

**SOUTH EAST FOREST NATIONAL PARK AND  
EGAN PEAKS NATURE RESERVE**

**PLAN OF MANAGEMENT**

**NSW National Parks and Wildlife Service**

**Part of the Department of Environment and Conservation (NSW)**

**August 2006**

**This plan of management was adopted by the Minister for the Environment on 3<sup>rd</sup> August 2006.**

### **Acknowledgments**

This plan of management is based on a draft plan prepared by staff of the Far South Coast Region and Conservation Management Unit with the assistance of specialists in Southern Directorate and community representatives from the former Eden and Narooma District Advisory Committees on the steering committee.

The plan draws heavily on a number of documents prepared for the Eden Comprehensive Regional Assessment (CRA) process which lead to the Eden Regional Forest Agreement.

Extensive consultation was undertaken with community organisations and individuals during development of the plan. The NPWS gratefully acknowledges the information and ideas contributed by these people.

Cover photograph: Carters Creek by M. van Ewijk. © DEC and M. van Ewijk.

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## FOREWORD

South East Forest National Park and Egan Peaks Nature Reserve are adjoining reserves that together cover 117,644ha of rugged escarpment country west of Bega and Eden in south-eastern NSW. The two areas are part of a system of conservation reserves along the great eastern escarpment and are linked to other reserves that protect the coastline and coastal hinterland.

The park and reserve are significant for their diverse native forests, large number of threatened or rare plant species and restricted plant communities including significant areas of old growth forest, high habitat value for a diverse range of native animal species and populations of a large number of threatened fauna including the very rare long-footed potoroo, evidence of substantial and extensive Aboriginal occupation and features remaining from European use, high water catchment values, high scenic values, wilderness and remote areas which allow natural processes to continue undisturbed; and a range of education, tourism and recreation opportunities.

This plan of management sets out strategies for protection of the significant natural and cultural values of the South East Forest National Park and Egan Peaks Nature Reserve, while providing for sustainable public use. Because much of the national park has been subject to logging in recent years, there is a strong emphasis on promoting regeneration of degraded vegetation ecosystems.

The *National Parks and Wildlife Act, 1974* requires a plan of management to be prepared for each national park and nature reserve. A plan of management is a legal document that outlines how a park will be managed in the years ahead.

A draft plan of management for South East Forest National Park and Egan Peaks Nature Reserve was placed on public exhibition from 14 January until 22 April 2005. The exhibition of the draft plan attracted 74 submissions that raised 18 issues. All submissions received were carefully considered before adopting this plan.

This plan of management establishes the scheme of operations for South East Forest National Park and Egan Peaks Nature Reserve. In accordance with Section 73B of the *National Parks and Wildlife Act 1974*, this plan of management is hereby adopted.

**Bob Debus**  
**Minister for the Environment**

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## **1. MANAGEMENT CONTEXT**

### **1.1 LEGISLATIVE AND POLICY FRAMEWORK**

The management of national parks and nature reserves in NSW is in the context of a legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act), the *Threatened Species Conservation Act 1995* (TSC Act), and the statewide policies of the National Parks and Wildlife Service (NPWS).

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.

A plan of management is a statutory document under the NPW Act. Once a plan has been adopted by the Minister, no operations may be undertaken within the national park or nature reserve except in accordance with the plan.

South East Forest National Park and Egan Peaks Nature Reserve have been considered together in this plan of management since they are adjacent areas and the reserve is managed as an integral part of the park.

### **1.2 NATIONAL PARKS, NATURE RESERVES, WILDERNESS AREAS AND REGIONAL FOREST AGREEMENTS**

#### **1.2.1 National Parks**

National parks are reserved under the *National Parks and Wildlife Act 1974* 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 (Section 30E), 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.

The World Conservation Union, IUCN, defines a protected area as follows:

“An area of land and/or sea especially dedicated to the protection and maintenance of biological biodiversity, and of natural and associated cultural resources, and managed through legal or other effective means” (IUCN, 1994).

A national park is described as a protected area managed mainly for ecosystem protection and recreation in the IUCN Management categories of protected areas (IUCN Category II).

National parks are part of the regional pattern of land use. Management of national parks aims to minimise disturbance to natural and cultural heritage. Other land uses, for example agriculture, forestry and mining, are distinguished by an acceptance or encouragement of environmental modification. National parks, therefore, provide for only a limited part of the range of land uses in a region.

### **1.2.2 Nature Reserves**

Nature reserves are reserved under the National Parks and Wildlife Act to protect and conserve areas containing outstanding, unique or representative ecosystems, species, communities or natural phenomena.

Under the Act (Section 30J), nature reserves are managed to:

- conserve biodiversity, maintain ecosystem functions, and protect geological and geomorphological features and natural phenomena;
- conserve places, objects, features and landscapes of cultural value;
- promote public appreciation, enjoyment and understanding of the reserve's natural and cultural values; and
- provide for appropriate research and monitoring.

A nature reserve is described as a protected area managed mainly for science in the IUCN Management categories of protected areas (IUCN Category Ia).

Nature reserves differ from national parks in that they do not have as a major management principle to provide for visitor use. Sustainable visitor use may be taken into consideration under Section 72AA(1) of the National Parks and Wildlife Act.

### **1.2.3 Wilderness Areas**

Part of the southern end of the park has been declared the Genoa Wilderness under the *Wilderness Act 1987*, while a small part of the far northern section is included in the Brogo Wilderness. The Coolangubra area was identified as Wilderness in the late 1980's. However its wilderness values were diminished through subsequent forestry roading and logging operations.

Wilderness areas are large natural areas of land that, together with their native plant and animal communities, are essentially unchanged by human activity. It is recognised that even in the most untouched landscapes there is evidence of human impact, such as airborne pollution or introduced species. Areas classified as wilderness, however, are amongst the least modified and undisturbed landscapes that we have left to us.

Wilderness areas provide for the long term protection of biological diversity and serve as scientific reference areas. They also preserve the capacity of the area to evolve in the absence of significant human interference. An important purpose of wilderness areas is to provide opportunities for solitude and appropriate self-reliant recreation. Protection of natural values, however, has priority over providing for recreational use of wilderness areas.

Management of natural and cultural heritage and of introduced species and fire is carried out in wilderness areas in the same manner as other parts of the park, with special attention to minimising impacts on wilderness values.

#### **1.2.4 Regional Forest Agreements**

Regional Forest Agreements are one of the principle means of implementing the National Forest Policy Statement of 1992. Under this Statement Commonwealth, State and Territory governments agreed to work towards a shared vision for Australia's forests. This aimed to maintain native forest estate, manage it in an ecologically sustainable manner and develop sustainable forest-based industries. The Statement provided for joint comprehensive assessments of the natural, cultural, economic and social values of forests. These assessments formed the basis for negotiation of Regional Forest Agreements that provide, amongst other things, for Ecologically Sustainable Forest Management (see section 4.3.5).

The Eden CRA (comprehensive regional assessment) region totalled 800,000ha extending from Bermagui and Nimmitabel to the Victorian border. The Eden Regional Forest Agreement of 1999 (Eden RFA) covered the Eden CRA region and was the first of four such agreements completed for the eastern forests of NSW. The process leading up to the RFA provided for major additions to the reserve system in the Eden Region, including establishment of the South East Forest National Park (see section 2.2.1). The gazettal of South East Forest National Park makes a significant contribution to the establishment of a comprehensive, adequate and representative public reserve system for the Eden Region.

## **2. SOUTH EAST FOREST NATIONAL PARK AND EGAN PEAKS NATURE RESERVE**

### **2.1 LOCATION, GAZETTAL AND REGIONAL SETTING**

South East Forest National Park lies along the coastal escarpment of southern NSW between Nimmitabel and the Victorian border, near the towns of Bombala, Eden, Bega and Merimbula. It consists of several sections, most of which are joined to form a long narrow park with an extremely long perimeter. The park forms part of a continuous chain of reserves along the eastern escarpment from the Illawarra to south of the Victorian border.

The park was formed in 1997 from several earlier national parks and areas of state forest. The former parks were Genoa, Tantawangalo, Bemboka Yowaka and Coolangubra National Parks, all of which were reserved in 1994. Genoa National Park had been formed from two earlier parks - Nalbaugh, gazetted in 1972 and Nungatta, gazetted in 1973. Additions since then have brought the area of South East Forest National Park to 115,499ha.

Egan Peaks Nature Reserve was dedicated in 1972 and has an area of 2,145ha. It is contiguous with the central eastern section of the park and managed as part of the park, though in accordance with its nature reserve status. For simplicity, the term 'park' will be used in this document to mean both South East Forest National Park and Egan Peaks Nature Reserve.

For ease of reference, the park has been divided into eight sections based largely on the former national park areas. The sections are shown on the Regional Context Map and consist of the Bemboka, Glenbog, Tantawangalo, Yowaka, Yurammie, Coolangubra, Waalimma and Genoa sections of the park. Egan Peaks Nature Reserve is managed as part of the Yowaka section. The sections are used solely to facilitate reference to particular parts of the park. They do not indicate differences in management regimes - the park is managed as a whole.

The park and nature reserve are part of a system of conservation reserves along the great eastern escarpment of southern NSW and eastern Victoria. National parks and nature reserves protect large stretches of the region's coastline and hinterland including Ben Boyd, Mount Imlay, Wadbilliga, Biamanga, Mimosa Rocks and Bournda National Parks and Bournda, Bondi Gulf, Coolumbooka and Nadgee Nature Reserves. South East Forest National Park adjoins Coopracamba National Park to the south (in Victoria), Wadbilliga National Park to the north and Bournda Nature Reserve to the east. It also adjoins extensive areas of state forest. The whole comprise an important suite of eucalypt forests across an altitudinal range which may have international values.

Tourism is a major contributor to the economy of the region. The national parks and state forests, along with the coastline, rural scenery, towns and villages, attract large numbers of visitors. Other significant land uses include timber industries, dairying and grazing.



## **2.2 IMPORTANCE OF SOUTH EAST FOREST NATIONAL PARK AND EGAN PEAKS NATURE RESERVE**

The park (and reserve) covers a large and diverse area with significant geological, biological, cultural, landscape and recreation values. The important features are briefly described below and covered in more detail in chapter 4.

### **Geological and geomorphological values**

The park includes part of the Great Escarpment which runs from northern Queensland to the Victorian border. It is an erosion feature separating the coast from the inland tablelands and is characterised by mountainous country including large areas of dissected, moderate to rugged topography and plateau. Its origins date back 90 million years during times of major plate tectonic movement.

The geology of the park is quite complex, consisting of extensive areas of granitic intrusions plus basalt and rhyolite flows, narrow bands of metamorphic rocks and outcropping Ordovician metasediments and Upper Devonian sediments. Significant geological and geomorphological features include granite tors at Pheasants Peak, the elliptical Jingera Rock syenite complex, Wolumla Peak, upland swamps such as Nunnock Swamp in the Tantawangalo section and gorges on Stockyard Creek, Myanba Creek, Cow Bail Creek, Wog Wog River and the Genoa River.

### **Catchment values**

The park protects parts of the upper reaches of several eastward and westward flowing streams including the Bega, Towamba and Genoa Rivers, and part of the catchment of Cochrane Dam. Several small undisturbed catchments are contained entirely within the park. These are in the Genoa Wilderness, White Rock Mountain/Wog Wog Mountain area, Tantawangalo Creek area and north-east of Bemboka Peak. These are areas where natural hydrological processes continue largely unmodified by human intervention and contribute significantly to the water supply for communities to the east.

### **Landscape values**

The park has significant aesthetic value and high landscape diversity, featuring extensive areas of tall forests, numerous streams with waterfalls and waterholes, escarpments, gorges, high peaks and panoramic views at a number of locations. Thirteen sites of aesthetic significance sufficient to warrant nomination for inclusion on the Register of the National Estate have been identified (Environment Australia 1998b). For details see [www.ahc.gov.au/register](http://www.ahc.gov.au/register).

### **Biological values**

The park has high biological diversity because of its large size, varied landforms, climate and geology and its occurrence at the junction of the South East Corner and South East Highlands continental biological regions (Thackway and Cresswell, 1995).

A total of 48 vegetation ecosystems are predicted to occur (Keith and Bedward 1999), of which 6 have 80% or more of their total distributions in the park. These ecosystems are primarily eucalypt communities but include small areas of rainforest, wetlands, heathlands and scrublands. Two of the ecosystems have been listed as endangered ecological communities in Schedule 1 of the *Threatened Species Conservation Act 1995* and several are regionally rare.

A major reason for the park's creation was protection of a range of high fertility old growth forest ecosystems. Thirty two percent of the old growth eucalypt forest in the Eden CRA region is contained within the park and many old growth ecosystems in the park are poorly represented in other conservation reserves. Eight old growth ecosystems have 80% or more of their distribution in the park (RACD-DUAP 1999c).

The park contains four plant species listed under the Threatened Species Conservation Act as endangered and seven vulnerable plant species, two of which are endemic to the park. In addition to these species 72 plants found within the park have been identified as being of particular conservation concern in the Eden region (RACD-DUAP 1999c). Seventeen of these are ROTAP (rare or threatened) species (Briggs and Leigh 1996).

The park is an area of outstanding native animal species diversity and is vital to long term conservation of regional biodiversity. Several areas are particularly rich in arboreal mammals and hollow-nesting birds while others are important habitats for threatened animal species, including the very rare long-footed potoroo.

Three endangered native animal species and 30 vulnerable species are found in the park. The very rare long-footed potoroo has been recorded in the far southern section of the park. In addition to the threatened species, a further 13 native animal species of conservation concern occur.

