwalla Lagoon- are located within the park or within Corramy State Conservation Area, which is being considered for addition to the park. These are representative examples of South Coast estuaries of a variety of types. Conjola is one of the few national parks with a significant area of deep coastal lake foreshore, on Conjola Lake. State Environmental Planning Policy (SEPP) 14 wetlands are located on the northern side of Swan Lake and the southern side of Berrara Creek.

Biodiversity

The national park has been described (by Mills 1995a) as a biodiversity hot spot with eighteen different vegetation communities and 429 native plant species being represented. The vegetation communities are particularly floristically diverse and in a relatively natural state with low levels of invasion from exotic plants (Mills, 1998). They form a very important area of coastal reservation in southern New South Wales, arising from the juxtaposition of so many different vegetation communities over a relatively small area.

The park supports a good sample of the flora of the southern area of the Sydney Basin Bioregion near its southern limit of occurrence. Twelve plant species common on Sydney basin sandstone have their southern limit in the park or nearby. These species are grey gum (*Eucalyptus punctata*), *Amyema cambagei*, narrow-leaved bottlebrush (*Callistemon linearis*), *Conospermum elliptica*, long-leaf coneseeds (*Conospermum longifolium*), Port Jackson mallee (*Eucalyptus obstans*), willow-leaved hakea (*Hakea salicifolia*), narrow-leaf drumsticks (*Isopogon anethifolius*), *Leucopogon amplexicaulis*, *Melaleuca decora*, prickly conesticks (*Petrophile sessilis*), *Phebalium squamulosum* and red five-corners (*Styphelia tubiflora*).

Five threatened plant species are found in the park. These are the endangered *Wilsonia rotundifolia* and the vulnerable *Wilsonia backhousia*, magenta lilly pilly (*Syzygium paniculatum*), leafless tongue orchid (*Cryptostylis hunteriana*) and tangled bedstraw (*Galium australe*). The tangled bedstraw was until recently presumed extinct in NSW. It was re-discovered in Conjola National Park as well as near Bega, Batemans Bay, Kangaroo Valley and south of Mongarlowe. Magenta lilly pilly reaches its southern limit in the park.

The large-leaved grevillea (*Grevillea macleayana*) and yellow bush pea (*Pultenaea villifera*) have been recorded in the park. These species are listed on the national register of rare or threatened Australian plants (ROTAP). Conjola National Park probably contains the largest population of yellow bush pea (Mills, 1995b).

Another eight significant species occur in the park that are rare in NSW or in the region. These are bangalow palm (*Archontophoenix cunninghamiana*), *Blechnum*

ambiguum, Port Jackson pine (*Callitris rhomboidea*), grey saltbush (*Atriplex cinerea*), coast canthium (*Canthium coprosmoides*), veiny wilkiea (*Wilkiea huegeliana*), donkey orchid (*Diuris auria*) and *Stackhousia spathulata*.

At least thirty-five terrestrial and epiphytic orchid species occur in the park. It is likely that several additional orchid species regarded as significant occur in the park as they have been recently recorded nearby.

Small areas of saltmarsh, swamp mahogany (*E. robusta*) and swamp oak (*Casuarina glauca*) forests occur on the shores of Swan Lake and swamp oak forest also occurs on Conjola Lake. These are listed as endangered ecological communities (Coastal Saltmarsh, Swamp Sclerophyll Forest and Swamp Oak Floodplain Forest) under the Threatened Species Conservation Act. Swamp mahogany is an important food source for several threatened animal species including the swift parrot, regent honeyeater, yellow-bellied glider and grey-headed flying fox.

Areas of bangalay (*E. botryoides*)/banksia (*B. integrifolia*) forest occurs along the park's coastline at The Haven, Monument Beach and the mouth of Berrara Creek. This community is listed as the endangered ecological community Bangalay Sand Forest.

Although there has been a history of logging, land degradation and frequent wildfire, significant areas of old growth forest have been identified in the park. Old growth forest has high aesthetic and habitat value, particularly for arboreal mammals and birds dependent upon tree hollows.

The park contains a variety of fauna habitats, with forests, woodlands, heathlands and swamplands adjacent to lakes, lagoons and the ocean. These habitats support a high diversity of fauna (Mills, 1995b) and the park is an important refuge for protection of native fauna populations. Protection of natural vegetation within the park also assists maintenance of aquatic habitat for birds, fish and invertebrates in the adjacent estuaries. Swan Lake and its associated wetlands is a significant breeding and feeding areas for waterbirds, particularly black swan (*Cygnus atratus*). Ocean beaches adjacent to the park provide important foraging and roosting habitat for a number of threatened shorebirds and migratory species, some of which nest in the park above high tide mark.

The park is significant for threatened fauna species. A total of five endangered and twenty vulnerable fauna species (listed in Schedule 1 and Schedule 2 of the Threatened Species Conservation Act) have been recorded in and around the park. Endangered species recorded are the regent honeyeater (*Xanthomyza phrygia*), swift parrot (*Lathamus discolor*), little tern (*Sterna albifrons*), hooded plover (*Thinornis rubricollis*) and green and golden bell frog (*Litoria aurea*). Vulnerable fauna species recorded are the long-nosed potoroo (*Potorus tridactylus*), white-footed dunnart (*Sminthopsis leucopus*), yellow-bellied glider (*Petaurus australis*), squirrel glider (*Petaurus norfolcensis*), large-footed myotis (*Myotis adversus*), greater broad-nosed bat (*Scoteanax rueppellii*), grey-headed flying-fox (*Pteropus poliocephalus*), little red flying-fox (*Pteropus scapulatus*), glossy black-cockatoo (*Calyptorhynchus lathamii*), powerful owl (*Ninox strenua*), sooty owl (*Tyto tenebricosa*), masked owl (*Tyto novaehollandiae*), square-tailed kite (*Lophoictinia isura*), gang-gang cockatoo (*Callocephalon fimbriatum*), pink robin (*Petroica rodinogaster*), turquoise parrot (*Neophema pulchella*) sooty oystercatcher (*Haematopus fuliginosus*), pied oystercatcher (*Haematopus longirostris*), osprey (*Pandion haliaetus*) and black bittern (*Ixobrychus flavicollis*).

Several other threatened species have been recorded nearby and may occur in the park including the southern brown bandicoot (*Isodon obesulus*), spotted-tailed quoll

(*Dasyurus maculatus*), common bentwing-bat (*Miniopterus schreibersii*), broad-headed snake (*Hoplocephalus bungaroides*) giant burrowing frog (*Heleioporus australiacus*) and the Australasian bittern (*Botaurus poiciloptilus*).

The park provides significant habitat for the glossy black-cockatoo, gang-gang cockatoo, powerful owl, hooded plover and pied oystercatcher. The hooded plover has been recorded breeding near the entrances to Nerrindillah Lagoon and Berrara Creek. The latter is the most northerly and one of the more successful breeding sites for the hooded plover in recent years.

A further 8 fauna species have been recorded which are regionally rare or at the edge of their range (Daly et al, 1998). The regionally rare species are the dusky antechinus (*Antechinus swainsonii*), king quail (*Coturnix chinensis*), spotless crake (*Porzana tabuensis*), black-winged stilt (*Himantopus himantopus*), beautiful firetail (*Stagonopleura bella*) and double-banded plover (*Charadrius bicinctus*). The coppertail skink (*Ctenotus taeniolatus*) and Freycinet's Frog (*Litoria freycineti*) are at the southern end of their ranges.

Cultural heritage

There is a high diversity and occurrence of Aboriginal sites in the park and surrounding areas including middens, campsites, artefact scatters, rock shelters and grinding grooves. The area is relatively rich in Aboriginal sites due to its proximity to the coast, estuaries, freshwater creeks and a variety of habitats that contain abundant food supply.

The park contains a monument to the people who lost their lives during the wreck of the *Walter Hood*, the largest ship (at 204 feet) built in Scotland up to 1852 (Mawer, 1994). The monument is listed in the register of the National Trust.

The park also has a number of features of local historic interest including a former Australian Railways Union camp site, a charcoal burning site, and weirs.

Scenery

The coastline of the park is extremely scenic, with a variety of features such as sandy beaches, rock outcrops, small estuaries and diverse vegetation communities. The woodlands and forests of the hinterland are also attractive, along with features such as small waterfalls and waterholes on some of the creeks.

The park enhances the scenic amenity of the district by providing natural backdrops to the important waterways of Swan Lake, Conjola Lake and Berringer Lake. The forested bays and ridges are particularly attractive.

Educational, tourism and recreational

The park provides a range of low key recreational, educational and tourism opportunities for the local community and visitors to the area. These are primarily focussed on the coastline and estuaries but include opportunities for walking, scenic driving and riding in the hinterland. The visitor opportunities in the park complement the more developed recreation facilities provided in nearby towns and villages and significantly enhance the tourism value of the district.

3.2 MANAGEMENT DIRECTIONS

Protection of the ecological values of the park, particularly in relation to maintenance of biodiversity and protection of threatened species, will be given highest priority. This will be achieved by:

- control of introduced species;
- survey and monitoring of threatened and rare species;
- closure of unnecessary roads and rehabilitation of degraded areas;
- strategic fire management; and
- management of recreation use to minimise impacts.

All known Aboriginal sites will be conserved and the local Aboriginal community will continue to be involved in their management. The *Walter Hood* Monument will continue to be protected and conservation works will be undertaken as required.

The existing day use recreation and tourism facilities will be maintained and managed to retain their low key nature. A network of vehicle trails will be kept open for public vehicle access, cycling and horse riding. Boating access to the lake and lagoon foreshores will continue to be permitted but no facilities will be provided. Emphasis will be placed on raising public awareness of the values of the park by promotional programs and provision of on-site interpretive information.

4. CONSERVATION OF NATURAL AND CULTURAL HERITAGE

4.1 LANDSCAPE AND GEOLOGY

The park covers a relatively large area of coastal plain, a number of estuaries and a short section of coastline. It includes approximately half the shores of Conjola and Berringer Lakes and surrounds all but the eastern shore of Swan Lake. The estuaries of Berrara Creek and Nerrindillah Creek lie wholly within the park and the majority of their catchments are also in the park. The southern section of Corramy State Conservation area, which may be added to the park, covers much of the Tullarwalla lagoon catchment and part of its shoreline. There are small wetlands and low lying areas around the estuaries and along creek lines.

The coastline, located between the Berrara Creek and Nerrindillah Creek estuaries, features beaches and small rocky headlands. The addition of Farnham Headland will increase the area of coastline in the park. The headland is a large, prominent area of dunes overlying a rocky base.

The landscape is mostly gently undulating, although the upper reaches of Nerrindillah Creek and of Tullarwalla Creek in the north western corner of the park are more incised, and the shores of Conjola Lake rise steeply. The highest point in the park is Cudmirrah Trigonometric Station at 152 metres above sea level, near the western edge of the park.