The park provides essential habitat between the forests of Coopracamba NP in east Gippsland and escarpment parks to the north as far as the Sydney basin. It is also linked to coastal parks via areas of state forest and private lands. This linked system protects extensive areas of native forests and the plant and animal species that depend on them.

Private landholders who have entered into Voluntary Conservation Agreements contribute to a wildlife corridor linking the Yurramie and Tantawangalo sections of the park. This provides an east-west corridor from the tablelands to the coast that contributes to preventing isolation and fragmentation of animal and plant populations. Wildlife corridors increase the amount of habitat available and are important for migratory animals with large home ranges.

### **Cultural heritage values**

The park has a large number of places of cultural value to local Aboriginal people. These places include archaeological sites, spiritual sites, ceremonial sites and contact sites. The park also provides opportunities for Aboriginal people to continue to be involved in management of their traditional lands both through cooperative management arrangements with the NPWS and through activities such as cultural tourism.

The park contains numerous sites and features associated with past European exploration, agricultural, mining, forestry and recreational activities. Several early transport routes still exist. These early trails are significant for their demonstration of the hardships experienced by early settlers in communicating and transporting goods from the tablelands to the coast. Of particular interest is the Cow Bail Trail which still runs on or close to its original route and retains early cuttings, chimneys and other features.

Parts of the Wolumla, Pambula and Yambulla gold fields were located in what is now park, and pits, shafts and other features dot the landscape in these areas.

Timber-getting has been a major use of the forests since early European settlement. Little remains of early use but the park landscape has been significantly affected by forestry use during the latter half of the 20<sup>th</sup> century. After World War II interest in the conservation values of the south east forests developed and the Coolangubra area contains the site of a major confrontation between conservationists and forestry workers during the 1980s.

Many people in local communities have strong ties to the park area because of past involvement in forest industries or in conservation campaigns. Local people may also have family histories of mining or other uses of the forests.

### **Wilderness values**

The areas of the park declared as wilderness are quite small but they add to the extensive wilderness on adjacent lands. The Brogo Wilderness extends northwards into Wadbilliga National Park while the Genoa Wilderness area lies adjacent to the larger Coopracambra Wilderness in Victoria. The Coolangubra area was identified as wilderness in the late 1980's, however its wilderness values were diminished through subsequent forestry roading and logging operations and it was not declared as wilderness.

The wilderness areas provide important biodiversity protection and opportunities for natural systems to continue to evolve in the absence of human interference. They also provide opportunities for solitude and appropriate self-reliant recreation.

### **Tourism and recreation values**

The park has high tourism and recreation value because of its large size, diverse landscapes and scenic features. It is conveniently located near a number of towns and villages, including popular coastal tourist destinations.

The park provides an alternative to frequently crowded coastal destinations and a sense of adventure and relative solitude. It provides opportunities for scenery viewing, walking, picnicking and camping in forest settings ranging from wilderness to high quality facility areas. The many roads and vehicle trails in the park also provide opportunities for driving, cycling and horse riding in appropriate locations.

When combined with recreation opportunities and facilities in nearby state forests, the park is expected to be a significant contributor to regional tourism and to generate social and economic benefits for the region.

### **Research and educational values**

The physical and biological diversity of the park and the variety of past land uses provide numerous topics for research and educational activities, including the opportunity to study recovery of areas disturbed by past logging operations.

A large amount of information has been collected about the plant and animal communities of the park and this will be valuable as base data for further research and in building up a more complete understanding of the area's ecology.

The park will be a valuable educational resource for local schools and the general community. Interpretive information will present the important natural and cultural values of the park to visitors and promote awareness of the impacts of previous land use and changes in community attitudes towards sustainable utilisation of forest resources.

## 2.3 SUMMARY OF SIGNIFICANCE

The park is of **national** conservation value for its biological diversity and protection of rare forest ecosystems, significant areas of old growth forest and populations of threatened plant and animal species, and as part of an extensive linked protected area.

The park is of **regional** conservation value for its:

- diverse geology and topography;
- protection of the upper reaches of several important catchments;
- high landscape quality and several outstanding scenic features such as Jingera Rock and Pheasants Peak;
- protection of a high proportion of the naturally vegetated land, vegetation ecosystems and plant and animal species of the Eden region;
- protection of a large number of regionally significant plant and animal species;
- maintenance of natural processes in the Genoa and Brogo Wilderness areas and several smaller remote areas where human impact is minimal;
- value for scientific research, building on extensive base-line survey;
- role in linking other reserves and areas of state forest along the escarpment and coast;
- range of cultural heritage sites, including Aboriginal, transport, mining and forestry sites;
- cultural and social value to many members of local communities;
- educational value arising from the park's diversity and accessibility; and
- range of tourism and recreation opportunities.

### 3. OBJECTIVES OF MANAGEMENT

#### 3.1 SPECIFIC OBJECTIVES FOR SOUTH EAST FOREST NATIONAL PARK AND EGAN PEAKS NATURE RESERVE

In addition to the general objectives for the management of national parks, nature reserves and wilderness areas (refer section 2.1), the management of South East Forest National Park and Egan Peaks Nature Reserve will be subject to the following specific objectives:

- *protection as part of a system of contiguous conservation reserves along the Great Eastern Escarpment and in the Eden region;*
- *contribution to protection of natural and cultural heritage and the landscape values of the Eden region;*
- *protection and enhancement of scientific reference values to provide information, and if necessary a species source, for nearby areas subject to intensive human use;*
- *maintenance of east-west vegetation links between the escarpment and the coast;*
- *maintenance, and where necessary recovery, of populations of threatened species found in the south east forests, with highest priority to endemic plant species and endangered forest-dependent fauna species such as the long-footed potoroo and smoky mouse;*
- *conservation of endangered ecological communities and rare forest ecosystems which are solely or largely contained within the park;*
- *increasing the proportion of old growth forest ecosystems;*
- *recovery from the impacts of past logging operations, including ongoing rationalisation of the road network and restoration of natural forest values;*
- *encouragement of community education and appreciation of the diversity and high conservation values of the south east forests; and*
- *contribution to regional tourism and recreation opportunities and provision of social and economic benefits to the region.*

#### 3.2 OVERALL STRATEGY

South East Forest National Park and Egan Peaks Nature Reserve will be managed to conserve their natural and cultural heritage while providing opportunities for sustainable public use. Strategies and programs to protect, and where necessary restore, the natural and cultural values will include:

- protection from human disturbance of rare forest ecosystems, significant areas of old growth, and the habitat of threatened species;
- conservation, in conjunction with the community, of significant cultural values and places and landscapes;
- application of fire regimes designed to maintain ecosystems;
- control of introduced plant and animal species;
- rehabilitation of areas previously subject to logging activities and of logging infrastructure such as trails and log dumps;
- implementation of the principles of ecologically sustainable forest management (see section 4.3.5) including codes of practice, research and monitoring; and
- management of public use in an ecologically sustainable manner.

Provision for public use will be made in a regional context and jointly with other public land managers. Conservation will have priority over public use and only those areas that can sustain use will be promoted through provision of access and facilities.

There will be some closure and downgrading of former forestry roads to reduce impacts such as erosion, weeds and pest animals. Monitoring of levels of use of some remaining roads will provide accurate information to guide future management. Most of the roads retained will be open to public use. Cycling and horse riding will be permitted on appropriate roads and other suitable trails.

Low key picnicking, lookout, walking and camping facilities will be provided, mainly in the central part of the park. Existing facilities will be retained and camping, picnicking and walking opportunities will be expanded through upgrading of some existing facilities and construction of additional short and medium distance walking tracks, camping facilities and day use areas. This will allow for increased opportunities for public use, understanding and enjoyment of the park and presents the park as a key nature based tourism resource for the region.

High quality interpretive information will be provided at strategic visitor facilities to encourage appreciation of the high conservation values of the park and reserve and understanding of their important place in the regional landscape. Minimal impact recreation practices will be encouraged.

The Genoa and Brogo wilderness areas will continue to be maintained as high quality wilderness providing opportunities for solitude and self-reliant recreation. Programs for management of threatened species, fire, introduced species and other issues will apply within the Genoa and Brogo wilderness areas as for other parts of the park. Because of the emphasis on protecting wilderness in an unmodified state, however, particular care will be taken to ensure that management programs are designed to avoid damage to natural values.

The park will be managed within a bio-regional landscape framework. Conservation of the native plant and animal communities of the region cannot be achieved solely on national park and nature reserve lands. This is particularly so given the linear configuration of the South East Forest National Park and its high boundary to area ratio.

Management programs will be undertaken in cooperation with Forests NSW, Parks Victoria, local government, neighbouring private landowners and tourism organisations. Emphasis will be placed on encouraging retention and sympathetic management of significant natural vegetation on adjacent lands.

Close liaison will be maintained with adjacent land managers and neighbours to facilitate cooperative management programs, resource and information sharing. The community will be kept informed about major management programs and will be consulted and involved in appropriate programs. An ongoing consultation program with the Aboriginal community will be developed, and mechanisms for promoting traditional use and cooperative management of areas of cultural significance to the Aboriginal community will be developed and implemented.

## **4. POLICIES AND FRAMEWORK FOR MANAGEMENT**

This chapter contains the policies and framework for the management of South East Forest National Park and Egan Peaks Nature Reserve together with relevant background information. Policies are summarised under the following section headings:

- 4.1 NATURE CONSERVATION
- 4.2 CULTURAL HERITAGE
- 4.3 USE OF THE AREA

Natural and cultural heritage and on-going use are presented individually for convenience and clarity. In practice, however, they are strongly inter-related and together form the landscape of an area. Much of the Australian environment has been influenced by past Aboriginal and non-Aboriginal land use practices and the activities of modern day Australians continue to influence bushland through recreational use, cultural practices, the presence of introduced plants and animals and in some cases air and water pollution.

The policies established in this plan of management provide the framework for future management consistent with sound ecological principles. Anticipated resources and community trends over the next five to ten years have also been taken into consideration. The actions identified in the implementation table at the end of the plan are those to which priority will be given in the foreseeable future.

Where not specifically provided for in this plan, management of South East Forest National Park and Egan Peaks Nature Reserve will be in accordance with the National Parks and Wildlife Act and with general NPWS policies.

### **4.1 NATURE CONSERVATION**

#### **4.1.1 Geology, Soils, Catchment and Landscape**

##### **Landform**

South East Forest National Park incorporates three broad physiographic units – coastal hills, escarpment and the edge of the Southern Tablelands.

Coastal hills and valleys occur mainly in the eastern (Yowaka and Yurammie) sections of the park. This area is characterised by gentle undulating topography rising up to dissected foothills of moderate relief. Elevations range from 80 m to 350m.

Most of the park lies in the escarpments and foothills area. The escarpment is an erosion feature that separates the coast from the Tablelands. It is characterised by mountainous country including large areas of dissected, moderate to rugged topography and plateau. This area encompasses the South Coast Range and adjoining ridges, with elevations rising to a maximum of 1243 m at Brown Mountain.

The Tablelands area is characterised by undulating country of low relief with elevations of between 750 and 1000m above sea level. The western extremities of the Coolangubra and Tantawangalo sections are in this area.

## **Catchments**

There are six catchment areas associated with the park. Four major river basins lie to the east of the tablelands and escarpment. These are the Bega basin (Bemboka, Bega and Brogo Rivers), the Towamba Basin (Towamba River) and the Wallagaraugh and Genoa River Basins. The Snowy River Catchment drains the western extremities of the park. In addition there is the coastal catchment drained by four sub-catchments associated with the Pambula, Merimbula, Yowaka and Nullica rivers.

The park plays an important role in catchment protection because of its high proportion of forested lands. Creeks and rivers emanating from the park have high water quality characterised by low salinity, turbidity, dissolved organic matter and phosphorous regimes. Further, they usually have high clarity and dissolved oxygen. Many towns and rural dwellings in the vicinity of the park are dependent on their water supplies from ground and surface water that has its origins in park areas.

All or substantial areas of a large number of sub-catchments are protected in the park, particularly in the Genoa, Coolangubra and Tantawangalo sections. Significant natural catchments include Sheep Station Creek, which rises under the southern slopes of Wog Wog Mountain, and the White Rock and Reef Creek catchments, which flow into the Genoa River.

## **Geology**

Most of the park lies on Devonian (405 to 345 million years ago) or Silurian (425 to 405 million years ago) granitoids of the Bega Batholith, a large scale igneous intrusion. The Bega Batholith extends from Bungendore in the north to the Victorian border and comprises three major igneous rock types; granite-adamellite, adamellite and quartz diorite-granodiorite (Reinson 1976), with at least 66 separate intrusions.

A large area of Tertiary (65 to 1 million years ago) volcanics (flows of basalt and similar rocks) overlays the granite in the vicinity of Brown Mountain and there are smaller patches in the Big Jack area and parts of Tantawangalo.

In eastern Coolangubra and parts of Yowaka are metasediments of the Ordovician (500 to 425 million years ago) Adaminaby Group. These are the basement or oldest rocks of the park and include sandstones, greywackes, shales, quartzite, phyllites and slates. The metasediments are a mixture of sedimentary and metamorphic rocks which have undergone further contact metamorphism adjacent to granitoid bodies. Due to their greater resistance to erosion many of the higher landscape features in the Bega Batholith area are Ordovician metasediment rock types.

Upper Devonian sediments outcrop as sub-horizontal strata in the Genoa, Yurammie and Bemboka areas and often form prominent topographic features such as the Nungatta Plateau and Wolumla Peak.

Igneous extrusive Upper Devonian rhyolites and basalts of the Boyd Volcanic Complex are found in small areas. Eden Rhyolite occurs as welded ash-flow tuffs and domes of rhyolite lava, predominantly in the eastern Yowaka section of the park with small extrusions also in parts of Tantawangalo and Coolangubra.

An unusual feature is the Jingera Complex found at Jingera Rock and Burragate Peak in the Yowaka section. This elliptically shaped Jurassic (180 to 135 million years ago) intrusion of nepheline syenite is 7 square kilometres in area and has a restricted occurrence. It is the first reported complex of this type in Australia (Beam 1980).



Minerals such as gold, silver, copper and molybdenite occur in a number of localities, particularly in the Boyd Volcanic Complex and the Bega Batholith, and have been mined in the past (see section 4.2.2).

## **Major features**

Major geological and geomorphological features of the park include:

- the Jingera rocks complex;
- Wolumla Peak;
- the rugged mountain landscapes, plateaus and scenic gorges of the Genoa section, dominated by the relatively inaccessible slopes, high peaks and plateau of Wog Wog, White Rock and Nungatta mountains;
- gorges of the Coolangubra section, including Myanba Creek Falls, Stockyard Creek, Cow Bail Creek and the Wog Wog River;
- the magnificent granite tors of the Bold Granite and the South Coast ranges, in the Coolangubra section;
- the rugged landscape, high peaks and ridges of the Bemboka Section, particularly Pigeon Box, Bemboka Peak and Numbugga Walls; and
- Nunnock Swamp and associated swamp communities in the Tantawangalo section, on the geological change between the Tablelands and the coastal escarpment.

These landforms, together with the diverse forests and other significant landscape features listed in section 2.2.2, give the park high aesthetic value.

## **Soils**

Due to the large variety of parent rock found in the park the soils are highly variable, with different properties and characteristics. Soils derived from granite have little clay content and tend to be highly erodible. Those on granodiorite and the Ordovician sediments are more fertile and less erodable while the basalt soils are quite stable. Soils associated with Orogenic Granites in the Genoa area are highly erodible and are very sensitive to the effects of intense wildfire and disturbances such as clearing and road building. Section 4.3.3 provides for closure of unwanted forestry trails and other roads that are subject to erosion problems. Regeneration of former logging coupes will also reduce the potential for soil erosion in the park.

Soils of particular significance are those associated with rhyolite outcrops, predominantly in Yowaka. These support unique communities containing rare, disjunct and endemic plants (Albrecht, 1986). The nutrient rich soils of the Waratah Creek and Brown Mountain areas support moist forests and high value arboreal habitat.

The Nunnock Swamp area soils support unique wetland communities of large sphagnum hummocks, formed as a result of continuously saturated ground conditions and very low input of mineral nutrients. At the time the park was established, a road across the swamp was impeding natural water movement and was a source of sediment. It has now been diverted to restore natural values and protect water quality.

## **Climate Change**

Significant climate change is expected over the next century. The size and altitudinal range of the park has the potential to accommodate changing species distribution. Park management should ensure linkages between reserved areas through Voluntary Conservation Agreements with private landholders and other methods.

## **Policies**

- *The NPWS supports the principles of total catchment management and will liaise with local government and other authorities to maintain and improve water quality and support catchment management committees.*
- *All development and management works will incorporate effective soil erosion and sediment control principles and practices. Where human activity has accelerated erosion so as to threaten significant habitats or other values, appropriate control measures will be undertaken.*
- *All new developments and activities will be designed to protect the high natural landscape and scenic values of the park. Significant geological and topographic features will be protected.*

### **4.1.2 Native Vegetation**

Comprehensive reviews of the classification and distribution of native vegetation were undertaken during the Eden Comprehensive Regional Assessment (CRA) Project (RACD-DUAP 1998abcd). The vegetation was classified into ecosystems, defined as groupings of plant communities with similar floristic composition and structure (Keith and Bedward 1999). Ecosystem distribution was predicted by the relationship of floristic groups with climate, soil and topography.

The research predicted that 48 vegetation ecosystems occur in the park, divided into 7 broad groups (see Appendix 1). Eucalypt ecosystems make up 96% of the park's vegetation while the remainder consists of rainforest, wetland, heathland and scrubland occurring in small clearly defined and naturally fragmented patches with very specific habitat requirements.

#### **Old growth**

A major consideration in mapping of vegetation ecosystems during the CRA process was identification of old growth. Old growth forests are places where eucalypt ecosystems have reached ecological maturity. Old growth is the final stage in the dynamic cycle of growth. The natural processes of wildfire, storms and disease modify old growth stands, providing opportunities for young regrowth forests. Human activities such as logging and prescribed burning also modify forests. Old growth was mapped during the CRA using aerial photography and was defined as forest stands where senescent tree crowns make up more than 30% and regrowth crowns contribute to less than 30% of the canopy.

Old growth forests are of scientific and cultural interest since they probably represent the species diversity and structure of forests as they were prior to the arrival of Europeans. Old growth provides diverse and abundant animal home sites (hollows) and other habitat values, refuge for animals and plants sensitive to exotic pests and humans, and refuge after wildfire or during drought.

Maintenance of a diverse mosaic of forest growth stages that includes an adequate area of old growth is a key biodiversity conservation issue in the Eden region. Old growth currently covers 22% of the park, made up of 10.7% wet eucalypt forests, 5.3% dry shrubby eucalypt forests and 5.7% dry grassy eucalypt forests. Regrowth and young forest stands currently make up 33% of the forests found in the park while mature forests cover about 46% of the park. NPWS management will aim to increase the proportion of old growth and decrease the proportion of regrowth and young forest stands.

Many old growth ecosystems in the park are found in small fragmented patches. Large patches of old growth on high fertility soils are of particular interest because of the high diversity and number of rare and threatened arboreal fauna they are likely to contain. The largest patches of old growth are nearly always in the most inaccessible country. The mean patch size of old growth forest stands mapped in the park is 58 ha with over thirty patches greater than 1000 ha and more than 680 patches between 10 and 30 ha.

### Significant ecosystems and species

The table below sets out the status of each of the vegetation ecosystems predicted to occur in the park and its old growth component. Validation of the extent of rare and very rare ecosystems in the park is needed.

Endangered and regionally rare or very rare ecosystems are of particular concern for park management, especially those ecosystems that have a very small area or restricted distribution or a high proportion of their distribution in the park. Also of concern are ecosystems which, while extensive in the Eden region are poorly represented within NPWS reserves. These types of ecosystems have been identified by the Eden RFA as being of conservation concern.

### REGIONAL DISTRIBUTIONS OF PARK ECOSYSTEMS<sup>1, 2</sup>

Ecosystem	Ecosystem	Old growth
<b>Wet eucalypt forests</b>		
Tantawangalo Wet Shrub Forest	Rare	Very Rare
Flats Wet Herb Forest <sup>M</sup>	Uncommon	Very Rare
Wadbilliga River Valley Forest	Rare	Rare
High Mountain Wet Layered Forest	Uncommon	Rare
Mountain Wet Fern Forest	Uncommon	Uncommon
Basalt Wet Herb Forest	Common	Uncommon
Hinterland Wet Fern Forest	Common	Common
Hinterland Wet Shrub Forest	Common	Common
Mountain Wet Herb Forest	Common	Common
Mountain Wet Layered Forest	Common	Common
Coastal Gully Shrub Forest	Common	Common
<b>Dry shrubby eucalypt forest</b>		
Sandstone Dry Shrub Forest	Very Rare	Very Rare
Mountain Dry Shrub Forest	Uncommon	Rare
Mountain Intermediate Shrub Forest	Uncommon	Rare
Mountain Sandstone Shrub Forest	Uncommon	Rare
Foothills Dry Shrub Forest	Uncommon	Uncommon
Genoa Dry Shrub Forest	Uncommon	Uncommon
Coastal Dry Shrub Forest	Common	Common
Coastal Range Dry Shrub Forest	Common	Common
Inland Intermediate Shrub Forest	Common	Common
Subalpine Dry Shrub Forest <sup>H</sup>	Common	Common
Tableland Dry Shrub Forest	Common	Common
Wadbilliga Dry Shrub Forest	Common	Common
Wadbilliga Gorge Dry Forest	Common	Common
Eden Dry Shrub Forest	Common	Common
<b>Dry grassy eucalypt forest</b>		
Waalimma Dry Grass Forest	Very Rare	Very Rare
Wallagaraugh Dry Grass Forest <sup>L</sup>	Rare	Very Rare
Wog Wog Dry Grass Forest	Rare	Very Rare
Brogo Wet Vine (Grassy) Forest <sup>E,M</sup>	Uncommon	Rare
Nalbaugh Dry Grass Forest	Uncommon	Rare

Bega Wet Shrub (Grassy) Forest	Common	Uncommon
Escarpment Dry Grass Forest <sup>H</sup>	Common	Common
Hinterland Dry Grass Forest	Common	Common
<b>Rainforests</b>		
Dry Rainforest <sup>E,M</sup>	Very Rare	Not known
Myanba Dry Scrub (Eucalypt Fig) Forest	Rare	Not known
Cool Temperate Rainforest	Rare	Not known
Hinterland Warm Temperate Rainforest	Uncommon	Not known
Coastal Warm Temperate Rainforest	Common	Not known
<b>Freshwater Swamps and Riparian Ecosystems</b>		
Swamp Forest	Rare	Not known
Northern Riparian Scrub <sup>M</sup>	Rare	Not known
Southern Riparian Scrub	Rare	Not known
Sub-Alpine Bog <sup>E</sup>	Uncommon	Not known
<b>Rocky Scrublands and Heathlands</b>		
Mountain Rock Scrub	Very Rare	Not applicable
Rhyolite Rock Scrub	Very Rare	Not applicable
Rocky Tops Dry Shrub Forest	Rare	Not applicable
Acacia Scrub	Common	Not applicable
Hinterland Heath	Rare	Not applicable
Montane Heath	Uncommon	Not applicable

<sup>1</sup> from Keith and Bedward (1999) with further interpretation from Miles (1999)

<sup>2</sup> refer NPWS (1999a) for detailed information and management actions)

<sup>E</sup> Endangered ecological community listed in Threatened Species Conservation Act

<sup>H, M, L</sup> High, medium or low priority for conservation of forest ecosystem, from Eden RFA (1999), based on rarity, percentage cleared and amount protected in conservation areas.

The 690 ha of Sandstone Dry Shrub Forest in the park comprise 83.4% of its regional occurrence while over 90% of Wog Wog Dry Grass Forest (873 ha) is contained within the park. The situation is more significant for old growth proportions of rare ecosystems. The park has 99% of the old growth Sandstone Dry Shrub Forest (176ha), 40% of Waalimma Dry Grass Forest (29 ha), 91% of Wog Wog Dry Grass Forest (109 ha) and 42 % of Wallagaraugh Dry Grass Forest (32 ha). The management of these very rare old growth forests is of particular concern given the small size of remaining areas.

Dry rainforest is the rarest rainforest type found in the region. The 29 ha estimated to occur in the Coolangubra section of the park comprise 41% of all the dry rainforest that remains in the Eden region. Myanba Eucalypt-Fig Forest is almost endemic to the park, with the 323 ha in the park comprising 96% of its total area in the Eden region. The area of Cool Temperate Rainforest is also significant. The 505 ha in the park is 58% of the regional distribution.

Subalpine Bog, Southern Riparian Scrub and Northern Riparian Scrub are poorly represented in NPWS reserves. Of the estimated 488 ha of Subalpine bog occurring in the Eden region only 48 ha are in the park, while the park contains only about 109 ha of riparian scrub.

Rocky scrublands cover less than 0.08% of the park but contain over 25% of the endangered and 42% of the vulnerable plant species found within the park. The total area of Rhyolite Rock Scrub in the region is only 46 ha, with 16 ha occurring in the park. It contains a number of shrubs endemic to the rhyolite outcrops including the threatened species *Genoplesium rhyoliticum*, *Leionema (Phebalium) ralstonii*, *Westringia davidii*, *Zieria parrisiae*, *Zieria formosa* and *Zieria buxijugum*.

Most of the area of Rocky Tops Dry Shrub Forest (1241 ha) occurs in the park as does almost half (92 ha) of the total area of Mountain Rock Scrub.

The area of Hinterland Heath in the park is less than 14 ha, although this is 3% of the total area in the Eden region.

Endangered Ecological Communities and plant species of particular conservation significance in South East Forest National Park (SEFNP) and Egan Peaks Nature Reserve are listed in the tables below. The species listed are mainly listed as threatened under the *Threatened Species Conservation Act 1995*, and Rare or Threatened Australian Plants (ROTAP) species (Briggs and Leigh, 1996). As stated in section 2.2.2, a large number of additional species occurring in the park were identified during the CRA as being of regional conservation significance.

Under the Threatened Species Conservation Act a recovery plan may be prepared for endangered (Schedule 1) and vulnerable (Schedule 2) flora and fauna and endangered ecological communities. The purpose of a recovery plan is to promote the recovery of a threatened species or community to a position of viability in nature. A recovery plan has been prepared for threatened species occurring on rhyolite outcrops. Recovery plans will be implemented when prepared for other scheduled species and communities that occur in the park.

Pending the preparation of recovery plans, management guidelines will be prepared. The guidelines will identify the need for validation of existing locations and numbers, monitoring requirements and actions to minimise threats. Where current knowledge is inadequate the precautionary principle will apply.