The underlying geology of the park is mainly composed of the Permian Conjola formation, a series of sandstone and shale units. This is overlain by large areas of Wandrawandian Siltstone around Swan Lake.

There are Quaternary sand dunes along the coastline, and alluvial deposits in gullies north west of Swan Lake, on low lying shore areas of Conjola Lake, and around Nerrindillah Creek. There are also small areas of tertiary sediments on the coast south of Nerrindillah Creek.

As stated in section 3.1, the coastline and estuaries are very attractive and contribute significantly to the value of the area for locals and visitors. Activities such as off-road vehicle use and car and rubbish dumping in some locations detract from the scenic values as well as having a variety of other environmental impacts (see sections 5.1 and 6.2).

Desired Outcomes

- Significant geological and geomorphological features are protected, particularly the estuaries and the coastal dune systems of Berrara Beach and at Sussex Inlet.
- The scenic values of the park and in particular the relatively undisturbed coastline and lake shores are protected.

Strategies

- *Locate and design management and visitor facilities to minimise their visual impact from villages, public access roads and vantage points.*
- *Liaise with neighbours and authorities to minimise the impact of adjacent land use on the scenic values of key locations in the park.*

- *Work closely with local police and Shoalhaven City Council to address illegal vehicle and trail bike use and car and rubbish dumping activities.*

4.2 NATIVE VEGETATION

The vegetation communities in the park are in relatively good condition although some areas have been affected by selective logging, firewood gathering or by intense or frequent fire, with consequent changes in structure and composition. Some areas of the park have few large trees and there are patches of even-aged small trees or other disturbances. These areas will recover in time provided the fire frequency is appropriate (see section 5.3).

A comprehensive study of the vegetation of the southern and eastern sections of the park was carried out by Kevin Mills and Associates in 1995 and the entire park was later mapped as part of the CRA process and follow-up studies (NGH Environmental, 2004). The CRA process was undertaken in the lead up to the Southern Regional Forest Agreement and consisted of comprehensive regional assessments (CRA) of the natural, cultural, economic and social values of forests.

The park's vegetation pattern is associated with areas of sandstone or clay soils, deep gullies, the coastline and the estuaries. Woodlands occur throughout most of the park but there are significant areas of forest on deeper soils and also small areas of heath. Eighteen distinct vegetation communities have been identified.

The most extensive communities are scribbly gum (*Eucalyptus sclerophylla*) and red bloodwood (*Corymbia gummifera*) woodlands with a heath understorey. Small areas of yertchuk (*E. considiniana*), red bloodwood and scribbly gum woodlands are found on the ridge tops.

Open forest communities dominated by blackbutt (*Eucalyptus pilularis*), bangalay (*E. botryoides*), red bloodwood, Sydney peppermint (*E. piperita*), scribbly gum or black she-oak (*Allocasuarina littoralis*) are found on deeper soils amongst the woodlands, particularly in the southern part of the park and on the dunes near Farnham Headland. Some areas of bangalay open forest on the dunes have a rainforest understorey.

Small areas of tall open forests of blackbutt, rough-barked apple (*Angophora floribunda*), turpentine (*Syncarpia glomulifera*) and spotted gum (*E. maculata*) occur in more fertile and sheltered locations. These communities are important as they have been extensively logged or cleared outside the park. Areas of spotted gum within the park have been logged in the past and large trees are uncommon.

Small patches of warm temperate rainforest are found in gullies, the main species being lilly pilly (*Acmena smithii*), cabbage palm (*Livistona australis*) and jackwood (*Cryptocarya glaucescens*).

Closed shrubland of coast banksia (*Banksia integrifolia*), coast wattle (*Acacia longifolia*), and coast teatree (*Leptospermum laevigatum*) is found along the immediate coastline. There are small patches of heathland dominated by *Allocasuarina distyla* on Farnham Headland.

Numerous areas of sedgeland occur along creeklines and in other poorly drained locations. Woollybutt (*E. longifolia*) woodland occurs along drainage lines north of Swan Lake. On the shores of Swan Lake and to a lesser extent Conjola and Berringer Lakes, are small patches of saltmarsh, swamp paperbark (*Melaleuca*

ericifolia) shrubland, swamp mahogany (*E. robusta*) and swamp oak (*Casuarina glauca*) forests.

A number of permanent vegetation monitoring sites have been established throughout the park and these may be used to monitor changes in vegetation as needed.

Significant communities and species

As stated in section 3.1 saltmarsh, swamp mahogany, swamp oak forest and bangalay/banksia forest are listed as endangered ecological communities. The first three communities are vulnerable to weed invasion and changes in drainage. These communities in the park are not presently threatened, although bitou bush or boneseed (*Chrysanthemoides monilifera*) is present in low numbers in the swamp mahogany community at Swan Lake and this needs to be monitored (see section 5.2). Some areas of bangalay/banksia forest could be affected by weed invasion and by hazard reduction burning designed to protect adjacent villages.

The threatened species tangled bedstraw (*Galium australe*), *Wilsonia backhousia* and *W. rotundifolia* have been recorded in the Swan Lake catchment and *W. backhousia* is also found at Monument Point. Leafless tongue orchid (*Cryptostylis hunteriana*) occurs mainly in the southern part of the park and magenta lilly pilly (*Syzygium paniculatum*) is found in the Nerrindilla Creek valley.

Under the Threatened Species Conservation Act, strategies for promoting the recovery of threatened species, populations and ecological communities will be set out in a Species Priorities Action Statement. Individual recovery plans may also be prepared to consider management needs in more detail. Specific management actions, survey and research may be carried out within the park for protection of individual populations and to monitor the effectiveness of management programs.

The ROTAP listed yellow bush pea (*Pultenaea villifera*) occurs mainly in pockets of infrequently burnt vegetation on the foreshore of Conjola Lake, some ridgelines and in the upper reaches of the Berrara Creek catchment. It is found in several dry forest and woodland communities of scribbly gum, blackbutt and bloodwood. Little is known about the species, and monitoring and further research are required for its appropriate management.

The ROTAP plant *Grevillea macleayana* has been recorded in a few locations in the northern and central sections of the park. These records need to be verified and a more comprehensive survey carried out.

The other significant species listed in section 3.1 are scattered throughout the area, although a number occur only along streams and adjacent to wetlands.

Connections to other areas

Conjola National Park is adjacent to Morton National Park to the west and Narrawallee Creek Nature Reserve to the south, although divided by sealed roads. These connections enhance the long term viability and maintenance of biodiversity.

Areas of Crown land adjoin the park east of Swan Lake and west of Bendalong. There are also a number of adjacent areas of naturally vegetated private land and it would be desirable for these to be retained in a natural condition.

Desired Outcomes

- The full range of native plant species found in the park is conserved.
- Vegetation structural diversity and habitat values are conserved, and recover where affected by past logging and fire.
- The significant vegetation communities are conserved.
- The habitat and populations of all threatened and biogeographically significant species are protected and maintained.
- Neighbours support conservation of remaining areas of privately owned native vegetation near the park.

Strategies

- *Undertake further survey where needed to check vegetation community mapping and survey the new addition at Farnham Headland.*
- *Undertake targeted survey for Cryptostylis hunteriana, Galium australe, Wilsonia backhousia, W. rotundifolia, Syzygium paniculatum, Pultenaea villifera and Grevillea macleayana. Establish a monitoring program for any sites at risk in order to provide information about population changes, threats and management needs.*
- *Introduce other measures as needed to assist protection of threatened flora within the park, including implementation of Species Priorities Action Statements and recovery plans if prepared.*
- *Periodically resurvey vegetation monitoring plots.*
- *Liaise with neighbours and land use authorities to encourage retention of areas of native vegetation close to the park. Encourage establishment of voluntary conservation agreements for significant naturally vegetated private land, particularly areas containing threatened plant communities and important wildlife corridors.*

4.3 NATIVE ANIMALS

As a result of the large areas of relatively undisturbed vegetation and the variety of habitats, the native fauna of the park is diverse. Information available on native animals known to occur in and around the park has been obtained from NPWS Wildlife Atlas records, species lists provided by local enthusiasts, information from Forests NSW, a fauna survey of the eastern part of the park (Daly, 1998) and the comprehensive regional assessment undertaken in the lead up to the Southern Forest Agreement.

More than 197 bird species have been recorded in the park and surrounding area (Mills, 2004a). These include water birds, seabirds, raptors and a large variety of birds dependent on open forest/heathland vegetation, including gang-gang cockatoo (*Callocephalon fimbriatum*), yellow-tailed black cockatoo (*Calyptorhynchus funereus*), Australian king-parrot (*Alisterus scapularis*), spotted pardalote (*Pardalotus punctatus*), superb lyrebird (*Menura novaehollandiae*), rufous whistler (*Pachycephala rufiventris*) and satin flycatcher (*Myiagra cyanoleuca*). Waterbirds recorded include the chestnut teal (*Anas castanea*), Pacific black duck (*Anas*

superciliosa), black swan (*Cygnus atratus*), white-faced heron (*Egretta novaehollandiae*) and Australian white ibis (*Threskiornis molucca*).

Thirty six mammal species have been recorded in the area including dusky antechinus (*Antechinus swainsonii*), long-nosed bandicoot (*Perameles nasuta*), common wombat (*Vombatus ursinus*), common brushtail possum (*Trichosurus vulpecula*), feathertail glider (*Acrobates pygmaeus*), greater glider (*Petauroides volans*), sugar glider (*Petaurus breviceps*), common ringtail possum (*Pseudocheirus peregrinus*), eastern grey kangaroo (*Macropus giganteus*), red-necked wallaby (*Macropus rufogriseus*), swamp wallaby (*Wallabia bicolor*), little bat (*Eptesicus vulturinus*), bush rat (*Rattus fuscipes*), short-beaked echidna (*Tachyglossus aculeatus*) and common dunnart (*Sminthopsis murina*).

Reptiles known to occur include the common scaly foot (*Pygopus lepidopodus*), jacky lizard (*Amphibolurus muricatus*), eastern water dragon (*Phyignathus lesueurii*), lace monitor (*Varanus varius*), copper-tailed skink (*Ctenotus taeniolatus*), eastern water skink (*Eulamprus quoyii*), common death adder (*Acanthophis antarcticus*), red-bellied black snake (*Pseudechis porphyriacus*), eastern brown snake (*Pseudonaja textilis*), diamond python (*Morelia spilota sp. spilota*) and eastern blue-tongue lizard (*Tiliqua scincoides*).

Twelve species of frog have been recorded in the park including Bebron's toadlet (*Pseudophryne bibronii*), green tree frog (*Litoria caerulea*) and bleating tree frog (*Litoria dentata*).