#### **ENDANGERED ECOLOGICAL COMMUNITIES**

<b>Community</b>	<b>Location in SEFNP</b>	<b>Distribution in region</b>	<b>Action</b>
Brogo Wet Vine Forest	Moist gullies adjoining rural land in Bega and Towamba valleys	Limited to Brogo-Bega and Candelo-Myrtle areas, mainly on private land	Apply management guidelines Draft and implement recovery plan
Bega Dry Grass Forest	Small patches on fertile, granitic soils around the periphery of the Bega and Towamba valleys	Limited to patches in the Cobargo, Bega, Candelo areas in the Bega and Towamba Valleys, and near Tanja – mainly on private land	Apply management guidelines Draft and implement recovery plan
Candelo Dry Grass Forest	Small patches on fertile, granitic soils around the periphery of the Bega and Towamba Valleys	Limited to patches in the Bega and Towamba Valleys, with an outlying stand between Bega and Wolumla	Apply management guidelines Draft and implement recovery plan
Sub-Alpine Bog	Moist, flat, grassy/shrubby frost hollows generally in granite escarpment	Tantawangalo. Includes Nunnock, Dragon and Packers Swamps.	Apply management guidelines Draft and implement recovery plan
Dry Rainforest of the South East Forests	Granite shelves in groundwater seepage areas on Big Jack Mountain	Limited to patches between Cobargo and Bega, south of Candelo, and upper Towamba Valley, mainly on private land	Apply management guidelines Draft and implement recovery plan

**PLANT SPECIES OF PARTICULAR CONSERVATION SIGNIFICANCE**

Species	Location in SEFNP	Distribution in the region	TSC Act	ROTAP	Action
<b><i>Grevillea acanthifolia</i> ssp <i>paludosa</i></b>	Known from two locations on Nalbaugh Plateau, Genoa section, along edge of sub-alpine bog, and Bega Swamp, Brown Mountain, Glenbog section	Endemic to SEFNP	Endangered	2ECit	Apply management guidelines Draft and implement species recovery plan
<b><i>Pomaderris cotoneaster</i></b>	Known from three locations: Tantawangalo Weir, Reedy Ck, Coolangubra and Neenah Ck, Genoa section	Southern range limit in NSW, sporadic populations up to Morton NP	Endangered	3ECi	Apply management guidelines Draft and implement species recovery plan. Monitor population with further survey
<b><i>Pomaderris elachophylla</i></b>	Known from four locations: Nalbaugh Plateau, Myanba Ck Coolangubra Section; near Tantawangalo Mountain and Cochrane Dam	Northern range limit, common in Victoria	Endangered	Not listed	Apply management guidelines Draft and implement species recovery plan
<b><i>Genoplesium rhyoliticum</i></b>	Two confirmed sites in the Yowaka section. One other site in SEFNP still to be confirmed.	Regional endemic known from three sites in the region, one in Nullica State Forest	Endangered	2E	Implement recovery plan “Eden rhyolite rocky outcrop multi-species plan”
<b><i>Boronia deanei</i></b>	Known from the Nalbaugh Plateau at two locations, sharing the same site as <i>Grevillea acanthifolia</i> at one.	Southern range limit, major southern disjunction. Found south coast and ranges, scattered populations up to Blue Mountains.	Vulnerable	3VCa	Management as per <i>Grevillea acanthifolia</i>
<b><i>Eucalyptus parvula</i></b>	One location at Nunnock Swamp; Tantawangalo section	Scattered from Nunnock Swamp to Badja Sawmill Very poorly reserved. SEFNP one of two small reserved populations.	Vulnerable	2VCi	Apply management guidelines Draft and implement a species recovery plan
<b><i>Leionema (Phebalium) ralstonii</i></b>	Located in ten sites around Egan Peaks, Yurammie Section	Regional endemic known from 26 sites on NPWS estate	Vulnerable	2VCi	Implement recovery plan “Eden rhyolite rocky outcrop multi-species plan”

<b>Species</b>	<b>Location in SEFNP</b>	<b>Distribution in the region</b>	<b>TSC Act</b>	<b>ROTAP</b>	<b>Action</b>
<b><i>Acacia georgensis</i></b>	One location along the Towamba River downstream from Burragate in the Coolangubra section	Regional endemic known from three locations: Tathra, Doctor George Mtn and Towamba River.	Vulnerable	2VC	Implement recovery plan "Eden rhyolite rocky outcrop multi-species plan"
<b><i>Phebalium rhytidophyllum</i></b>	Known from three sites along ridge between Wog Wog and White Rock Mtns, Genoa Section	Endemic to SEFNP	Vulnerable	2VCit	Apply management guidelines Draft and implement a species recovery plan
<b><i>Pomaderis aff. parrisiae</i></b>	Brown Mountain, southern escarpment Big Jack Mtn, and Egan Peaks NR	Also known from two sites in Wadbilliga NP	Vulnerable	2VC	Apply management guidelines Draft and implement a species recovery plan
<b><i>Westringia davidii</i></b>	Known from 4 locations in the Yowaka section	Regional endemic found in 14 locations including Jingera FR, Nethercote Falls FR and Private lands	Vulnerable	2V	Implement recovery plan "Eden rhyolite rocky outcrop multi-species plan"
<b><i>Correa lawrenciana var genoensis</i></b>	Nungatta	Previously only known from Victoria where it is now thought to be extinct	Potential for listing	Not listed	Apply management guidelines
<b><i>Callistemon foresterae</i></b>	Nungatta	Originally only known from 2 populations in NSW and 1 or 2 populations from Victoria	Potential for listing	Not listed	Apply management guidelines
<b><i>Acacia subtilinervis</i></b>	Bemboka, possibly Yowaka and Egan Peaks rocky outcrops	Scattered from Morton NP to Lower Snowy	Not listed	3RCa	Associated with threatened rhyolite species. Implement recovery plan "Eden rhyolite rocky outcrop multi-species plan"
<b><i>Daviesia suaveolens</i></b>	Bemboka section is southern range limit	Scattered from Clyde Mountain to Bemboka	Not listed	3RCa	Monitor population on opportunistic basis and manage impacts using precautionary principle
<b><i>Dodonaea rhombifolia</i></b>	Bemboka section; Egan Peaks		Not listed	3RCa	Monitor population on opportunistic basis and manage impacts using precautionary principle

<b>Species</b>	<b>Location in SEFNP</b>	<b>Distribution in the region</b>	<b>TSC Act</b>	<b>ROTAP</b>	<b>Action</b>
<i>Eucalyptus badjensis</i>	Tantawangalo and Bemboka sections	Dampier Trig to Tantawangalo	Not listed	2RCi	Monitor population on opportunistic basis and manage impacts using precautionary principle
<i>Eucalyptus latiuscula</i>	Nalbaugh, Genoa section	Southern Range Limit	Not listed	3RC	As above
<i>Eucalyptus spectatrix</i>	Bemboka section	Endemic to region	Not listed	2RC	As above
<i>Haloragodendron bauerlenii</i>			Not listed	3RCa	As above
<i>Hibbertia hermanniifolia</i>	Known from Mt Poole in the Genoa section	Southern Range Limit	Not listed	3RCa	As above
<i>Myoporum bateae</i>		Southern range limit	Not listed	3RC	As above
<i>Persoonia brevifolia</i>	Nalbaugh is eastern range limit	regional endemic regional endemic regional endemic also found at Jingera Rock	Not listed	2RCa	As above
<i>Phebalium carruthersii</i>			Not listed	3RC	As above
<i>Pomaderris costata</i>	Egan Peaks and Genoa section		Not listed	3RC	As above
<i>Pomaderris pauciflora</i>	Tableland species		Not listed	3RC	As above
<i>Pomaderris virgata</i>	Genoa section and Egan Peaks	Regional endemic also found at Jingera Rock	Not listed	3RC	As above
<i>Prostanthera walteri</i>	Genoa section is northern limit	Regional endemic also found at Mt Imlay	Not listed	3RCa	As above
<i>Pseudanthus divaricatissimus</i>	South-eastern range limit		Not listed	3RCa	As above
<i>Pultenaea villifera</i>	Southern range limit		Not listed	3RCi	As above



## Management history

Little past clearing for agriculture or settlement has taken place in the park area; most clearing was limited to a few stock routes and bridle trails. Grazing by domestic stock has occurred in many areas but the impact of this is largely unknown. Clearing associated with mineral extraction and prospecting was isolated (see section 4.2.2) and had all but stopped by the 1930s.

Records suggest that wildfire is the single largest contributor to the area of regrowth in the park. Extensive wildfires occurred during the 1930s and in 1952, 1958, 1972/73 and 1982/83.

Most of the park was formerly state forest and has progressively changed from Forests NSW to NPWS management since 1972, with most of the area reserved since 1994. Fire and logging practices employed by Forests NSW are well documented from 1970 onwards (SFNSW 1994).

Three types of prescribed burning practices were used in what is now the park - asset protection burns around pine plantations, townships and rural dwellings; broad area burns used to limit potential wildfire damage to regrowth stands; and fuel management/regeneration burns immediately following timber harvesting. The ecological impacts of this prescribed burning on the park have not been assessed.

It is estimated that 7.8% of the park has been affected by logging carried out between 1970 and 1998. This has increased the area of regrowth and young forest. The western portion of the Yurammie section was extensively logged in the 1970's. Following the 1981 wildfire the size of logging coupes was reduced and fuel management became more intensive. Logging activity also increased. Areas affected include the Coolangubra section following the completion of Wog Way, the eastern parts of the Yurammie section and the central eastern part of the Genoa section off Imlay Road. During 1990 logging continued in the Coolangubra and Genoa sections of the park and extended onto the western slopes around Stanton Rocks in the Yowaka section, around Waratah Creek and into the south eastern parts of the Tantawangalo section.

Buffer strips for the protection of water quality, vistas, rainforest stands, threatened plants and animals were progressively introduced into logging practices throughout the 1980's and 1990's. Habitat and seed tree retention was also progressively increased. Except for a few examples, re-vegetation of logged areas was through natural seed germination following fuel reduction burning after logging. The success of regeneration of logged areas varies. In some areas only a few species have regenerated and regrowth is very patchy. These areas are of particular concern for future management.

Disused forestry infrastructure (gravel pits, roads, trails, log dumps) remains in areas previously logged. Shining gum (*Eucalyptus nitens*) is native to the higher parts of the park around Brown Mountain but was planted near Obliqua Road in the Tantawangalo section in the mid 1980's. Shining gum and non-local wattles were also planted to assist in the revegetation of log dumps and roads during the 1980's and 1990's in the Coolangubra area and possibly elsewhere. The long term impact on biodiversity of non-local native plants is uncertain but removal would satisfy the requirements of the precautionary principle.

## Threats

The impact of persistent destructive events (pests, weeds, erosion and frequent fires) and the risk of decisive destructive events (high intensity fire) on rare species and ecosystems are issues of particular management concern.

Wildfire is potentially a serious threat to the structure and biodiversity of existing old growth and mature forest stands in the park, particularly where they are surrounded by regrowth areas. Securing the future of old growth dependent rare and threatened fauna will be an important management issue while old growth patches remain small and fragmented. The issue of fuel management has been considered as part of preparation of fire management strategies for the park (see section 4.1.5).

Events such as wildfire have the potential to significantly alter the conservation status of key biodiversity elements. Species and floristic assemblages previously well protected could be dramatically reduced following wildfire. Management actions previously planned for areas of low conservation importance may need to be reconsidered following such events. Revisions in management will also be needed as the relative proportions of young and old growth forest ecosystems change.

Weeds, particularly serrated tussock and pine wildings, pose a potential threat to native vegetation in the park. Weed control is discussed in section 4.1.4.

Introduced animals, particularly pigs, goats and deer are a threat to the viability of rare plant populations and their communities and could potentially have a negative impact on rare ecosystems and old growth ecosystems of the park. Their control is discussed in section 4.1.4.

Bell miner (*Manorina melanophrys*) and phytophthora (*Phytophthora cinnamomi*) dieback exist in parts of the park. The quarantine and hygiene practices developed in Western Australia for phytophthora dieback may be appropriate to very rare old growth and endangered plant communities in the park. Further work is required to determine the level of risk and appropriate management for both kinds of dieback. Their current impact area in the park is considered small.

Disused roads, trails, log dumps and gravel pits may contribute to the degradation of terrestrial and aquatic native plant communities through erosion. This disused infrastructure also permits greater access throughout the park thereby increasing the potential penetration of pests, weeds and phytophthora dieback in the park. Closure of unnecessary trails has been dealt with in section 4.3.3 of this plan.

Imported road aggregate and operation of road maintenance equipment can be a source of weeds and phytophthora. It is proposed (section 4.3.3) to gain gravel for road maintenance from a former Forests NSW quarry on Wog Way.

### **Policies**

- *Management of the park's vegetation will be in accordance with Ecologically Sustainable Management Practices as outlined in the Eden Regional Forest Agreement 1999 (see section 4.3.5) and will aim to:*
  - *maintain floristic and structural diversity;*
  - *conserve or increase the proportion of old growth;*
  - *conserve rare ecosystems and rare or threatened species;*
  - *maximise habitat values for native animal species; and*
  - *encourage recovery from past forestry disturbances.*
- *Access into rare vegetation ecosystems, old growth and concentrations of rare plants will be minimised.*
- *Use of imported road aggregate will be minimised to retard the movement of weeds and phytophthora dieback.*
- *The NPWS will encourage the retention of native vegetation adjacent to the park, particularly where it links the park to nearby reserves and state forests, through such means as regional vegetation management plans, regional environmental plans and voluntary conservation agreements.*

## **Actions**

- *Field and GIS programs will be undertaken to improve the accuracy of rare ecosystem, rare species and growth stage maps.*
- *Management guidelines will be developed and implemented for threatened and rare plant species and ecosystems. These will detail the potential impact of fire, pest, weeds, dieback, collection etc and set priorities for management actions.*
- *Monitoring programs will be established to measure long term changes in the abundance and distribution of threatened or rare plant species and ecosystems.*
- *Actions outlined in species recovery plans will be implemented.*
- *Former logging coupes will be assessed to determine the success of regeneration and programs will be established where needed for assisting return to a natural species array and structure.*
- *Non-local trees and shrubs planted for forestry purposes will be removed and replaced with indigenous species.*
- *Areas of noticeable dieback will be investigated to determine the cause and any treatment needed. Monitoring of areas subject, or potentially subject, to dieback will be undertaken. Access and management practices will be assessed with the aim of avoiding spread of phytophthora.*

### **4.1.3 Native Animals**

Extensive research work has been carried out in the south east forests and there have been 210 native vertebrate species recorded in the park, comprising 48 mammal, 116 bird, 13 amphibian and 33 reptile species. This diversity directly reflects the size and location of the park and the combination of altitude, topography, geology and rainfall.

Species diversity varies throughout the park. Areas containing old growth, moist forests, wet gullies and rainforest are particularly high in conservation significance because of their rarity, species diversity and numbers of threatened and uncommon animal species. For example, the Waratah Creek area in Coolangubra and the moist forests of Brown Mountain, parts of the Bemboka section and the Dragon Swamp Creek, Mt Darragh and Bulls Mountain areas in the Tantawangalo section are rich in arboreal fauna species and in the number of individuals. These areas contain a suite of hollow-nesting birds and arboreal marsupials, as well as other species. Riparian and rainforest habitats also provide refuges for animals during drought and wildfire events. These areas provide stock from which the affected areas are later recolonised.

All records of native animals (and plants) are collected and stored on the NSW Wildlife Atlas, a state-wide data base established by the NPWS. Information is built up about locality, habitat and breeding records and used to assist management of native wildlife.

Maintenance of fauna diversity in the park largely relies on management of habitat (as set out in previous sections) and minimising the impact of introduced species, fire and human disturbance (covered in following sections). This section concentrates on strategies for management of threatened and uncommon species.

Invertebrate taxa in the south east forests, as indeed the rest of Australia, are largely unknown. CSIRO ecologists have recorded 700 beetle species in the Wog Station area adjacent to the park (George Milkovits, pers. comm.). Eighty percent of other invertebrates recorded in the study, however, have yet to be classified. It is expected that this diversity would be similar in the nearby South East Forest National Park.

Little is known about fish in the park but some of the lower east-flowing streams are important as breeding areas for the Australian bass *Macquaria novemaculeata* and the Australian grayling *Prototroctes maraena*. Populations of both species have greatly declined because of land management practices that result in increased turbidity, reduced stream flow rates and siltation of significant pool habitats. Management of fish in NSW is the responsibility of NSW Fisheries but where their habitats are located in national parks the NPWS aims to protect those habitats by managing catchments. Aquatic habitats will be protected through appropriate fire and weed management, closure of unnecessary trails, restricted development and effective maintenance of roads and trails to minimise siltation and turbidity.

## **Threatened Species**

A large number of threatened native animal species have been recorded throughout the south east forests. These include endangered species with a high public profile such as the koala. Management for threatened species is a critical issue for the park because of its importance for a number of species and the over-riding influence of threatened species needs on all aspects of management.

The Potoroo Management Area (PMA) in the Genoa section of the park contains the only known habitat for the long-footed potoroo in NSW and is therefore critical for its survival. One of the key dietary items of the long-footed potoroo is underground fungal fruiting bodies. The area is subject to an intensive survey, research and monitoring program. The area is also specifically targeted for intensive predator control (see section 4.1.4). Public access to the PMA will be restricted to minimise threats to this very rare species.

The Yowaka and Waalimma sections contain habitat for the endangered smoky mouse. On-going survey and predator control are undertaken in smoky mouse habitat. *Phytophthora dieback* in the area is of concern for smoky mouse conservation and it may be necessary to restrict access to affected areas.

Habitats for many threatened species are not restricted to the park but are spread across all land tenures. Cooperative measures such as the Yurangalo Voluntary Conservation Agreement will be vital for maintenance of vegetation corridors and habitat for threatened fauna populations.

The table below sets out management issues and approaches for each of the threatened species. These guidelines will be followed as far as is practicable but this may not always be possible because of conflicts in the needs of different plant and animal species living in the same area, particularly with regard to fire regimes (see section 4.1.5).

As for threatened plant species, recovery plans may be prepared for threatened fauna. Recovery plans are in preparation for most of the species found in the park and will be implemented when completed. These will detail information about species biology, distribution, status, habitat requirements and associated management strategies.

Recovery plans may provide for community education for particular species such as the koala, for which significant habitat occurs on private land. Neighbours will be encouraged to report sightings of threatened species.

## GUIDELINES FOR MANAGEMENT OF THREATENED FAUNA SPECIES

Species	S t a t u s	Survey	Research	Monitoring	Wildfire	Fuel Reduction Burns (FRB)	Predator Control	New (and if possible existing) Infrastructure
<b>Long-footed potoroo</b> <i>Potorous longipes</i>	E	On going	On going	On going. Also part of the ground dwelling fauna monitoring program	PMA is a high priority for protection. Avoid placement of large control lines within Zone	FRBs outside this area. Keep burn small, preferably in spring and not at times of environmental stress.	On-going targeted program	Exclude from PMA, close and rehabilitate existing roads except those essential for research and management
<b>Southern brown bandicoot</b> <i>Isoodon obesulus</i>	E	On going	On going	Monitoring may occur if populations are located	Give any population located high priority protection. Avoid placement of large control lines within boundaries of identified populations	Avoid burning more than 50% of local habitat. Fire intervals of 10-15 years.	Target if found.	None within 200 ha area around recorded areas
<b>Smoky mouse</b> <i>Pseudomys fumeus</i>	E	On going	Subject to funding	On going	Populations are a high priority for protection. Avoid placing control lines within boundaries of identified populations	Exclude from known populations pending further investigation. Strategic burns outside this area	On going program	None within 100 ha of recorded areas
<b>Long-nosed potoroo</b> <i>Potorous tridactylus</i>	V	Only as part of EIA for proposed activities	None planned	On going	Avoid large control lines within known habitat	Modified burns with emphasis on strategic burning	Part of the park program	Exclude from within boundaries of identified populations*
<b>White-footed dunnart</b> <i>Sminthopsis leucopus</i>	V	Only as part of EIA for proposed activities	Subject to funding	None planned	No special consideration	Protect potential nesting sites (eg logs) during FRB. Burn patch <10 ha. Avoid burning >50% of local habitat.	Part of the park program	Exclude from within boundaries of identified populations

Species	S t a t u s	Survey	Research	Monitoring	Wildfire	Fuel Reduction Burns (FRB)	Predator Control	New (and if possible existing) Infrastructure
<b>Tiger quoll</b> <i>Dasyurus maculatus</i>	V	Only as part of EIA for proposed activities	None Planned	Monitoring may occur if new pops located	Avoid destroying known den and latrine sites when constructing control lines	Keep fire away from known den and latrine sites. Protect hollow-bearing trees.	Only incidental. Use modified bait mounds. No aerial or surface baiting	Exclude from 200 m around known latrine and den sites
<b>Koala</b> <i>Phascolarctos cinereus</i>	V	On going, including recording fresh faecal pellets and analysis of dead animals	On going	To be determined as part of the recovery planning process.	All known populations will be a high priority for protection	Hazard reduction burns to be conducted under conditions that minimise crown scorch.	Targeted in core areas	Tailored to protect large feed tree species and areas or trees known to be used by koalas.
<b>Yellow-bellied glider</b> <i>Petaurus australis</i>	V	Only as part of EIA for proposed activities	None planned	Subject to funding	Avoid destroying hollow bearing trees when constructing control lines	Avoid hollow-bearing tree removal during FRBs	Only incidental as part of the park program	Tailored to protect feed trees and dens
<b>Squirrel glider</b> <i>Petaurus norfolkensis</i>	V	Only as part of EIA for proposed activities	None planned	Monitoring may occur if populations are located	All known populations will be a high priority for protection	Prefer low-intensity fire in winter. Avoid removing hollow-bearing trees.	Only incidental as part of the park program	Tailored to protect feed trees, understorey food resources and den
<b>Eastern pygmy possum</b> <i>Cercartetus nanus</i>	V	Only as part of EIA for proposed activities	None planned	Monitoring may occur if populations are located	All known populations will be a high priority for protection	Avoid removing hollow-bearing trees.	Only incidental as part of the park program	Tailored to protect feed trees, understorey food resources and den
<b>Brush-tailed phascogale</b> <i>Phascogale tapoatafa</i>	V	Only as part of EIA for proposed activities	None planned	Monitoring may occur if new populations are located	All known populations will be a high priority for protection	Avoid removing hollow-bearing trees. Burn patches <20 ha. Avoid burning >50% of local habitat.	Only incidental as part of the park program	Tailored to protect hollow bearing trees
<b>Grey-headed flying fox</b> <i>Pteropus poliocephalus</i>	V	Conduct searches for roosts (c) as part of EIA	None planned	Monitoring may occur if roost sites are located	All known populations will be a high priority for protection	Modify to keep away from known roost sites	Only incidental as part of the park program	No infrastructure within 200 m of roost sites. Minimise human disturbance.

Species	S t a t u s	Survey	Research	Monitoring	Wildfire	Fuel Reduction Burns (FRB)	Predator Control	New (and if possible existing) Infrastructure
<b>Eastern horseshoe-bat</b> <i>Rhinolophus megaphyllus</i>	V	Conduct searches for roosts <b>(c)</b> as part of EIA	None planned	Monitoring may occur if roost sites are located	Major control lines should not be constructed 100m of known roost sites	No special consideration	Only incidental as part of the park program	No infrastructure likely to increase human to roost sites, no infrastructure within 200 m of roost sites
<b>Common bent-wing bat</b> <i>Miniopterus schreibersii</i>	V	Conduct searches for roosts <b>(c)</b> as part of EIA	None planned	Monitoring may occur if roost sites are located	Major control lines should not be constructed within 100m of known roost sites	Avoid known roost sites.	Only incidental as part of the park program	No infrastructure likely to increase visitation to roost sites, no infrastructure within 200 m of roost sites
<b>Eastern cave bat</b> <i>Vespadelus troughtoni</i>	V	Conduct searches for roosts <b>(c, r)</b> as part of EIA for proposed activities	None planned	Monitoring may occur if roost sites are located	Major control lines should not be constructed within 100m of known roost sites	Avoid known roost sites.	Only incidental as part of the park program	No infrastructure within 200 m of roost sites. Do not encourage human visitation to roost sites.
<b>Large-footed mouse-eared bat</b> <i>Myotis adversus</i>	V	Conduct searches for roosts <b>(cts)</b> as part of EIA for proposed activities	None planned	Monitoring may occur if roost sites are located	Major control lines should not be constructed within 100m of known roost sites	Avoid known roost sites. Avoid removing hollow-bearing trees.	Only incidental as part of the park program	Do not increase human visitation to roost sites, no infrastructure within 200m of roost sites
<b>Greater broad-nosed bat</b> <i>Scoteanax rueppellii</i>	V	Conduct searches for roosts <b>(t)</b> as part of EIA for activities	None planned	Monitoring may occur if roost sites are located	Avoid destroying hollow bearing trees when constructing control lines	Avoid known roost sites. Avoid removing hollow-bearing trees.	Only incidental as part of the park program	Maintain a 50 m wide vegetation buffer around roosting sites
<b>Great pipistrelle</b> <i>Falsistrellus tasmaniensis</i>	V	Conduct searches for roosts <b>(c) (t) (s)</b> as part of EIA for proposed activities	None planned	Monitoring may occur if roost sites are located	Avoid destroying hollow bearing trees when constructing control lines	Avoid removing hollow-bearing trees.	Only incidental as part of the park program	Maintain a 50 m wide vegetation buffer around roosting sites
<b>Mastiff bat</b> <i>Mormopterus spp.</i>	V	Conduct searches for roosts <b>(t)</b> as part of EIA for proposed activities	None planned	Monitoring may occur if roost sites are located	Avoid destroying hollow bearing trees when constructing control lines	No special consideration	Only incidental as part of the park program	Maintain a 50 m wide vegetation buffer around roosting sites