While the park's habitats are generally in good condition, a number of public roads and former forestry trails cross the park, resulting in significant habitat fragmentation. Closure of unnecessary trails is provided for in section 9.

Fauna monitoring sites have been set up in the eastern part of the park and sites should also be established in the remainder. Survey at these sites can indicate the success of management programs such as pest control and responses to hazard reduction and wildfire.

The estuaries within or adjacent to the park are in good condition and, as stated in section 3.1, provide breeding and feeding areas for waterbirds. The Healthy Rivers Commission's Independent Inquiry into Coastal Lakes (2002) identified Swan Lake and Conjola Lake/Berringer Lake for significant protection and NPWS will be involved in preparation of Sustainability Assessments for the lakes. Management of the lakes rests with several government agencies but NPWS has responsibility for fauna (mammals, birds, reptiles and amphibians). The NPWS is a member of Shoalhaven City Council management committees for the lakes and boating plans are being prepared or reviewed that seek, amongst other things, to minimise the impact of recreational use on waterbirds and significant areas of habitat.

The lakes' extensive seagrass beds provide important fish habitat and Conjola Lake potentially contains the threatened Australian grayling (*Prototroctes maraena*) (A. Lugg, pers. comm.). Management of fish in NSW is the responsibility of the Department of Primary Industries but where their habitats are located in or adjacent to the park the NPWS aims to protect those habitats. The most important requirements for protection of fish habitat in the park are the protection of foreshore vegetation and prevention of siltation and turbidity by runoff from roads, trails and recreation facilities.

Threatened species

Threatened fauna species recorded in the park are listed in section 3.1. There is insufficient knowledge of the occurrence and distribution of some species in the park,

particularly the spotted-tailed quoll, green and golden bell frog, long nosed potoroo and southern brown bandicoot.

The management needs of threatened species will be established as part of a Species Priorities Action Statement and any recovery plans prepared under the Threatened Species Conservation Act. Specific management actions may be undertaken to assist the survival of threatened species such as fencing of shorebird nesting areas in conjunction with public education and pest control programs.

Desired Outcomes

- The full range of native animal species found in the park is conserved.
- The habitat and populations of all threatened fauna species and biogeographically significant species are protected and maintained.
- Levels of habitat fragmentation are reduced.

Strategies

- *Undertake specific management programs where needed to conserve threatened species; particularly the hooded plover, glossy black-cockatoo, powerful owl and pied oystercatcher. This may include erecting barriers or signs to keep visitors away from nesting sites.*
- *Undertake targeted surveys for the spotted-tailed quoll, green and golden bell frog, southern brown bandicoot and long nosed potoroo.*
- *Implement relevant measures included in Species Priorities Action Statements for threatened fauna species and in recovery plans if prepared.*
- *Liaise with adjacent land management agencies and volunteers as needed to minimise impacts on nesting shorebirds.*
- *Work with other agencies and Council management committees for the lakes to minimise the impact of recreational boating on waterbirds and significant areas of habitat.*
- *Establish fauna monitoring plots in the western part of the park and periodically resurvey all plots.*
- *Ensure that creek crossings on park roads provide for fish passage. Design and construct creek crossings in accordance with Department of Primary Industries guidelines.*

4.4 ABORIGINAL HERITAGE

Aboriginal people have utilised the resources of the South Coast for at least 20,000 years and this long association continues today. The park is situated within the lands of South Coast Aboriginal people of the Dharawal-Dhurga language group. Today, the park is in the area covered by the Jerrinja Local Aboriginal Land Council, other Aboriginal community organisations such as elders groups and traditional custodian families.

It is recognised that the landscape and the plants, animals and physical features within the landscape are all an integral part of Aboriginal cultural heritage. Archaeological sites in the park are a record of past resource use by Aboriginal

people. There may also be places such as mythological sites or ceremonial sites that are significant to Aboriginal people but do not contain any physical evidence of past use or occupation.

A 1997 survey of roads in the park (Kuskie, 1997a) found 20 Aboriginal sites in addition to nine sites previously recorded. The lands added in 2001 have not been surveyed. Most of the recorded sites are axe grinding grooves and artefact scatters. Shell middens, rock shelters and a scarred tree have also been recorded. Quarry sites and burials have been found nearby and could occur in the park.

An important site in the park is the Fishermans Rock Aboriginal complex on Berrara Creek. This covers a large area and consists of axe grinding grooves, a midden and an extensive artefact scatter. The site is adjacent to a popular fishing area and is vulnerable to erosion, souveniring of artefacts, vandalism of the grinding grooves and lighting of fires. Works have been undertaken to keep vehicles off the site and address erosion problems. Further work is needed to stop people walking across an area of grinding grooves. An interpretive shelter has been installed with a focus on Aboriginal cultural information, to raise awareness of the importance of protecting the site.

While the NPWS has legal responsibility for the protection of Aboriginal sites within parks it acknowledges the right of Aboriginal people to make decisions about their own heritage. It is therefore policy that Aboriginal communities be consulted about decisions regarding the management of Aboriginal sites and related issues and how the Aboriginal culture and history of an area will be promoted and presented. Section 6.1 provides for Aboriginal community input into any interpretive material relating to Aboriginal culture.

Desired Outcomes

- Aboriginal sites and places are protected from damage by human activities.
- Aboriginal people are involved in management of Aboriginal cultural values in the park.

Strategies

- *Consult and involve the Jerrinja Local Aboriginal Land Council, other relevant Aboriginal community organisations and representatives of traditional custodian families about all aspects of management of Aboriginal sites and values in the park.*
- *Protect Aboriginal sites from damage by human activities. Carry out surveys and risk assessment as required.*
- *Precede all works with the potential to impact on Aboriginal sites by an archaeological assessment.*
- *Do not publicise the location of Aboriginal sites except where:*
 - *the agreement of the relevant local Aboriginal land council and other Aboriginal community members has been obtained;*
 - *a conservation study has been prepared and any management works necessary to protect the site from damage have been implemented; and*
 - *the site will be interpreted to promote public knowledge and appreciation of Aboriginal culture.*

- *Monitor the Fishermans Rock Aboriginal site complex to check for erosion and other impacts. Investigate options for keeping walkers off the axe grinding grooves. Undertake additional protective measures if necessary.*

4.5. HISTORIC HERITAGE

Prior to reservation, the tenure of the park was a combination of Crown land, state forest and nature reserve. Cudmirrah Nature Reserve, located on the coast south of Berrara Creek, was dedicated in 1959 and thus has been protected land for more than 45 years. It was absorbed into Cudmirrah National Park in 1994 and later into Conjola National Park. There has been little clearing or development of the remainder of the park area apart from some logging, quarrying, grazing and recreation use.

Old Berrara Road was the original road to the coastal villages of Cudmirrah and Berrara until the present road across the Swan Lake entrance was constructed in the late 1960s. There is anecdotal evidence that the road formerly extended along the coast past the mouth of Berrara Lagoon and presumably further south, and that modifications to the shoreline still exist.

The main historic site is a monument erected in 1927 in memory of the *Walter Hood* shipwreck, located at Monument Beach in the former nature reserve. This is a burial site marked by a stone monument to the eleven men who died when the *Walter Hood* struck rocks just off the coast between Bendalong and Berrara in 1870. The original burial ground was located further east of the present site on the dunes. The remains were exhumed and moved to the present site early last century because of erosion. A wire fence has been erected to protect the monument from vandalism. Conservation work may be required in order to arrest deterioration by weathering. Information about the shipwreck has been included in the interpretive shelter at the Monument Beach picnic area.

A former Australian Railways Union (ARU) camp site is located on Farnham Headland at Sussex Inlet. This site dates back to the early 1900s. The ARU (now called the Public Transport Union) moved to its present site on the eastern side of the inlet about fifty years ago. Although there are no remains of the huts on Farnham Headland there are footings present and some interesting glass bottle retaining walls. The walls are deteriorating and present a public safety risk. There are also some exotic plants on the site. These will be assessed and either controlled or removed to prevent their spread (see section 5.2).

Selective logging of hardwoods such as blackbutt, turpentine and bloodwood was carried out in the central and western parts of the park from the 1900s. The logging has left numerous logging trails and log dumps, and stumps with board scars can be seen in a number of locations. It is reported that a forestry camp was formerly located on lower Nerrindillah Creek.

A former charcoal burning site is located in the western part of the park north of Bendalong Road. Charcoal burning was undertaken primarily during the Second World War to produce gas to power converted trucks and cars. Kilns were generally located adjacent to timber supplies and the gas used locally. The site in the park is overgrown and in ruins. It includes the remnants of three brick-walled charcoal burning pits and there may be other structures. Investigation and assessment of remains is needed.

The remains of a small weir are located on Nerrindillah Creek where it is crossed by Nerringillah Road. It is reported that the weir, along with associated piping, formerly supplied drinking water to the village of Bendalong.

A former shale mine is reported to be located in the Bendalong area. The history of this site is unknown.

Quarrying of road base and some rubbish dumping took place in the park area prior to reservation. The quarries and tips will be progressively rehabilitated (see section 5.1). Car bodies and other dumped items are scattered throughout the park, particularly along boundaries. In accordance with standard NPWS practice, dumped material will be assessed for historic significance and removed if appropriate.

Desired Outcomes

- Historic features are appropriately conserved and managed.

Strategies

- *Conserve the historic places of the park in accordance with the Burra Charter of Australia ICOMOS.*
- *Protect the Walter Hood monument through maintenance of the fence and control of weeds as necessary. Prepare a conservation analysis for the monument and undertake conservation works as required.*
- *Record the remaining features at the former Australian Railways Union camp site and assess their significance and risk to public safety, particularly the glass bottle walls. Depending on the result of the assessment take any necessary safety or conservation measures, which may include removal, construction of a retaining wall, or fencing.*
- *Record and assess the former charcoal burning site and determine whether protection or management works are needed.*
- *Record other known historic features. Encourage research into their history.*

5. PARK PROTECTION

5.1 EROSION, WATER QUALITY AND CATCHMENT MANAGEMENT

Soils in the park consist primarily of shallow sandy loams and sands over fine sands and sandy clay subsoils. They are prone to erosion and become very unstable when the topsoil is removed. In well-drained flat areas they form good road surfaces but on slopes or wet areas they break down. Many of the roads and trails in the park are suffering erosion and poor drainage, particularly at creek crossings, and need regular maintenance or remedial work (see section 9).

Dune areas on the banks of Sussex Inlet are eroding as part of a natural river meander process. This erosion and denuding of vegetation has been occurring for at least the last 50 years and probably for a lot longer (Manly Hydraulics Laboratory report for NPWS 1997). Erosion has been accelerated due to people sand sliding on the dunes, walking on the dune face and boat wash and wind generated waves in the Inlet. The face of the dune north of the Haven has been closed to pedestrian access, the top of the dune fenced and a walking track provided over the top of the dune. A timber toe wall has been constructed on Crown land adjacent to part of the dune area on Farnham Headland.

Former quarries and old tip sites in the park have been subject to basic rehabilitation works such as reshaping, ripping and brush matting. Vehicle use of the quarries is causing erosion and inhibiting revegetation, and car dumping is occurring. These activities are not appropriate in a conservation area. All quarries, former tips and denuded areas will be closed to vehicle use and rehabilitated, including the former Blackbutt Road, Southdown Trail and Boundary Road quarries which are being used for trail bike riding and car dumping. A small section may be retained unvegetated in some quarries for use as a bushfire refuge area.

The park plays a major role in protection of the estuaries of Swan Lake, Berrara Creek, Conjola Lake, Washerwomans Creek, Wandandian Creek, Berringer Lake and Nerrindillah Creek. Water quality is generally good because of the small amount of development in the catchments and the low topography. It is possible, however, that former quarries and the many unsealed roads in the park contribute undesirable levels of sediment to the creeks and estuaries. Rehabilitation of the quarries and tips, road maintenance and closure of unnecessary roads (section 9) will reduce this.

Nerrindillah and Berrara Lagoons are ICOLs (Intermittently Closed and Open Lagoons) and, as stated previously, are reserved within the park. These lagoons do not affect built assets during times of high water levels and should be allowed to follow natural opening regimes

Management committees have been established by Shoalhaven City Council for Conjola Lake, Swan Lake and Berrara Creek. The NPWS is actively involved with these committees and has had input to management plans prepared for Conjola Lake, Swan Lake and Berrara Creek. The estuary management plan for Conjola Lake refers to erosion of some foreshore areas and contains a range of measures to address this. Currently, erosion of the national park foreshore is minimal but it needs to be monitored.

A number of stormwater drains from urban areas and caravan parks discharge into the park and are resulting in pollution and weed growth. Where feasible these should be relocated outside the park but if this cannot be achieved, measures such as retention basins and weed control are needed to minimise their impacts.

Desired Outcomes

- Human induced erosion in the park is minimised and degraded areas are rehabilitated.
- The park's catchment values and the water quality and health of streams and the coastal lakes are maintained. In particular, the high environmental quality of Swan Lake is maintained.

Strategies

- *Design and undertake all works in a manner that minimises soil erosion and water pollution.*
- *Take appropriate control measures where erosion is being accelerated by human activity or is threatening significant habitats or other values.*
- *Monitor the dunes along the Sussex Inlet channel that are in the park and undertake any additional measures where needed to address erosion and safety issues.*
- *Close former quarries, tips and other degraded areas to vehicle access. Rehabilitate where necessary by ripping to allow natural regeneration followed by brush matting or planting with local species as required.*
- *Liaise with Shoalhaven City Council and other relevant authorities to mitigate the impact of any development or use proposals on the water quality of the park's catchments and estuaries and on other park values.*
- *Allow Nerrindillah and Berrara Lagoons to follow natural opening regimes. Do not support artificial opening.*
- *Continue to participate in natural resource and floodplain management committees to protect water quality and significant conservation values in the park and adjacent waterways.*
- *Undertake monitoring as needed to check for erosion of the Conjola Lake foreshores within the park.*
- *Liaise with Shoalhaven City Council and neighbours regarding the impacts of stormwater drains that discharge into the park. Seek their relocation outside the park or arrange amelioration/maintenance agreements where necessary.*

5.2 INTRODUCED SPECIES

An introduced species is defined in this plan as any plant or animal species not native to the area. Introduced species within the park and on adjoining land are of concern because they have the potential to have detrimental effects on ecological values and can spread to and from neighbouring land.

The occurrence of introduced plant species in the park is generally low. Most of the weeds occur along roadsides in or near townships and on dune systems. Weeds also occur on areas that have been disturbed in the past such as former tips and quarries.

A weed survey was undertaken by Kevin Mills & Associates in 1998 in the eastern and southern sections of the park. Over 70 weed species were identified in and near the park, many of these being weeds favoured by disturbance, such as mother of millions (*Bryophyllum delagoense*), exotic grasses such as kikuyu (*Pennisetum clandestinum*), winter senna (*Senna pendula*) and asparagus fern (*Protasparagus aethiopicus*). Farnham Headland has extensive areas of asparagus fern that will require a major effort to bring under control once the land is added to the park. The western parts of the park have not been surveyed but weed diversity and occurrence appear to be low.

The *Noxious Weeds Act 1993* places an obligation upon public authorities to control noxious weeds on land that they occupy to the extent necessary to prevent such weeds spreading to adjoining lands. Declared noxious weeds in the Shoalhaven City Council area that are known to occur in the park are bitou bush (*Chrysanthemoides monilifera subsp. rotundata*), boneseed (*Chrysanthemoides monilifera subsp. monilifera*), noogoora burr (*Xanthium occidentale*), pampas grass (*Cortaderia selloana*), blackberry (*Rubus fruticosus*) and African lovegrass (*Eragrostis curvula*). All these species occur at low levels and will be controlled as a priority in ongoing weed management programs.

Bitou bush and boneseed occur along and around Berrara and Monument beaches, on the shores of Swan Lake and Berringer Lake and on Farnham Headland. Boneseed occurs on the more clay based soils in the park. Occurrences are relatively low but effective and on-going control of bitou bush and boneseed is essential because of the high ability of these species to spread rapidly into undisturbed bushland and to smother native species. Invasion of native plant communities by bitou bush/boneseed is listed as a key threatening process under the TSC Act and the plants are also listed as Weeds of National Significance. The draft Bitou Bush Threat Abatement Plan (DEC, 2004) lists protection of areas of the endangered Swamp Sclerophyll Forest (found adjacent to Swan Lake) and of the regionally significant plant *Stackhousia spathulata* at Berrara Beach as priorities.

Bitou bush/boneseed are primarily spread by foxes and birds from area to area. Therefore it is essential to have an integrated approach to control. A bitou bush working group consisting of representatives from NPWS, Dept. Lands, Council, Environment Australia, Healthy Cities and the local community has been active in the Lake Conjola/Mollymook and Sussex Inlet areas.

Significant occurrences of sea spurge (*Euphorbia paralias*) are found on some beaches in the park. This species is a prolific seeder that can easily be introduced by sea-borne seed. On-going monitoring and control efforts will therefore be needed.

In the western part of the park are two sites of former pine plantation trial plots. The pines have been removed and the areas are rehabilitating naturally but on-going wilding control is needed.

A number of exotic trees and garden plants remain at the site of the former Australian Railways Union camp on Farnham Headland. Some plants are rapidly spreading into adjoining bushland and will have to be removed. The historic significance of other exotics will be assessed along with an overall assessment of the site and a decision made whether or not to remove them.

The aquatic weed *Caulerpa taxifolia* is found adjacent to the park in Conjola Lake. *Caulerpa* is an invasive species that is easily spread by boating and fishing activities as well as wave action. It can rapidly displace native aquatic vegetation such as seagrass and potentially affect the habitat values of estuarine areas.

Wild dogs have been reported in the park and control programs have been undertaken by the South Coast Rural Lands Protection Board under contract to the NPWS, both routinely and in response to reports. Wild dogs, including dingoes, are a declared pest throughout NSW under the *Rural Lands Protection Act 1998* due to their impacts on livestock. Conjola National Park is not considered to provide high quality core habitat for dingoes. NPWS has a statutory obligation to control wild dogs in the park to ensure attacks on livestock from wild dogs moving out of it are minimised.

Foxes, rabbits and feral cats are also present in the park. A 1998 survey (Olsen & Latimer, 1998) found low to moderate fox activity in the park. Sand-plot monitoring sites have been established in the western part of the park and are checked twice yearly to determine the relative density of feral cats, dogs, foxes and native species and the success of control programs. Rabbits and cats are mainly found on the park edges adjacent to the villages.

Foxes are considered the major threat to ground dwelling native animals in the area and are known to be spreaders of weeds such as bitou bush. Predation by the Red Fox is a Key Threatening Process under the TSC Act for critical weight range mammals and ground nesting birds. The 1998 survey helped to identify areas that require control programs. Control is particularly targeted towards protecting threatened shorebirds in accordance with the priorities in the Fox Threat Abatement Plan prepared under the TSC Act. Generally fox and dog control programs are undertaken at the same time. These will continue and monitoring of fauna, especially threatened species, will be used as an indicator of the success of these programs. Because of continual invasion from surrounding lands, cooperative control of foxes is needed over a wide area if measures in the park are to be successful in the medium term.

The park adjoins a number of rural properties. It is important for effective fencing to be maintained to prevent stock entering the park.

Desired Outcomes

- The impact of introduced species on native plants and animals is minimised.

Strategies

- *Introduced plant species will be controlled and where possible eradicated. Priority for treatment will be given to those that:*
 - *have been declared noxious;*
 - *threaten populations of threatened species and the integrity of significant native communities;*
 - *may affect neighbouring lands;*
 - *have a high capacity for dispersal; and/or*
 - *are new isolated occurrences.*
- *Treat known occurrences of bitou bush, boneseed, coral tree, cassia, mother of millions, lantana, pampas grass, asparagus fern, African lovegrass, blackberry, pampas grass and Cape ivy as a priority. Monitor occurrences, particularly in the endangered ecological communities.*
- *Monitor the occurrence of sea spurge on beaches in the park and take action to control it, with priority to infestations likely to impact on threatened shorebird breeding sites and to new infestations.*

- *Seek the cooperation of other authorities, the community and neighbours in implementing weed control programs. In particular, liaise with Shoalhaven City Council about weed control on land to the east of Swan Lake.*
- *Continue to support and encourage community volunteer bush regeneration programs in and adjacent to the park. Encourage the formation of additional revegetation and weed control groups in strategic areas.*
- *Undertake on-going wilding control in the two former pine trial plantations.*
- *Undertake weed survey in the western part of the park and at Farnham Headland.*
- *Assess the historic significance and potential to spread of exotic plantings at the former ARU camp site on Farnham Headland. Remove exotic plants not considered to be significant.*
- *Cooperate with the Dept. of Primary Industries as required in measures to control Caulerpa taxifolia infestations in Conjola Lake.*
- *Control introduced animals where they have a significant impact on native species, particularly threatened species, or neighbouring stock, in cooperation with the South Coast Rural Lands Protection Board and neighbouring land holders where appropriate. Design programs to avoid impact on non-target species. Monitor the effectiveness of control programs using techniques such as scat surveys and sand plot monitoring.*
- *Undertake programs as required for the control of wild dogs, foxes and feral cats in conjunction with the South Coast Rural Lands Protection Board and neighbours.*
- *Monitor rabbit populations in the park adjacent to villages and carry out control as needed, in conjunction with Shoalhaven City Council and other land managers.*
- *Encourage effective maintenance of fencing on boundaries with rural properties by working closely with neighbours.*

5.3 FIRE MANAGEMENT

Fire is a natural feature of the environments of the park and is essential to the survival of some plant communities. Too frequent or regular fire, however, can cause loss of particular plant and animal species and communities. Fire can also damage some types of Aboriginal sites, historic sites and recreation facilities and affect visitors and neighbouring land and assets.