Species	S t a t u s	Survey	Research	Monitoring	Wildfire	Fuel Reduction Burns (FRB)	Predator Control	New (and if possible existing) Infrastructure
<b>Yellow-bellied sheath-tailed bat</b> <i>Saccolaimus flaviventris</i>	V	Conduct searches for roosts ( <b>t</b> ) as part of EIA for proposed activities	None planned	Monitoring may occur if roost sites are located	Avoid destroying hollow bearing trees when constructing control lines	Avoid removing hollow-bearing trees.	Only incidental as part of the park program	Maintain a 50 m wide vegetation buffer around roosting sites
<b>Golden-tipped bat</b> <i>Kerivoula papuensis</i>	V	Conduct searches for roosts ( <b>t</b> ) as EIA for proposed activities	None planned	Monitoring may occur if roost sites are located	Avoid destroying hollow bearing trees when constructing control lines	Avoid removing hollow-bearing trees.	Only incidental as part of the park program	Maintain a 50 m wide vegetation buffer around roosting sites
<b>Regent honeyeater</b> <i>Xanthomyza phrygia</i> / Swift parrot <i>Lathamus discolor</i>	V	On going as part of national survey	Site characterisation	As part of the national survey	No special consideration	Ensure a balance of age classes in overstorey vegetation. Avoid removing winter-flowering eucalypts of >60cm diameter.	Only incidental as part of the park program	No removal of winter flowering eucalypts > 60cm diameter
<b>Masked owl</b> <i>Tyto novaehollandiae</i>	V	Conduct searches for nests as part of EIA for proposed activities	On going (SFNSW)	At known nest sites (SFNSW)	Avoid destroying hollow bearing trees when constructing control lines	Rake hoe around known nesting sites. Avoid removing hollow-bearing trees.	Only incidental as part of the park program	No infrastructure within 200 m of known nesting sites
<b>Sooty owl</b> <i>Tyto tenebricosa</i>	V	Conduct searches for nests as part of EIA for proposed activities	On going (SFNSW)	At known nest sites (SFNSW)	Avoid destroying hollow bearing trees when constructing control lines	Rake hoe around known nesting sites and keep burns out of riparian zones. Promote fire regimes suitable for small mammals.	Only incidental as part of the park program	No infrastructure within 200m of known nesting sites
<b>Powerful owl</b> <i>Ninox strenua</i>	V	Conduct searches for nests as part of EIA for proposed activities	On going (SFNSW)	At known nest sites (SFNSW)	Avoid destroying hollow bearing trees when constructing control lines	Rake hoe around known nesting sites Avoid removing hollow-bearing trees.	Only incidental as part of the park program	No infrastructure within 200m of known nesting sites



Species	S t a t u s	Survey	Research	Monitoring	Wildfire	Fuel Reduction Burns (FRB)	Predator Control	New (and if possible existing) Infrastructure
<b>Barking owl</b> <i>Ninox connivens</i>	V	Conduct searches for nests as part of EIA for proposed activities	None planned	At known nest sites (SFNSW)	Avoid destroying hollow bearing trees when constructing control lines	Rake hoe around known nesting sites. Avoid removing hollow-bearing trees.	Only incidental as part of the park program	No infrastructure within 200m of known nesting sites
<b>Pink robin</b> <i>Petroica rodinogaster</i>	V	None planned	None planned	None planned	No special consideration	Avoid riparian zones. Avoid FRB in spring and summer.	Only incidental as part of the park program	No special consideration
<b>Olive whistler</b> <i>Pachycephala olivacea</i>	V	To be conducted as part of EIA for proposed activities	None planned	None planned	No special consideration	Avoid riparian zones. Avoid FRB in spring and summer.	Only incidental as part of the park program	None at known sites
<b>Glossy black cockatoo</b> <i>Calyptorhynchus lathamii</i>	V	Conduct searches for nests and feed trees as part of EIA for proposed activities	Possible research into feed tree and nest site selection	Nests may be monitored if found	No major control lines within 100m of known nest sites. Avoid hollow bearing trees when constructing control lines	Exclude fire from Allocasuarina littoralis stands, with diameter <20 - 30 cm, where possible. Avoid removing hollow-bearing trees.	Only incidental as part of the park program	None within 100m of known nests. No removal of feed trees
<b>Turquoise parrot</b> <i>Neophema pulchella</i>	V	Conduct searches for nests as part of EIA for proposed activities		Nests may be monitored if found	Major control lines should not be constructed within 100m of known nest sites. Protect hollow bearing trees.	Avoid removing hollow-bearing trees. Avoid FRB in spring.	Only incidental as part of the park program	None within 100m of known nests. No removal of stumps and hollow logs from nesting areas
<b>Giant burrowing frog</b> <i>Heleioporus australiacus</i>	V	Only as part of EIA for proposed activities	On going (Forests NSW)	None planned	Major control lines should not be constructed within 100m of known burrows	Avoid constructing control lines within known areas. Avoid burning in potential habitat in summer and autumn.	As above	None within 200 ha area surrounding records

Species	S t a t u s	Survey	Research	Monitoring	Wildfire	Fuel Reduction Burns (FRB)	Predator Control	New (and if possible existing) Infrastructure
<b>Stuttering barred frog</b> <i>Mixophyes balbus</i>	V	Yes, to confirm past recordings	None planned	If found	Exclude fire from rainforest/successional rainforest areas.	Exclude from drainage lines, rainforest areas.	Known sites should be targeted	None within 200 ha area surrounding records or within 1 km upstream or downstream of records.

E = endangered, V = vulnerable (c) = cave, (r) = rock overhangs (t) = tree (s) = human built structures such as bridges, buildings and culverts

Survey for threatened species is carried out as part of preparation of recovery plans and the plans are likely to provide for on-going monitoring and research. In addition to NPWS programs, Forests NSW undertakes monitoring at various locations in the park as part of a comparison of various logging prescriptions and for comprehensive monitoring of species with large home ranges. Survey work will also be undertaken as part of environmental assessment of proposed activities.

### Species of special management concern

Below is a list of significant species that, although not listed under the Threatened Species Conservation Act, are of special management concern because individuals and populations are particularly susceptible to habitat disturbance. Such disturbances include road construction, wildfire, fuel reduction burns, predation by feral animals, infrastructure construction and other activities that remove or alter habitat. Special attention will be given to protection of habitat for these species when planning and undertaking management operations.

Species	Concern
<b>Greater glider</b> ( <i>Petauroides volans</i> )	Very sensitive to habitat loss. Removal of the canopy or even thinning of trees for provision of infrastructure could have a severe impact on local population
<b>Long-nosed bandicoot</b> ( <i>Perameles nasuta</i> )	Medium sized ground mammals are inherently vulnerable to decline from predators. Known populations should be monitored and predators reduced through baiting programs
<b>Feathertail glider</b> ( <i>Acrobates pygmaeus</i> )	Reasonably well protected provided habitat is maintained
<b>Platypus</b> ( <i>Ornithorhynchus anatinus</i> )	Reasonably well protected provided habitat is maintained
<b>Beautiful firetail</b> ( <i>Stagonopleura bella</i> )	Restricted to heath and tea tree scrub habitats with nearby permanent water. Care must be taken not to disturb this habitat
<b>Brush bronzewing</b> ( <i>Phaps elegans</i> )	Restricted to dense heaths, tea tree scrub and undergrowth in coastal forests. They nest low down or on the ground, making incubating birds and chicks easy prey for cats and foxes
<b>Red-browed treecreeper</b> ( <i>Climacteris erythroptis</i> )	Hollow dependent; require mature standing and fallen trees with decorticated bark. This species is possibly declining due to habitat removal
<b>Crested shrike-tit</b> ( <i>Falcunculus frontatus</i> )	Vulnerable to vegetation clearing, fragmentation and dieback and rely on peeling and decaying bark. The species is possibly declining and care should be taken not to disturb their habitat
<b>Yellow-tailed black cockatoo</b> ( <i>Calyptorhynchus funereus</i> )	Requires large hollows for nesting and are affected by anything that impacts on recruitment of hollow bearing trees and acacias
<b>Dollar birds</b> ( <i>Eurystomus orientalis</i> )	Hollow dependent and possibly declining in more open habitats
<b>Spotted quail-thrush</b> ( <i>Cinclosoma punctatum</i> )	Affected by vegetation clearing and fragmentation. Impacts by predation are unknown but possibly a threat since it is a ground nesting species. Too frequent fires destroy ground habitat
<b>Eastern horseshoe bat</b> ( <i>Rhinolophus megaphyllus</i> )	Inherently vulnerable to disturbance due to its colonial and cave roosting behaviour
<b>White-striped mastiff bat</b> ( <i>Nyctinomus australis</i> )	Probably not of particular concern however it is a hollow dweller and hollow resource is limiting and needs to be sensibly managed
<b>Common death adder</b> ( <i>Acanthopis antarcticus</i> )	Relatively sedentary, living mostly amongst leaf litter. Frequent fires and earth moving machinery probably detrimentally impact these species. This area is a stronghold for this species, which is declining in south-eastern NSW

## **Policies**

- *The park's fauna will be managed in accordance with Ecologically Sustainable Management practices as outlined in the Eden Regional Forest Agreement 1999.*
- *Threatened species will be managed as far as practicable in accordance with the principles in the table in this section of the plan and the provisions of species recovery plans.*
- *Impacts on habitat of species of special management concern will be avoided in accordance with the table above.*
- *Where there are conflicts between the needs of different species, management programs will be designed as far as possible to conserve all native species present but particularly to ensure that populations of threatened species are maintained.*
- *Access will be minimised in the Potoroo Management Area.*
- *A precautionary approach will be applied to management actions when there is a lack of information pertaining to a species.*
- *Following investigations, and subject to policy, the NPWS may reintroduce locally extinct or depleted species such as the koala and the brush-tailed rock wallaby into the park.*

## **Actions**

- *Monitoring will continue to be undertaken for threatened species.*
- *The Potoroo Management Area will continue to be targeted for research work.*
- *Provisions contained in threatened species recovery plans will be implemented as these are developed.*

### **4.1.4 Introduced Species**

An introduced species is defined in this plan as any plant or animal species not native to the park or a particular location in the park. 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.

Control of introduced species requires an integrated approach to control programs and other management issues. For example, roads and trails can be a primary means of weed infestation and access by feral animals. Control is most effectively undertaken in cooperation with neighbours and other authorities, particularly for species such as waterborne weeds and feral animals that readily move over a wide area.

Weed and pest animal control plans are being prepared for the park that set out techniques and programs for survey, monitoring and treatment.

### **Introduced Plants**

There has been no systematic survey of introduced plants, therefore understanding of weed locations is incomplete. Known introduced plants mainly occur in areas of the park previously subjected to forestry activities or adjacent to agricultural land..

Known noxious weeds present in the park include serrated tussock *Nassella trichotoma*, Paterson's curse *Echium plantagineum*, blackberry *Rubus discolor*, nodding thistle *Carduus nutans*, willow *Salix* spp. and crofton weed *Ageratina adenophora*. The *Noxious Weeds Act 1993* places an obligation upon all landholders to control declared noxious weeds on land that they occupy to the extent necessary to prevent such weeds spreading to adjoining lands.

The only known infestations of serrated tussock occur along the Mataganah Fire Trail in the central section of the park. Crofton weed occurs in a small area on Brown Mountain.

Infestations of willow occur along several of the rivers within the park. Paterson's curse, blackberry, nodding thistle, spear thistle *Cirsium vulgare* and blue periwinkle *Vinca major* occur in small infestations throughout the park. These species are treated by chemical spraying and hand removal. Control programs are proving successful but on-going monitoring is required.

Large numbers of pine wildings *Pinus radiata* have spread into the park in areas adjacent to pine plantations. Control is undertaken using the cut-stump method but pine wildings will be an on-going and increasing problem as more adjacent farmland areas are planted to pines.

## **Introduced Animals**

The Regional Pest Management Strategy addresses specific pests and detailed management strategies to be employed in the control of pest animals (see [www.nationalparks.nsw.gov.au](http://www.nationalparks.nsw.gov.au)).

Introduced animal species of concern include pigs, foxes, wild dogs, goats, rabbits, deer, horses and cats.

Pigs occur throughout the park and are difficult to eliminate as the activities of illegal pig hunters disperse the pigs and disrupt control programs. An ongoing trapping program is in place, concentrated in the central and southern sections of the park to assist in conservation of potoroo populations. Pigs dig up and eat hypogeous (underground fruiting) fungi which are a major food source for potoroos. A pig control program has also been established in the far north of the park, in the Glenbog area.

Goats occur throughout the park but numbers are highest in steep escarpment country in the north. The goat control program includes the Judas Goat System (using radio telemetry to locate collared animals), trapping and opportunistic shooting. Rabbit populations throughout the park are low, but monitoring is required to ensure that numbers remain low.

Deer are sighted in a number of areas and are increasing in numbers. Programs specifically targeting deer are being developed.

Cats are believed to have a significant impact on native animals but they are extremely difficult to control. New methods will be tested and used as they become available, such as audio lures in smoky mouse habitat.

Wild dogs and foxes are widespread throughout the park. The main focus of the fox and dog control program will be in areas of the park adjacent to farmland to protect neighbouring landholders from economic losses, as well as in the Potoroo Management Area and smoky mouse habitat in order to reduce predator pressure on these and other threatened species. An ongoing control program is undertaken in cooperation with the South Coast and Bombala Rural Lands Protection Boards (RLPBs), Forests NSW, Parks Victoria and Department of Natural Resources. A monitoring program is conducted with the CSIRO to determine the effectiveness of the baiting program. Working groups comprising RLPBs, Department of Environment and Conservation (NPWS) and neighbours have developed Wild Dog Control Programs which address wild dog control across all land tenures.

European honey bees belonging to licenced beekeepers may be in the park from time to time and are managed in accordance with the NPWS Beekeeping Policy.

Boundaries with some grazing properties are unfenced and some stock intrusion occurs in the park.