Management of fire in the park is an important and complex issue. Management must aim to achieve both long term conservation of natural communities and ongoing fire management obligations that contribute to the protection of life and property within and adjacent to the park.

A Fire Management Strategy has been prepared for the park.

Fire history

The pre-European fire history of the area is not known, but from research conducted elsewhere it appears likely that the frequency and intensity of fire since European settlement is different from traditional Aboriginal burning practices.

Management burning is likely to have been undertaken in the former state forest areas as part of silvicultural practices and for fuel reduction. NPWS has carried out fuel reduction burns close to the villages in the eastern part of the park.

Most wild fires within the park have occurred as a result of larger fires originating to the west and moving eastwards to the coast. Data for the area indicates a comparatively high proportion (12%) of fires in the park burned an area of more than 200 hectares. The incidence of small wildfires, however, has increased quite markedly since the early 1980s.

It is thought that about 60-70% of fires are caused by illegal means. The majority of illegal fires occur around the towns and villages, especially Sussex Inlet and Cudmirrah.

Approximately 90% of the park was burnt in January 2002 as part of a large wildfire originating to the west. While the intensity varied, the environmental impact of such an extensive fire was very significant. The park is recovering satisfactorily but further fires should be avoided if possible in the short term over most of the park.

Although a large majority of fires in the area have been small it appears the area is particularly prone to large fire development if fires can not be suppressed quickly during adverse weather conditions.

Ecological requirements

Fire frequency, intensity and season of occurrence are major factors influencing the distribution and composition of plant and animal communities. They also affect nutrient cycles, erosion patterns and hydrological regimes. Ecological research suggests the following requirements for biodiversity conservation:

- variability of fire intervals and area burnt is important to conserve floristic diversity and provide diversity of habitat for animals; fire at regular intervals will lead to loss of species;
- most plant species and communities require infrequent fires of moderate to high intensity to achieve regeneration but patchy burns are better for fauna as they retain shelter and food refuges;
- fires during the breeding season are the most damaging to fauna communities because of direct killing of young and increased exposure;
- the appropriate mix of fire frequency and intensity is influenced by a range of factors including land uses, topography and climate; for example drought may delay recovery following a fire.

A variable fire frequency of between 5 and 30 years is indicated as generally appropriate for the park's vegetation communities, with the majority of each community maintained at the longer intervals. Species decline is predicted if successive fires occur less than 5 years apart or there are no fires for more than 30 years.

Large areas of the park appear to have been burned more frequently than is indicated for the maintenance of biodiversity. This could have resulted in species loss and the promotion of more fire prone vegetation in parts of the landscape, and presents challenges for fire management planning.

Fire management aims to maintain diversity by restricting planned and, if possible, unplanned fires to only a part of the distribution of a vegetation type within the park at any one time. This approach will ultimately result in a mosaic of age classes for each of the vegetation types.

The rare and threatened plants occurring in the park may need special fire management consideration. Little is known about their needs but the rare plant species *Pultenaea villifera* appears to thrive only on infrequently burnt sites. It grows in forest or woodland environments west of Cudmirrah/Berrara that have no natural protection from fire and will need careful management. This is in contrast to the more protected sites where it is found around Conjola Lake.

Foreshore vegetation in most places is fire sensitive. *Casuarina glauca* for example is often killed in fires. Foreshore vegetation is important for ensuring the stability of foreshores and dunes. Fire on dunes can also lead to a flush of opportunistic weeds.

The rainforest in the valleys adjacent to Conjola Lake and in Myrtle Gully on the south western side of the park are fire sensitive. The tall eucalypt forests in the same areas and those in the eastern part of the park with a rainforest understorey are also fire sensitive but less so than the rainforest. Fire should be excluded from these areas where possible.

Consideration also needs to be given to identified areas of old growth forest in fire management planning and operations. Important factors will be preventing high intensity fires if possible and avoiding disturbance during fire suppression operations.

A number of permanent vegetation monitoring plots have been established across the park to monitor recovery from the January 2002 fire and to help inform fire management decisions.

Strategies and cooperative arrangements

A variety of fire management strategies have been developed, including slashed breaks, fuel reduction, fire trails, detection and cooperative arrangements. Some, or at times all, of these are applied where appropriate to best protect life, property and natural and cultural assets within and adjacent to the park. In particular, fuel reduction programs, fire breaks and fire trail maintenance will be designed and implemented close to boundary areas in cooperation with the Rural Fire Service, land management agencies and neighbours.

Under the *Rural Fires Act 1997* the NPWS is a fire authority that may undertake fire suppression within reserves and under cooperative arrangements with other fire authorities. As a land management agency, the NPWS is responsible for managing fire on the park including activities that contribute to the protection of life, property and community assets both within the park and on adjoining lands. An important part of NPWS fire management for the park is participation in local cooperative fire management arrangements as a member of the Shoalhaven District Bush Fire Management Committee. This committee coordinates fire management and fire control on a district wide basis.

Preparation of fire risk and fuel management plans is a requirement of the Rural Fires Act. The Shoalhaven Bush Fire Risk Management Plan has identified fire management requirements throughout the Shoalhaven. These have been incorporated into the Fire Management Strategy prepared for the park.

The Fire Management Strategy identifies a number of Asset Protection Zones (APZ) adjacent to urban areas, generally backed by Strategic Fire Management Zones (SFMZ). The APZs are maintained primarily by slashing while fuel reduction burning is carried out as needed within the SFMZs to assist with protection of urban areas and other assets.

Heritage Management Zones (HMZ) have been placed over the rest of the park. Within the HMZs minimum and maximum fire intervals have been set for flora and fauna conservation and strategies have been determined for protection of threatened species and cultural heritage. A particular consideration in Conjola is protection of threatened plants and Aboriginal sites from damage by use of heavy machinery for fire suppression. The Fire Management Strategy also provides for avoiding use of heavy machinery where possible in wetlands, areas of waterlogged soil, dunes and headlands.

Bushfire suppression operations may require the construction of temporary trails, refuge areas, helipads and firelines. These are routinely closed and rehabilitated as part of post fire operations.

Desired Outcomes

- Fire regimes are appropriate for long-term maintenance of the park's plant and animal communities.
- Bushfire mitigation measures contribute to the cooperative protection of persons and property on or immediately adjacent to the park.
- Aboriginal sites, historic places and culturally significant features are afforded protection from damage by bushfires and suppression activities.

Strategies

- *Implement the fire management strategy for the park. In particular, maintain identified slashed breaks and Asset Protection Zones.*
- *Carry out fuel management burning programs in accordance with the fire management strategy and as conditions permit.*
- *As far as possible exclude fire from foreshores, headlands, rainforest communities and other sensitive vegetation communities as recognised in the fire management strategy.*
- *Maintain identified fire trails to a satisfactory standard of access, safety and stability.*
- *Undertake ecological burning if necessary to produce habitat suitable for species with specific requirements. Prior to any such burning, undertake an assessment of vegetation characteristics and the status of key species in the area to determine the need for fire and its likely ecological effect.*
- *Undertake on-going review of the impact of prescribed burning and wildfires on vegetation composition and structure. Modify programs where appropriate to minimise adverse impacts.*
- *Encourage research into the ecological effects of fire in the park, particularly the fire response of Pultenaea villifera, Gallium australe and Cryptostylis hunteriana and the requirements of threatened fauna species.*
- *Set up additional fire monitoring plots to monitor vegetation changes in frequently burnt areas adjacent to villages. Periodically resurvey fire monitoring plots.*
- *Liaise as needed with Shoalhaven City Council and other relevant agencies to ensure that new developments do not impose additional fire mitigation measures on the park.*

- *Continue to actively participate in the Shoalhaven District Bush Fire Management Committee. Maintain close contact, coordination and cooperation with volunteer rural fire brigades with regard to fuel management and fire suppression.*
- *Carry out fuel management in cooperation with neighbours for mutual protection in accordance with the Shoalhaven Risk Management Plan.*
- *Rehabilitate areas disturbed by fire suppression operations as soon as practicable after the fire.*

6. VISITOR OPPORTUNITIES AND EDUCATION

6.1 PROVISION OF INFORMATION

Park facilities and services provide opportunities to enjoy, appreciate and understand the value of our natural and cultural heritage. Information provision at visitor destinations and about the park in general assists the protection of natural and cultural heritage, encourages support for conservation and increases the enjoyment and satisfaction of visitors. Encouraging understanding of the heritage value of parks can also help to combat inappropriate activities.

The park has a number of natural and cultural features of interest to visitors; primarily the estuaries, rocky headlands, beaches, varied vegetation communities, waterfalls and waterholes along Berrara Creek and its tributaries, the Fisherman's Rock Aboriginal axe grinding grooves and the *Walter Hood* Monument. These features will be managed and where appropriate interpreted to visitors in a manner that protects their special values and encourages appropriate use. The park has a network of unsealed roads and a range of day use areas and bushwalks that provide opportunities to enjoy and appreciate the area's natural and cultural values. Interpretive signs have been provided at Monument Beach and Fisherman's Rock.

Community and commercial operations such as guided tours that promote public understanding and appreciation of natural and cultural values are appropriate in the area. Because of the potential for large groups to have greater environmental impact, limits will be set on group sizes and frequency of use where necessary. It is very important for quality interpretive information and promotion of minimal impact use to be included in group programs. Any applications for tourism operations will be assessed in terms of their compatibility with the management strategies for the park, environmental impact, effects on other visitors, the interpretation programs offered and other relevant factors.

It is most appropriate for local Aboriginal people to interpret Aboriginal sites and culture. Proposals for tours or other educational activities by Aboriginal people will be encouraged.

Desired Outcomes

- There is widespread community understanding and appreciation of the park's natural and cultural values and of minimal impact use principles. In particular, visitor awareness and appreciation of the area's Aboriginal cultural heritage and the custodianship of local Aboriginal families is enhanced.
- Visitors are aware of the park's recreation opportunities and can find their way to appropriate facilities.
- The park is a useful educational resource for local schools and community organisations.

Strategies

- *Encourage understanding and appreciation of the natural and cultural values of the park and adjacent areas through such means as interpretive signs, brochures, media articles and Discovery programs.*

- *Maintain interpretive shelters at Monument Beach and Fishermans Rock and update information as needed.*
- *Emphasise the following themes in interpretation programs:*
 - *the area's high biodiversity;*
 - *importance of habitats for threatened species; and*
 - *cultural heritage (particularly the Walter Hood shipwreck and Aboriginal values).*
- *Design promotional material and interpretive programs to promote care for the environment and minimal impact use.*
- *Seek input from Aboriginal community representatives when preparing interpretive information about Aboriginal cultural heritage.*
- *Undertake educational campaigns and erect signs as needed to combat inappropriate activities such as rubbish and vehicle dumping, firewood collection, off road trail bike riding, and dogs in the park.*
- *Permit community activities and commercial tour operations that promote understanding and appreciation of natural and cultural values subject to the following:*
 - *use will be confined to existing tracks and facilities that have been designed to cope with the level and type of use proposed;*
 - *use of minimal impact bushwalking and safe practices will be required;*
 - *provision of accurate and adequate interpretive information will be encouraged; and*
 - *limits will be placed on group sizes, areas of use and frequency of use where necessary to minimise environmental impacts and conflicts with other users.*

6.2 RECREATION AND TOURISM OPPORTUNITIES

It is estimated that there are approximately 30,000 visitors per year to Conjola National Park. The peak visitation is in summer and many visitors come from Sydney, Canberra and Wollongong, as well as the local area.

Recreational use is concentrated along the coastline, estuaries and lake foreshores and includes picnicking, walking, fishing, boating and beach activities. A range of day use facilities has been provided in appropriate locations and the unsealed roads through the park provide opportunities for bicycle riding, horse riding, scenic driving and vehicle access to points of interest.

As stated in section 2.1, the Conjola area is a popular holiday destination. Council lands and private operators offer a range of accommodation, beach access and picnicking facilities in towns and villages adjacent to the park. The low key facilities and natural settings of the park complement these more developed opportunities.

Local population and tourism levels in the area are increasing and will place increasing pressure on public facilities. Facilities in the park are not heavily used at present and can cope with an increase in use. It is essential, however for visitor use of the park to be managed so as to be ecologically sustainable in the long term. This requires placing limits on the number of access points, design of facilities to ensure that numbers of visitors and the style of use are appropriate for the site, and promotion of minimal impact use. The provisions below are designed to maintain the low key, scenic, natural settings that are the special feature of the park and to

provide for future use in a manner that protects ecological integrity and cultural heritage values.

Public vehicle access and scenic driving

Public vehicle access will be maintained to all designated visitor areas and along a network of public access roads through the park as shown on the Map (centre pages). These provide opportunities for driving through attractive forest and woodland environments. Most of the roads are of 4WD standard but Goonawarra Road, Blackbutt Road, Medlyn Ave (southern section), Fishermans Rock Road and Cedar Road can generally be used by 2WD vehicles. These are mapped as Main Public Access Roads. Other vehicle trails in the park will be closed to public use (mapped as Management Trails) or closed and rehabilitated (see the map), unless needed for essential access to private property (see section 7). Additional trails may be closed, in consultation with user groups, if they are found to have low use levels and are considered unnecessary for management or other purposes (see section 9).

Because of the nature of the soils in the park it is necessary to confine public vehicle use as far as possible to dry conditions only.

Several of the roads within the boundaries of the park have not been reserved as national park and remain the responsibility of other authorities or landowners. These roads are shown on the Map (centre pages) as non-park roads. They include The Springs Road, Pacificana Drive, northern section of Medlyn Ave, Bendalong Road, Old Berrara Road north, Mondayong Road north, the Haven access road and the western part of Nerringillah Road.

Trails along a power line through the eastern part of the park are used by the public to gain vehicle access to the southern side of Berrara Creek and to both sides of Nerrindillah Lagoon for fishing, canoeing and swimming. This use has damaged riparian vegetation and makes it difficult to control unauthorised public vehicle access along intersecting walking tracks. Barriers will be erected to keep vehicles back from the lagoon/creek banks and the impacts of continuing use of these trails will be monitored.

Vehicle access is available from the Princes Highway to Tullarwalla Lagoon through the southern section of Corramy State Conservation Area. If the land is added to the park, access will continue to be permitted to the lagoon but will be kept back from the immediate foreshore to protect foreshore vegetation, habitat and scenic values. Visitors are currently using a track along a power line from Sussex Inlet Road to reach the lagoon but this use is not appropriate as the track crosses private property.

As indicated in section 5.1, some off-road trail bike use occurs in the park. This damages walking tracks, opens revegetating trails and creates additional trails, with consequent impacts such as erosion, wildlife disturbance, weed introduction and increased access for feral predators.

Picnicking and beach access

The main picnic area within the park is located at Monument Beach. The Monument Beach picnic area can be reached by road and there are walking tracks to the area from North Bendalong. It can also be reached by walking along the beach from Berrara or Bendalong. The picnic area is low key with a picnic shelter, toilet and short walks to the Walter Hood Monument, the beach and Nerrindillah Lagoon. The picnic shelter blocks views of the coastline, detracts from the area's natural scenic character and restricts the number of groups using the picnic area to two. Options will be investigated for reducing the visual impact of the shelter and diversifying picnicking opportunities by provision of separate tables.

Fishermans Rock on Berrara Creek is a popular fishing spot and is visited regularly by local residents while The Haven, adjacent to the entrance of Sussex Inlet, is a popular swimming area as it is sheltered and has a small sandy beach. Car parks and walking tracks have been provided at both locations and there are picnic tables at The Haven.

There are two vehicle access points to Swan Lake within the park, at Medlyn Avenue on the northern shore (close to an area known locally as The Palms) and an area on the western side of the lake. No vehicle access is provided to the foreshores in order to protect vegetation, control bank erosion and maintain amenity. Car parking is set back from the western lake foreshore but is quite close to the shore at Medlyn Avenue and it would be desirable to relocate it. Both areas will be kept as basic areas for lake access, with no facilities other than a car park.

A parking area (known locally as the Helipad or North End car park) and associated beach access track are located at the northern end of Cudmirrah Beach at Farnham Headland. These will be retained upon addition of the land to the park. A further 500m along the road is an informal parking area used by fishers to access the rock platform. The car park and associated walking track need to be formalised.

Camping and wood fires

The proximity of the park to tourist centres such as Sussex Inlet, Berrara, Cudmirrah, Bendalong, Manyana and Lake Conjola provides visitors with a range of accommodation options. There are no existing camping areas in the park and there is a high demand for day use opportunities. Past informal camping on the shores of Conjola Lake and Swan Lake and at other locations resulted in significant vegetation damage. For these reasons only day use facilities will be provided in the park and camping will not be permitted.

In addition, wood fires will not be permitted in the park in order to avoid environmental and property damage by wood gathering and bushfire ignition.

Bushwalking

Two locally known features of interest are some waterholes on Berrara Creek near Blackbutt Road and small waterfalls on a tributary of Berrara Creek. A car park has been provided off Blackbutt Road for walking access to the waterholes. Access to the waterfalls is by a short walk from a parking area off Grasstree Road.

An old track along Berrara Creek has been utilised to provide a walking track from Berrara boat ramp, via Fishermans Rock, to the waterfalls. Other old tracks south of the Creek have been used to extend this walk to Monument Beach, thus providing a loop walk by returning to Berrara via the beach and headland. A shorter loop walk north of the Monument Beach picnic area has also been provided as part of this track system.

As stated previously there is a short walk from the Monument Beach picnic area to the *Walter Hood* monument and Nerrindillah Lagoon and this links with tracks outside the park from north Bendalong. Liaison is needed with Shoalhaven City Council regarding rationalisation and improvement of the tracks leading to the southern side of the lagoon and prevention of vehicle access onto the beach.

A foot track leads from The Haven area across Farnham Headland and provides views from a high point in the centre of the headland. The main track will be retained and unnecessary side tracks closed and rehabilitated following addition of the land to the park.

As part of safety works associated with the dunes on Sussex Inlet (see section 5.1) a fenced walking track with two small lookout platforms has been provided from The Haven to the Alamein Caravan Park, over the top of the dunes. Improvements to this track will be progressively carried out. For environmental and safety reasons sandsliding and access across the exposed dune face will not be permitted.

Cycling

The network of public access roads and management trails provides extensive opportunities for cycling in the park. Organised mountain bike riding competitions occur from time to time. Large groups of cyclists could cause damage to roads and trails during wet conditions and use at these times should be avoided. Large groups could also conflict with other users of the trails.

Horse riding

Horse riding occurs at low levels on public access roads, management trails and power line easements. Current use levels are acceptable but increased use could be of concern because of erosion, nutrient inputs, safety issues and conflicts with other visitors. Monitoring of use and impacts is needed. As for vehicles and bicycles, horse riding during wet conditions can cause road and trail damage.

Swimming with horses occurs in the north eastern corner of Swan Lake, with access across the park at Medlyn Avenue. This has resulted in impacts on the park and other beach users and needs to be controlled.

Conjola Lake foreshores

Access to the Conjola Lake foreshores within the park is primarily by boat as there is no public vehicle access, and in many cases the foreshores are quite steep. The main visitor use of the foreshores is day use by waterskiers, fishers and boaters. Berringer Lake is a shallower and more sheltered lake than Conjola Lake. It provides opportunities for smaller boats and canoeing.

Some degradation of the lake foreshores has resulted from heavy use in popular areas, particular past informal camping. Clearings, fire places and rough foot tracks were formed along parts of the foreshore but regeneration has been occurring in a number of areas since camping was prohibited following reservation of the park.

Since the main attraction of the lake foreshores is their naturalness and because of the lack of vehicle access, no visitor facilities will be constructed around Conjola Lake apart from minor facilities such as signposting which may be necessary for environmental protection reasons. Fencing and regeneration areas will be established where needed.

Some boat launching occurs across the park into Conjola Lake and Berringer Lake from adjacent private property and a caravan park. This use is at present causing only limited disturbance.

Other boat use

The Medlyn Avenue car park, and to a lesser extent the day use area on the western shore of Swan Lake, are used for launching small boats and canoes that can be carried to the water. As stated in section 4.3, a boating plan is being developed for Swan Lake that applies speed limits over parts of the lake to contribute to protection of significant waterbird habitat.

Boating and canoeing is also undertaken on the lower reaches of Berrara and Nerrindillah Creeks. In conjunction with NSW Maritime a four knot speed limit is being implemented on Berrara Creek estuary to provide for safe boat use and reduce bank erosion.

Desired Outcomes

- A variety of low key visitor opportunities are available that encourage appreciation of the natural environment.
- Facilities are designed and managed to provide a satisfying visitor experience and minimise impacts.
- Visitor use is appropriate to the purposes of national parks and is ecologically sustainable.