## **Policies**

- *Introduced plant species will be controlled and if possible eradicated. Priority for treatment will be given to those which:*
  - *have been declared noxious or are identified as high priority by the respective Bombala and Bega Council Weed Management Plans;*
  - *threaten rare vegetation ecosystems or significant native plant species;*
  - *may affect neighbouring lands;*
  - *have a high capacity for dispersal; and/or*
  - *are new isolated occurrences.*
- *Introduced animals will be controlled throughout the park. Control programs will be concentrated in areas where threatened species or neighbouring lands are most at risk. Control programs will be designed to avoid impact on non-target species.*
- *Weed and pest animal control programs will be undertaken in cooperation with other authorities, including cross-border agencies, and neighbours. On-going liaison and cooperative planning will be undertaken with neighbours about pest problems.*
- *Maintenance of effective fencing of boundaries with grazing properties will be encouraged. Fencing assistance may be provided.*

## **Actions**

- *Known occurrences of noxious and significant environmental weeds will continue to be treated. Priority will be given to serrated tussock and crofton weed.*
- *Fox, dog, pig and goat control will continue to be undertaken. Control programs will be conducted throughout the park, but will focus on areas adjacent to neighbouring farmland as well as the Potoroo Management Area, smoky mouse habitat, other known threatened species populations, and rare vegetation communities.*
- *Horses and rabbits will be controlled in response to sightings and cat control will be undertaken as effective methods are developed.*
- *Deer control programs will be developed and implemented.*
- *Weed and pest animal control plans will be completed and implemented.*
- *The NPWS will consult with other authorities and organisations with a view to reducing the invasion of pine seedlings into the park.*
- *Cooperative wild dog / fox management plans will be developed and implemented in partnership with Rural Lands Protection Boards, Forests NSW and neighbours.*

### **4.1.5 Fire Management**

Management must aim to achieve long term conservation of native plant and animal communities while providing ongoing protection of life and property within and adjacent to the park. Fire management strategies have been prepared to achieve this balance, however some important aspects of fire management are considered below. The northern Brogo and Bemboka sections of the South East Forest National Park are covered by the Wadbilliga Fire Management Strategy (FMS), whilst the remaining sections of the Park south of the Snowy Mountains highway are covered by the South East Forest National Park (including Egan Peaks Nature Reserve, Mount Imlay National Park and Yurammie State Conservation Area) FMS.

#### **Fire history**

Available fire history records for the park area commenced in 1948/49 but records are incomplete and sometimes inaccurate prior to the 1970s. The information shows that wildfires have occurred in approximately half of the 56 years since 1948/49. Large wildfires (more than 10,000 ha) occurred in the 1951/52 fire season and in 1957/58, 1972/73 and 1982/83. Smaller sized fires have generally occurred since the early 1970s. The reduction in large high intensity fires is probably a result of improvements in detection, response and suppression of fire. Approximately a third of the park has no recorded wildfires since 1948/49.

The prescribed burning data shows that nearly half of the park has been affected by prescribed fire in the past twenty years, and that a small proportion has been prescribed burned three or four times. In some areas, fires have been too frequent for optimal conservation of plant and animal communities.

Incendiarism, lightning and legal burning off were the dominant causes of fires, with human causes responsible for approximately 80% of the fires.

### **Ecological requirements**

Fire is a major management tool for maintaining naturally vegetated landscapes. Fire frequency, intensity and season of occurrence, together known as fire regime, are major factors influencing the distribution and composition of plant and animal communities. Research into fire ecology has established broad principles for the management of fire in an effort to avoid extinction of species:

- plant and animal species respond similarly to fire according to the characteristics of their life-history. It is not necessary to specify fire regimes for the conservation of every species; rather fire regimes for populations and communities or an ecosystem should be developed, which where possible, consider the specific needs of any threatened species known to be present;
- variable fire regimes are required across the landscape to maintain natural diversity. Management of fire within and adjacent to the park should aim, where practical, to provide a mosaic of fires of high, moderate and low intensity, frequency and extent. Extinctions are most likely when fire regimes of relatively fixed intensity, frequency and location prevail without variation.

Fire management is directed toward providing a diversity of fire regimes with variability across the park and over time. It aims to reduce the average size and intensity of wildfires and to minimise impact on wildlife by not allowing fires to completely burn the local extent of a vegetation community or habitat type and by providing unburnt refuge areas.

Major considerations for management of fire in the park are the ecological requirements of the many threatened species and rare ecosystems, the need to protect old growth forest and the presence of extensive areas that have been recently logged. In addition, vegetation communities that have a low tolerance to short fire intervals (eg rainforests and moist forests) occupy a significant area within the park, particularly the Tantawangalo section.

The fire management strategies contain biological fire thresholds for park ecosystems, guidelines for threatened plant and animal species and guidelines for managing fire in old growth forests. The fire management strategies aim to maintain a large proportion of each vegetation group in older fire ages classes and to exclude fire from the majority of regenerating logged areas until overstorey species have reached an appropriate stage of growth and maturity.

As well as plant and animal communities, fire affects nutrient cycles, erosion patterns, weed incursion, water quality and hydrological regimes. It can impact on Aboriginal sites (such as scarred trees), historic sites and recreation facilities and threaten visitors and neighbouring land. Large scale wildfire can also have medium to long term effects on the visual integrity of the landscape and immediate air pollution issues associated with smoke. The fire management strategies provide further guidelines for minimising these impacts. The individual needs of fire sensitive species will be considered when planning prescribed burns.

### **Strategies and cooperative arrangements**

Under the *Rural Fires Act 1997* the NPWS is a fire authority and is responsible for controlling fires on the park and ensuring that they do not cause damage to other land or

property. The NPWS fulfils these responsibilities by undertaking fire mitigation prevention and suppression strategies within the park.

Fire management in the park is complicated by its rugged topography, large boundary to area ratio, and the presence of adjacent property and assets such as houses, sheds and pine plantations. The overall threat to life and property from fire within the park is low to moderate in most locations because most buildings are located either downhill or within cleared areas such as paddocks. Six percent of dwellings, however, are located in areas of higher fire behaviour potential.

The NPWS regards cooperative fire management combined with community involvement as critical to the achievement of life and property protection as well as heritage management objectives. The NPWS is a member of the Bombala and Bega Bush Fire Management Committees that have a legislative responsibility to coordinate fire management and fire control on a district basis. The fire management strategies for the park complement operation and risk management plans prepared by the Committees.

The fire management strategies aim to:

- reduce the occurrence of human caused unplanned fires on the park;
- suppress unplanned fires;
- minimise the potential for spread of bushfires within, from or into the reserves;
- maximise protection from fires, of persons and property on, or immediately adjacent to, the reserves;
- manage fire regimes to avoid the extinction of all species that are known to occur naturally within the reserves;
- protect from damage by fires all Aboriginal sites, historic places and culturally significant features which are known to exist within the reserves.

Fire management strategies used include fuel reduction, fire trails, detection and cooperative arrangements. Fuel reduction will be undertaken through a strategic, mosaic pattern of burning based upon ecological burning principles and the over-riding need to protect life and property. Close to boundary areas, fuel reduction programs and fire trail maintenance systems will be designed and implemented in cooperation with neighbours.

### **Policies**

- *Fire, including both wildfires and prescribed fires, will be managed in accordance with the fire management strategies for the park and operation and bushfire risk management plans prepared by the Bombala and Bega Bush Fire Management Committees.*
- *Records and maps will be maintained of all fires as they occur.*
- *Research will be encouraged into the ecological effects of fire in the park, particularly the fire response of rare and threatened plant species and the requirements of threatened fauna species.*
- *The NPWS will continue to actively participate in the Bega and Bombala Bush Fire Management Committee. Close contact and cooperation will be maintained with Council fire control officers, volunteer Rural Fire Service brigades, Forests NSW and Victorian fire authorities.*
- *Land use planning undertaken by development authorities and private developers will be encouraged to incorporate boundary fire breaks and other fuel reduction measures in any development adjacent or in proximity to the park.*
- *The park may be closed to public use during periods of extreme fire danger for public safety and to reduce the likelihood of unplanned ignitions, and sections of the park may be closed to undertake fuel reduction programs.*

### **Actions**

- *Implement the fire management strategies for the park.*



- *Research information on suitable fire intervals for sensitive areas within the park and monitor unplanned and prescribed fire events to ensure the management objectives are met as far as possible.*
- *Annual programs will be prepared detailing fuel reduction burning, trail maintenance, research and other fire management requirements in accordance with the policies outlined above and the fire management strategies.*

## **4.2 CULTURAL HERITAGE**

Cultural heritage includes both Aboriginal and non-Aboriginal history and associated activities and works. It comprises important landscapes, sites, structures and relics that may have aesthetic, historic, scientific and social significance to present and future generations.

### **4.2.1 Aboriginal Cultural Heritage**

The park is within the territory of the Yuin people, of which there are several groups and clans. The coastal Yuin territory stretches from Cape Howe in the south, to the Shoalhaven River in the north, and inland to the eastern edge of the Monaro tablelands (Howitt 1904). Prior to British colonisation, the Yuin had a diverse economy, with trade and cultural links with neighbouring Aboriginal clans and tribes. A number of pathways and trails used by Aboriginal people are known within the parks. Some trails have been researched and documented as part of the Bega Valley Aboriginal Heritage Study (Blay 2005). Along with a diversity of food resources, including fish, macropods, possums and a range of plant species, the Yuin possessed an extensive and diverse material culture. Weapons and tools included barbed and unbarbed spears, spear throwers, shields and hatchets. Possum and kangaroo skin cloaks, woven nets, wooden and bark containers, bark huts and canoes, and a range of ceremonial items were also utilised.

Whaling and sealing expeditions to the far south coast in the late 1700's were the first contact between the Yuin people and Europeans. The arrival of pastoralists and timbergetters in the period from 1800 to the mid 1840's resulted in the introduction of disease, and conflict with the Yuin people. During this period, there was a marked decline in the Yuin population. Many Aboriginal people fell victim to disease and there is also anecdotal evidence that massacres occurred in the area. The 1861 passing of the Robertson Land Acts resulted in changing land use patterns, closer settlement and restricted access by Yuin people to many places in their country.

The Yuin have survived, despite the decimation of the population, and have retained their cultural identity. The transfer of traditional knowledge continues amongst contemporary Aboriginal people, and there is considerable interest in retaining links with country and culture. Aboriginal people have a strong attachment through spiritual and cultural links with the whole landscape, and specific locations within the park. Aboriginal people hold knowledge of flora, fauna and natural processes, that is relevant to, and may assist with nature conservation. 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.

Within the park there are individual places that are significant to the Yuin people. These include archaeological sites, spiritual sites, ceremonial sites and contact sites. Some sites may not contain any physical evidence of past use or occupation.

More than 100 archaeological sites have been recorded in the park and many more are likely to exist. Most are open camp sites but there are also scarred trees, axe grinding grooves and a quarry. Archaeological sites are important to Aboriginal communities as they are a testament to their culture's great antiquity. These sites are also important to non-Aboriginal people as they provide information about Australian history and ways of life prior to British colonisation. Most known archaeological sites in the region are located on ridges or on flats near water (Heffernan & Boot, 2000). These areas are also the areas

most likely to be used for recreational purposes and it will be necessary to undertake archaeological survey prior to upgrading or developing recreational and management facilities in the park.

Several prominent peaks within the park landscape have been identified as potential sites of spiritual significance. The significance of these places to Aboriginal people has yet to be determined but natural cultural heritage sites are amongst the most significant places recognised by Aboriginal people in the Eden region (Heffernan & Boot). Proposals for provision of recreational facilities and other management in such locations will be discussed with the Aboriginal community.

While the NPWS presently has legal responsibility for the protection of Aboriginal sites it acknowledges the right of Aboriginal people to make decisions about their own heritage. It is NPWS policy that Aboriginal communities be consulted about matters affecting the management of Aboriginal sites and related issues and how the Aboriginal culture and history of an area controlled by the NPWS will be promoted and presented.

Interest has been expressed by members of the Aboriginal community in accessing the park for cultural activities and teaching. The NPWS supports this in principle and will work with the community to establish agreements for such access.

### **Policies**

- *The NPWS will maintain close liaison with Aboriginal communities, in accordance with its Community Consultation Plan regarding all aspects of management of the park, with an emphasis on promoting opportunities for active involvement of Aboriginal people in management.*
- *Aboriginal people will be encouraged to carry out activities in the park related to traditional links to country in line with NPWS policy. Relevant Aboriginal communities will be consulted regarding requests for access for traditional or ceremonial purposes.*
- *All works with the potential to impact on Aboriginal sites will be preceded by an assessment of the impact on Aboriginal cultural heritage. The NPWS will advise the relevant Aboriginal communities of major work proposals and consult with them to determine any potential impact on Aboriginal cultural heritage values.*
- *Impacts of recreational use and management activities on Aboriginal sites within the park will be monitored.*
- *Prior to any promotion of a site, a conservation study will be prepared and any management work necessary to protect the site will be undertaken, along with relevant approvals to use and manage the information.*

### **Actions**

- *In association with the Aboriginal community, formal consultation mechanisms will be established for discussion of Aboriginal heritage management issues.*
- *The development of Memorandums of Understanding (MoUs) will be pursued between the NPWS and organisations representing the interests of the broader Aboriginal community in relation to the South East Forest National Park and other parks in the region to establish principles for a range of issues aimed at maximising the involvement of Aboriginal people in the ongoing management of the park.*
- *Surveys and recording of Aboriginal sites, places and landscapes within the park will continue to identify priorities for ongoing conservation/management of Aboriginal cultural heritage.*

#### **4.2.2 Post-1770 History**

Initial movements by Europeans into the areas now encompassed by park were led by explorers, miners and timber getters early in the 19th Century. During the 1830s European squatters spread from the Goulburn area south along the tablelands and from further north along the coast to the Bega area. Little settlement is known to have occurred in areas that now form the park but grazing by domestic stock, both sheep and dairy cattle,

has occurred in parts. Fence posts indicate the location of old fence lines. Initial pastoral interests saw scattered settlements evolve centred on station houses. Several towns, including Nimmitabel, Bombala, Eden and Bega, were established in the 1840's, serving as points of supply for surrounding districts.