Strategies

- *Maintain day use facilities as follows:*
 - *Monument Beach – car park, picnic facilities, toilet, information shelter, walking tracks;*
 - *Fishermans Rock – car park, information shelter, walking track along Berrara Creek;*
 - *The Haven – pathway to beach, walking tracks across Farnham Headland and to Alamein Caravan Park, picnic facilities if warranted by use levels;*
 - *Medlyn Avenue – car park relocated further back from the lake shore;*
 - *Western shore of Swan Lake – car park set back from shore;*
 - *Berrara Creek waterholes – car park off Blackbutt Road, walking track to creek;*
 - *Grasstree Road – parking area and walking track to waterfalls.*
- *Following the addition of Farnham Headland to the park, maintain the existing road. Formalise the existing walking track over the headland but close and rehabilitate unnecessary side tracks. Maintain the ‘Helipad’ parking area and beach access at the northern end of Cudmirrah Beach. Formalise the small parking area to the east for access to the rock platform, providing approximately 6 car spaces. Delineate the rock platform access track and control associated erosion. Fence viewing points if required.*
- *Investigate options for reducing the visual impact of the Monument Beach picnic shelter. If this is not practicable remove the shelter and replace with new facilities when it has reached the stage of needing major repair. Install additional picnic tables to provide an alternative to the shelter.*
- *Relocate the Medlyn Avenue car park to set it further back from the lake shore.*
- *Prohibit wood fires and don’t provide barbecues or rubbish bins. Permit visitors to use their own portable gas barbecues (subject to normal fire restrictions).*
- *Construct additional steps on the walking track between The Haven and the Alamein caravan park.*

- *Carry out track improvement and erosion control works where necessary on the loop walking track along Berrara Creek and the links to Monument Beach.*
- *Prohibit camping throughout the park.*
- *Retain the lake foreshores largely in a natural state with minimal facility development. Monitor the impacts of visitor use of the foreshores and take action such as fencing and signage as necessary to combat adverse impacts. Remove unauthorised fireplaces if constructed.*
- *Liaise with Shoalhaven City Council regarding illegal vehicle access on Monument Beach and rationalisation and upgrading of walking tracks to Nerrindillah Lagoon from North Bendalong.*
- *Permit public vehicle use in the park (including registered tail bikes) only on public access roads shown on the Map (centre pages) and on the power line trails to Berrara and Nerrindillah Lagoons (see below). Maintain Medlyn Ave, Goonawarra, Blackbutt, Fishermans Rock and Cedar Roads as the main public access roads, with a higher standard of surface than the other roads in the park.*
- *Roads within the park will be available for public use in dry conditions only. Erect signs to indicate access is permitted in dry conditions only.*
- *Liaise with Council and the Department of Lands about maintenance of roads under their control in and near the park.*
- *Continue to allow public vehicle access to Berrara and Nerrindillah Lagoons along the power line trails subject to such use not resulting in:*
 - *unacceptable damage to the lagoon shores or to vegetation under the power lines;*
 - *vehicle use on the intersecting walking tracks;*
 - *unacceptable damage to steep or poorly drained sections of the trails.*
- *Erect barriers near the ends of the power line trails to Berrara and Nerrindillah lagoons to keep vehicles back from the banks. Keep public use of these trails under review and close trails if unacceptable impacts occur.*
- *Continue to allow public vehicle access to Tullarwalla Lagoon from the Princes Highway if the southern section of Corramy State Conservation Area is added to the park. Install a barrier to keep vehicles off the immediate foreshore. Close the power line track from the Sussex Inlet Road to public use.*
- *Continue to permit small boat launching across the park into Conjola Lake, Berringer Lake and Swan Lake. Monitor this use to ensure that impacts are acceptable and take action to reduce impacts if needed. Do not upgrade the launching areas by providing formal boat ramps.*
- *Permit horse riding on public access roads, management trails and power line trails during dry conditions only. Horse riding will not be permitted on beaches, foreshores and walking tracks, except for access to Swan Lake as set out below.*
- *Permit access across the park to Swan Lake for swimming with horses only at a point immediately west of the Medlyn Avenue car park. Set an initial limit of 8 horses using the area. Monitor impacts on the park, other visitors and waterbirds and alter this number if appropriate. Close the access if alternative access becomes available outside the park or if unacceptable impacts occur.*

- *Permit riding of bicycles on public access roads, management trails and power line trails during dry conditions only. Set an initial maximum group size of 20 bicycles. Bicycles will not be allowed on walking tracks. Trails and slashed breaks may be temporarily or permanently closed to cycling if use is found to be creating unacceptable damage.*
- *Promote minimal impact horse riding and cycling practices, including no riding or cycling during or immediately following wet weather. Erect signs on management trails to indicate horse and bicycle access is permitted in dry conditions only. If necessary erect signs showing use of walking tracks by horses and bicycles is not permitted.*
- *Monitor the impacts of road and trail use by vehicles, bicycles and horses. Discuss impacts with user groups and take action to reduce impacts as needed, including upgrading of infrastructure, groups size limits, signage and temporary or permanent road/trail closure.*

7. OTHER USES

There are a number of powerlines, water pipelines, sewer lines, phone and fibre optic cables in the park, with associated access trails.

A telecommunications tower is located near the western edge of the park at Cudmirrah Trigonometric Station. The communications tower provides facilities for several organisations. It is fenced and will be protected by a cleared fire break.

Access to a communications tower and water tower south of Fishermans Paradise and to a pumping station at Fishermans Rock is via park management trails shown on the Map (centre pages).

The NPE(SRR) Act provides for exclusion from the park of 6 hectares at Bendalong for construction of the Northern Sewerage Treatment Plant and pipelines.

As explained in section 2.1, several roads to private property through the 2001 park additions are currently vested in the Minister for the Environment and must ultimately be added to or excluded from the park. The NPE(SRR) Act states that the Minister cannot close any roads that provide the only means of practical access to a private land holding or to state forest land. The NPWS will consult with neighbours to determine the existing use of Part 11 roads and enter into appropriate legal agreements for continued access and future maintenance if required. NPWS is not under any obligation to maintain Part 11 roads but may enter into maintenance agreements with the users.

A road around the southern side of Farnham Headland (across the land to be added to the park) provides vehicle access to a small Crown lease cabin area, the Inlet Holiday Cottages. This access will be retained and an access and maintenance agreement negotiated.

A number of commercial beekeeping sites are located within the park, close to roads. Apiary activities require a permit issued under the National Parks and Wildlife Act and must adhere to NPWS policy.

A small number of encroachments intrude into the park from adjoining residences. These are progressively being removed. There may be a need to fence certain boundaries to curb illegal activities such as rubbish/vehicle dumping, firewood collection, illegal vehicle access and encroachments.

Desired Outcomes

- Non-park uses have minimal impact on natural and cultural heritage.
- Access for authorised uses and to private property where appropriate, is facilitated.

Strategies

- *Arrange licences for utility easements and associated trails, and for use of park management trails to access off-park utilities. Monitor the implementation of maintenance agreements to maintain adequate vegetation cover and minimise weed invasion and erosion potential. Indicate NPWS preference for all powerlines within the park to be placed underground in future or, if this is not feasible, encourage other options such as upgrading of insulation to allow*

narrowing of easement clearings. Keep the need for utilities to cross the park under review and encourage their closure or relocation off-park when opportunities arise.

- *Review the terms of occupation of the Cudmirrah Trig communication tower and ensure that any adverse impacts from its operation and protection are minimised.*
- *Enter into access and maintenance arrangements where appropriate for use of roads in the 2001 additions to access private property.*
- *Enter into an access and maintenance agreement for vehicle access to the Farnham Headland cabin leasehold area once the headland is added to the park.*
- *Permit the existing commercial beekeeping operations in accordance with NPWS policy and licence conditions. Review set down sites to ensure that their location is compatible with management objectives.*
- *Work with neighbours to remove private structures that encroach on the park and to stop activities such as storage of materials, garden waste dumping and planting of exotics. Take action under the NPW Act to remove the structures and materials if necessary.*
- *Survey and mark park boundaries where required. Contribute to fencing of boundaries if there is a recognised management requirement.*

8. MONITORING AND RESEARCH

The purpose of scientific study in the park is to improve understanding of its natural and cultural heritage values, the processes that affect them and management needs for particular species and communities. It also indicates the success of management regimes and where changes may be needed.

Under the Southern Regional Forest Agreement all forest managers including Forests NSW, Dept of Lands and NPWS must demonstrate ecologically sustainable forest management (ESFM). ESFM aims to maintain or increase the full suite of forest values for present and future generations across the NSW native forest estate, including:

- ecosystem biodiversity, health, vitality, productive capacity and functional processes;
- soil and water productive capacity and functional processes;
- long term social and economic benefit; and
- natural and cultural heritage values.

ESFM will be applied to all ecosystem types and implemented primarily through monitoring to provide feedback on management programs and directions for ongoing adaptive management. Criteria and indicators of ecologically sustainable forest management have been identified and monitoring programs are being introduced to demonstrate the impact of management actions on ecological values and processes. Remedial management actions will be undertaken as required.

Research and monitoring will be undertaken as part of Regional ESFM programs and also for specific purposes identified in this plan. NPWS monitoring and research efforts must be directed towards the areas of greatest need and will concentrate on:

- threatened species for which the park provides significant habitat;
- introduced species monitoring;
- fire management, particularly fire responses of threatened and rare species; and
- Aboriginal/historic site survey and assessment.

Additional research programs will be considered where they complement ESFM criteria and indicators. The results of research and monitoring will be used to guide management programs.

Research by other organisations and students plus observations by individuals and groups such as bird watchers may also provide valuable information for management. A prospectus will be prepared to encourage involvement of other organisations in priority research areas.

The NPWS has begun a program of assessing and reporting on the condition and management adequacy of reserves through the State of Parks Program. This utilises a number of indicators related to the condition of natural and cultural heritage and visitor facilities, information availability and the management of threats such as fire and pests. Assessment of Conjola National Park indicates that overall it is in reasonably good condition.

Desired Outcomes

- Research is undertaken that enhances the information base and assists management of the park.
- Research causes minimal environmental damage.

- Monitoring programs are in place to detect any changes in the status of park values and are used to guide management decisions.

Strategies

- *Use the principles of Ecologically Sustainable Forest Management to guide management operations. Develop ESFM monitoring programs in the park where warranted and use the results to guide management programs.*
- *Undertake research to provide information about the park's natural and cultural heritage and human use in order to assist management. Give priority to research needs identified within this plan of management.*
- *Permit appropriate research by other organisations and individuals and promote research that is directly useful for management purposes, particularly on the topics listed above.*
- *Require any research structures and long term markers to be placed in locations that will minimise their visual impact and require their removal upon completion of the research.*
- *Prepare a prospectus to promote and guide research by other organisations into programs useful for management purposes, in particular, targeted flora and fauna surveys and site monitoring for threatened species, Aboriginal sites, historic features, the estuaries and visitor impacts.*
- *Encourage bird watchers and similar groups to pass on information gathered in the park.*

9. NPWS MANAGEMENT FACILITIES AND OPERATIONS

The only NPWS management facilities in the park are vehicle trails; both those open to public vehicle use (public access roads) and those maintained for management purposes such as fire suppression and pest control (management trails). Roads and trails are shown on the Map (centre pages).

The roads and trails in the park are generally poorly located and can be impassable in wet conditions. For this reason, section 6 provides for signposting advising that roads are available for public use in dry conditions only, but use of the roads and trails for management purposes should also be avoided. An extensive program of road upgrading was carried out on key roads following reservation of the park but further upgrading and regular maintenance will be needed.

Most of the vehicle trails reserved within the park are a result of former forestry activities. Several trails are not needed for public access to points of interest or for management purposes and will be closed. Roads and trails have environmental impacts such as habitat fragmentation, erosion and sedimentation, and reduction in vehicular access through conservation reserves is desirable to reduce these impacts. The trails to be closed have not been shown on the plan Map (centre pages) but the main ones appear on topographic maps. The trails to be closed include all or part of the former forestry roads named Peppermint, Waratah, Geebung, Armchair, Scribbly, Grey Gum, Banksia, Sheoak, Fitches Creek, Northern Boundary (west of Wents Road), Bloodwood and Boronia and a number of unnamed minor trails including regenerating logging trails.

Many organisations and individuals have an interest in management of the park, particularly neighbours with regard to such issues as fire management, weed and pest control, fencing and public access. On-going communication with a range of individuals, community groups and agency representatives will be needed.

Desired Outcomes

- Management facilities adequately serve management needs and have acceptable environmental impact.

Strategies

- *Maintain management trails to a serviceable standard of stability and access.*
- *Avoid use of roads and trails for management purposes in wet conditions unless essential for emergency purposes such as fire suppression.*
- *Signpost management trails and gate as required.*
- *Close trails not needed for public access or management purposes or for authorised access to private property or easements. Rehabilitate where needed to prevent erosion and encourage revegetation. Close additional roads, in consultation with user groups, if they are found to have low use levels and are not needed for management or other legitimate purposes.*
- *Maintain close liaison with neighbours of the park to deal with matters of mutual concern, such as boundary issues and pest and fire management.*

10. PLAN IMPLEMENTATION

This plan of management establishes a scheme of operations for Conjola National Park. It will remain in force until amended or replaced in accordance with section 73B of the NPW Act. The plan is part of a system of management that includes the National Parks and Wildlife Act, management policies, established conservation and recreation philosophies, and strategic planning at corporate, directorate and regional levels. The latter may include development of related plans such as regional recreation plans, species recovery plans, fire management plans and conservation plans.

Relative priorities for activities identified in this plan are set out in the table below. These priorities are subject to the availability of necessary staff and funds, and to any special requirements of the Director-General or Minister. High priority activities are those considered imperative to achievement of the objectives and desired outcomes. They must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources. Medium priority activities are those that are necessary to achieve the objectives and desired outcomes but are not urgent. Low priority activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.

The environmental impact of proposed activities will be assessed at all stages in accordance with established environmental assessment procedures. If the impacts of any activity proposed in this plan are found to be unacceptable, the activity will not be undertaken or be modified so as to comply with the environmental assessment outcomes.

Strategies

- *Undertake an annual review of progress in implementing this plan of management.*
- *Undertake an assessment after 5 years of the effectiveness of managing the park in accordance with this plan and of the degree of success in achieving the plan's objectives and desired outcomes. Base the evaluation on the monitoring programs set out in this plan and any others that may be developed.*

Implementation Table

Priority	Activity	Plan reference
High	Undertake targeted survey for <i>Cryptostylis hunteriana</i> , <i>Galium australe</i> , <i>Wilsonia backhousia</i> , <i>W. rotundifolia</i> , <i>Syzygium paniculatum</i> , <i>Pultenaea villifera</i> and <i>Grevillea macleayana</i> . Establish a monitoring program for any sites at risk in order to provide information about population changes, threats and management needs.	4.2
	Implement measures included in recovery plans for threatened species if prepared.	4.2, 4.3
	Undertake specific management programs for threatened species where needed, particularly the hooded plover, glossy black-cockatoo, powerful owl and pied oystercatcher. This may include erecting barriers or signs to keep visitors away from nesting sites.	4.3

	Undertake targeted surveys for the spotted-tailed quoll, green and golden bell frog, southern brown bandicoot and long-nosed potoroo.	4.3
	Monitor the Fishermans Rock Aboriginal site complex to check for erosion and other impacts. Investigate options for keeping walkers off axe grinding grooves.	4.4
	Protect the Walter Hood monument through maintenance of the fence and control of weeds as necessary.	4.5
	Treat known occurrences of bitou bush, boneseed, coral tree, cassia, mother of millions, lantana, pampas grass, asparagus fern, African lovegrass, blackberry, pampas grass and Cape ivy as a priority. Monitor occurrences, particularly in the endangered ecological communities.	5.2
	Monitor the occurrence of sea spurge on beaches in the park and take action to control it, with priority to infestations likely to impact on threatened shorebird breeding sites and to new infestations.	5.2
	Control introduced animals where they have a significant impact on native species or neighbouring stock. Monitor effectiveness of control programs.	5.2
	Implement the fire management strategy for the park. In particular, maintain identified slashed breaks and Asset Protection Zones.	5.3
	Set up additional fire monitoring plots to monitor vegetation changes in frequently burnt areas adjacent to villages. Periodically resurvey fire monitoring plots.	5.3
	Carry out fuel management burning programs in accordance with the fire management strategy and as conditions permit.	5.3
	Undertake ecological burning if necessary to produce habitat suitable for species with specific requirements. Prior to any such burning an assessment of vegetation characteristics and the status of key species in the area will be undertaken to determine the need for fire and its likely ecological effect.	5.3
	Continue to participate in the Shoalhaven District Bush Fire Management Committee.	5.3
	Maintain public access roads and management trails.	5.3, 6.2, 9
	Close roads not needed for public access or park management and rehabilitate where necessary.	9
Medium	Undertake further survey where needed to check vegetation community mapping and survey the Farnham Head addition.	4.2
	Periodically resurvey vegetation monitoring plots.	4.2
	Carry out survey for threatened fauna species as needed to monitor their status and response to management programs.	4.3
	Establish fauna monitoring plots in the western part of the park and periodically survey all plots.	4.3
	Prepare a conservation analysis for the Walter Hood monument and undertake conservation works as required.	4.5
	Record the remaining features at the former ARU camp site and assess their significance and risk to public safety. Depending on the result of the assessment, take any necessary measures, including removal or fencing, to counter any safety risk.	4.5
	Record and assess the former charcoal burning site and determine whether protection or management works are needed.	4.5

	Close former quarries, tips and other degraded areas to vehicle access. Rehabilitate where necessary by ripping to allow natural regeneration, brush matting or planting with local species as required.	5.1
	Monitor the dunes along the Sussex Inlet channel that are in the park and undertake any additional measures where needed to address safety issues.	5.1
	Continue to participate in Council management committees for the estuaries.	5.1
	Assess significance and potential to spread of exotic plantings at the former ARU camp site on Farnham Headland, remove exotic plants not considered significant.	5.2
	Undertake weed survey in the western part of the park and at Farnham Headland.	5.2
	Undertake programs as required for the control of wild dogs, foxes and feral cats in conjunction with the South Coast RLPB and neighbours.	5.2
	Maintain interpretive shelters at Monument Beach and Fishermans Rock and update information as needed.	6.1
	Maintain day use facilities as listed in section 6.2.	6.2
	Relocate the Medlyn Avenue car park to set it further back from the lake shore.	6.2
	Carry out track improvement and erosion control works where necessary on the loop walking track along Berrara Creek and the links to Monument Beach.	6.2
	Monitor the impacts of visitor use of the foreshores of Conjola Lake and Swan Lake and take action such as fencing and signage as necessary to combat adverse impacts.	6.2
	Erect barriers near the ends of the power line trails to Berrara and Nerrindillah Lagoons to keep vehicles back from the banks.	6.2
	Liaise with Council regarding illegal vehicle access on Monument Beach and rationalisation and upgrading of walking tracks to Nerrindillah Lagoon from North Bendalong.	6.2
	Erect signs to indicate that road use is permitted in dry conditions only.	6.2
	Review beekeeping set down sites to ensure that their location is compatible with management objectives.	7
	Signpost management trails and gate as required.	9
Low	Encourage retention of areas of native vegetation close to the park, encourage Voluntary Conservation Agreements on significant naturally vegetated private land.	4.2
	Record other known historic features.	4.5
	Undertake monitoring as needed to check for erosion of the Conjola Lake foreshores.	5.1
	Liaise with Shoalhaven City Council and neighbours regarding the impacts of stormwater drains that discharge into the park. Seek their relocation outside the park or arrange amelioration/maintenance agreements where necessary.	5.1
	Support and encourage community volunteer bush regeneration programs. Encourage the formation of additional revegetation and weed control groups in strategic areas.	5.2

	Undertake on-going wilding control in the two former pine trial plantations.	5.2
	Monitor rabbit population adjacent to villages and carry out control as needed, in conjunction with Council and other land managers.	5.2
	Undertake on-going review of the impact of prescribed burning on vegetation composition and structure. Modify programs where appropriate to minimise adverse impacts.	5.3
	Investigate options for reducing the visual impact of the Monument Beach picnic shelter. If this is not practicable remove the shelter and replace with new facilities.	6.2
	Following addition of Farnham Headland to the park, maintain the existing road. Formalise the existing walking track over the headland and close and rehabilitate unnecessary side tracks. Maintain the Helipad parking area at the northern end of Cudmirrah Beach. Formalise the small parking area to the east for access to the rock platform, providing approximately 6 car spaces. Delineate the rock platform access track and control associated erosion. Fence viewing points if required.	6.2
	Construct additional steps on the walking track between The Haven and the Alamein caravan park.	6.2
	Monitor horse riding use and the impacts of horse access to Swan Lake at Medlyn Avenue.	6.2
	Erect signs on management trails to indicate horse and bicycle access is permitted in dry conditions only.	6.2
	Monitor the impacts of small boat launching across the park into the lakes.	6.2
	Work with neighbours to remove private structures that encroach on the park.	7
	Enter into access and licence arrangements for utilities, keep the need for easement facilities under review.	7
	Enter into access and maintenance arrangements where appropriate for use of roads in the 2001 additions to access private property.	7
	Survey and mark park boundaries where required.	7
	Review the terms of occupation of the Cudmirrah Trig communication tower and ensure that any adverse impacts from its operation and protection are minimised.	7
	Enter into an access agreement with the Farnham Head leaseholder if the headland is added to the park.	7
	Prepare a prospectus to guide and promote research by other organisations, with priority to the topics listed in section 8.	8

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Conjola National Park