Produce from the tablelands was transported to the coast for shipping. Early transport routes cross the park at various locations, several of which were later developed to accommodate vehicles. The main routes are Big Jack Mountain Road, the Cowbail, Postmans Track, Mountain Road, New Line Road and other roads in the same area, and Brown Mountain Road. Some historic routes are known as bridle trails.

The first bridle trail, sometimes called the 'Mountain Hut Road', climbed over Big Jack Mountain and was travelled from 1832 onwards. Later the need for a route suitable for wagons was recognised. The original route was modified and the 'Purgatory' was constructed. This remained the only route for wagons until the 'Cow Bail' was aligned.

The Cow Bail Trail runs on or close to its original alignment. It was originally a stockmans route and was upgraded in part by Benjamin Boyd in 1843 to provide a direct link between his coastal development at Boydtown and his Monaro properties. Older parallel alignments remain visible and features including chimneys and cuttings along the trail illustrate construction and use of the road.

The Postman's Track was the main route for the transport of mail from the Monaro in the 1800's. The original track was noted by Government Geologist, Rev. W.B. Clarke in 1851, as the extremely rugged track used by the postman (Platts, 1989). Records show a weekly packhorse mail service ran until 1875 carrying mail from Cooma to the coast via the Postman's Track (NPWS, 1998). The current alignment is likely to follow only short sections of the original route.

Ruins of two stone buildings are located in a clearing on either side of the Tantawangalo Creek where the Postman's Track crosses the Creek. Built of local tabular stone, little is known of the history of the buildings. One is referred to as Heffernans Hut, presumably after the Heffernans who settled at Bimbaya in the early 1800's.

The Brown Mountain route, established in 1860 as a bridle trail, was upgraded in 1889 to accommodate vehicles, following local lobbying (Platts, 1989). Coaches began using the road almost immediately. The Brown Mountain road and Piper's Lookout are significant because of association with early motorised travel between the coastal plain and the Monaro. A stone wall and entrance gate was constructed at Pipers Lookout in 1951, in memory of Fred Piper who conducted mail and passenger services between Bega and Cooma over a 28 year period. The dramatic view from Piper's Lookout demonstrates the rugged nature of the escarpment. The lookout area has been enlarged, protecting the historic features, and on site interpretation tells the story of Fred Piper.

The early trails continue to hold significance to many that still use them today. Section 4.3.2 provides for continued use of historic trails that are within the park.

Gold was discovered in the district in 1852, although mining activity was limited until 1890 when payable gold was found near Pambula. Parts of the Towamba, Pambula and Nungatta goldfields covered the park. Goldfields were broad gazetted regions centred on identified lode areas and extending across lands that offered similar prospecting potential. The main mining areas were largely outside what is now park but pits and shafts dot the landscape in a number of areas of the park, particularly the eastern part. As well as gold, small amounts of silver, copper and other metals were extracted.

Incidental mining sites included Tingys Plains (1896) in the Coolangubra section, Stoney Creek (unknown dates) in Yowaka section and McCarthys Creek (1967) in the Tantawangalo section. Molybdenite, a strategic mineral used in weapons manufacture, was mined in the Yowaka Section during both world wars and in the Coolangubra section at Mines Road. The mining remains have yet to be systematically recorded.

Logging of the forests now in the park has occurred since Europeans first settled the area. In the late 1800's timber getting became the dominant industry of the district. Initially small operations began for local supply of firewood, building materials, railway sleepers, mineshaft supports, eucalyptus oil and other products. Changes in the 20th century led to the decline of many of these smaller operations as the timber industry changed and developed to supply sawlogs and woodchips to national and international markets. Physical evidence of forestry operations in the park includes trails, bark dumps, sleeper camps, hut sites, even-aged forest stands and sawmill sites. Because machinery was often moved from one location to another and the forest landscape has continued to change, there are commonly few remains of early operations. Inventory of historic forestry sites is limited.

The timber industry supported some local communities for many years, producing a wide range of commodities and exporting many raw materials. This led to a strong association between the local communities and the forests now included in the park. Interpretation in areas which provide evidence of past forestry activities needs to acknowledge management by Forests NSW and the strong association with local communities as well as changing community perceptions of land management (see section 4.3.1).

The 1950's and 1960's saw a growing interest in the conservation values of the south east forests. Several areas now in the park were identified as of particular conservation interest and were protected in forest reserves in the late 1970's and early 1980's. Protests and conflict over forest management practices, the scale of woodchip operations and the loss of old growth and wilderness values became common in the 1970's. The junction of the Forestry Commission diversion trail and the original Wog Wog forest trail was the site of one of many confrontations between conservationists and forestry workers in the 1980s. The Coolangubra Protest site witnessed a symbolic 'battle' over the issue of logging and development of old growth forests in south east NSW. These protests were instrumental in raising awareness of forestry issues in Australia. This awareness led to the declaration of several national parks over former state forest areas and eventually to the reservation of the South East Forest National Park. The protest site and the nearby quarry used to build Wog Way are two of many sites which have social significance as part of the conflicts over forest conservation.

A range of infrastructure (trails, pipelines, buildings) associated with Cochrane Dam is located adjacent to the Brown Mountain section of the park. Planned visitor facilities in this area (section 4.3.2) will be managed to protect and interpret these items.

A partially cleared former grazing property near Nunnock Swamp in the Tantawangalo Section of the park was added to the park in late 2002. It contains significant native grasslands and an historic building, Alexander's Hut, which provides an insight into the lives of early settlers of the Monaro. Conservation planning for the hut is being carried out, and other visitor facilities such as a campsite and walking track are planned in the immediate area to complement other facilities at Nunnock Swamp (see section 4.3.2).

There is insufficient information about other historic places and features in the park and further research and survey will be needed.

### **Policies**

- *The provisions of the Burra Charter of Australia (ICOMOS 1988) for the conservation of places of cultural significance will guide management of the cultural heritage of South East Forest National Park.*
- *Research into the cultural heritage of the park will be encouraged.*
- *Historic places and evidence of historic landuse will be assessed prior to any management works and appropriate conservation action carried out.*
- *Where historic features are located close to visitor facilities, the need for protection works, monitoring and interpretation will be considered and public safety issues will be addressed.*

## **Actions**

- *Historic places and routes will progressively be recorded and assessed, and management and interpretation strategies will be prepared for significant sites.*
- *Oral histories will be gathered where possible.*

## **4.3 USE OF THE AREA**

### **4.3.1 Promotion and Interpretation**

The park has numerous natural, cultural and aesthetic features of interest to visitors. Some, like the impressive variety of eucalypt forest types, old growth forests, waterfalls and rock formations are conspicuous and easy to appreciate. Others like the often cryptic and nocturnal fauna, threatened plants, and unique relationships within ecosystems are not so obvious, but equally as important and fascinating. It is this diversity and uniqueness of the south east forests that will be promoted and interpreted to visitors in a manner that value-adds to the park experience whilst protecting the resource by encouraging appropriate use and broad conservation ethics both inside and outside the park environment.

Communication covers a series of processes that build upon one another. These begin with satisfying visitors' basic needs to know what they can expect to see and do in the park and how to comfortably and safely get around (promotion and orientation). This progresses to learning about some of the natural and cultural features and processes (interpretation), developing skills to recognise and understand these elsewhere in the landscape (education) and ultimately to sharing knowledge and skills with others so that they may act as advocates in their own communities (advocacy).

**Promotional messages** are those that attract attention to the park and define its character. NPWS and Tourism visitor information centres play an important role in this process and messages are reinforced by the marketing strategies of local tourism organisations. A range of publications promoting destinations and recreation opportunities is currently in use including posters, postcards and saleable touring guides.

**Orientation** messages are those which introduce people to their location within the park or region, to access points and travel routes, to the range of recreational opportunities available at the various places and to the natural and cultural values at these places. This is the level of communication performed predominantly by existing information and directional signs. The size and configuration of the park and its multiple entry points do not lend themselves to the establishment of a major visitor orientation centre within the park at this stage.

**Interpretation** introduces the visitor to the detail in the environment (things such as the plants, rocks and animals, or the lives of former inhabitants) and to the fascinating and complex relationships that exist within it. This leads visitors to discovering and understanding park values. Current interpretation in the park relies on display panels at Six Mile Creek, White Rock River, Pipers Lookout and Myanba Gorge. The standard is very high and supports key messages and themes for the park as outlined in the Regional Interpretation Strategy (NPWS 1999e).

Some face to face interpretation is conducted in the park by NPWS staff as part of the annual Discovery Ranger program and as opportunistic talks to special interest groups. Commercial tour operators also interpret the values of the park to their clients.

The ultimate aim for the NPWS is that visitors leave the park with some additional life skills and a heightened sense of the need for conservation of natural and cultural elements and processes, and may ultimately become advocates for conservation off park and in their everyday lives.

## **Major communication themes for 'take home messages'**

To be effective, communication messages need to be simple, relevant to the lives of the visitors and thematic as well as promoting what is truly unique and impressive about the south east forests. Major themes include:

- the park has a wide range of forest habitats/eucalypt forests;
- NPWS is preserving and growing old growth forests for the future;
- caring for the forests across the whole landscape is everyone's responsibility;
- escarpment habitats, with their associated plant and wildlife species, are protected over large areas;
- park habitats exhibit a comprehensive range of ecological processes;
- the park supports a wide range of threatened species;
- the park protects the headwaters of many streams, creeks and rivers that run into lagoons, lakes and estuaries on the coast;
- rivers and creeks of the park contain many native fish and crustaceans that are vulnerable to pollutants such as soap oils and poisons entering the catchment;
- land use from the coast to the hinterland has been different at different times and by different communities, influenced by the society and values of the day;
- the importance of the park as a critical component of a Comprehensive, Adequate Reserve (CAR) System for the Eden Region;
- the park is currently managed for our community and with the assistance of the community by the NPWS for the conservation and protection of biodiversity;
- Aboriginal culture is a key element in the park;
- the park has a history of conflicts over forest conservation;
- the park has a complex logging history which influences forest structure and long term management needs;
- scientific research is needed for the protection of the park;
- a visit to the park will be exciting and enjoyable.

### **Policies**

- *The NPWS will continue to liaise with local and regional tourism organisations and other land management authorities to promote the park within the broader south east forests landscape as a regional resource and focus for nature based tourism.*
- *The NPWS will encourage the presentation of Aboriginal culture by the Aboriginal community. Any NPWS cultural information will be accurate and appropriate and be developed in consultation with the Aboriginal community.*
- *The NPWS will work with commercial operators through licensing arrangements to ensure that messages being delivered are consistent with NPWS messages as outlined in the Regional Interpretation Strategy, and of a high standard.*
- *The NPWS will encourage educational activities in the park in conjunction with local educational institutions.*

### **Actions**

- *The NPWS will continue to provide promotional and orientation information to regional Tourist Information Centres and local and regional publishers, and will produce media articles to promote NPWS activities in relation to the park.*
- *NPWS will continue to conduct workshops and familiarisation tours with tourism industry representatives.*
- *Orientation information and directional signage will be installed for visitor facility developments outlined in the table in section 4.3.2. to assist the easy and safe movement of visitors and promote greater understanding of unique park values.*
- *Tourist driving guides will be produced to guide visitors safely around the park and to link visitor sites. These guides will include visitor safety information and appropriate driving and minimal impact codes.*

## 4.3.2 Recreation and Tourism Opportunities

### Introduction

Most of the park is newly reserved and facilities have only recently been established or improved, including directional signs. Present visitor levels are low; in the order of 120,000 for 2004/5, of which the majority (112,000) were to Pipers Lookout. Continued growth in tourism within the region is expected to lead to increases in visitor use of the park.

A Recreation and Tourism Plan for the park (NPWS, 1999) was commissioned to gather information about recreation and tourism patterns, assess community needs and expectations with regard to nature based tourism opportunities in the region and identify potential gaps or opportunities in the park. The outcomes of this research show that:

- the most popular activities are currently sightseeing, pleasure driving, picnicking and short walks;
- most visitors are attracted to the park's scenic qualities and its quiet and restful atmosphere;
- visitation peaks during the summer period when the park becomes a day use destination from accommodation centres along the coast, particularly on 'bad beach days';
- the most significant contributing factor in increasing visitation will be the development of visitor facilities and promotion of the park;
- the park is currently dominated by semi-remote areas with vehicle trails, a reflection of the park's forestry history;
- gaps in recreation opportunities occur with regard to middle distance walking tracks, formal bush camping sites and opportunities to experience 'old growth forest',
- there is a need to improve access to recreation opportunities for the large visitor population based along the coastal strip, and
- because of the remoteness, recreational opportunities within the park should be grouped to establish a 'critical mass' of activity, offering visitors a greater range of destinations within an area of the park and 'return for effort' for travelling the long distances.

The Far South Coast Nature Tourism and Recreation Plan (May 2004) has been prepared by a multi-agency team comprising representatives from the NPWS, Eurobodalla Tourism, Sapphire Coast Tourism, Forests NSW, Department of Lands and local communities. This plan focuses on product development and provision of infrastructure and has been considered in the development of this management plan.

Recreation opportunities provided will be generally those at the low key end of the spectrum, in natural settings, which directly contribute to the visitor's appreciation and understanding of the park's natural and cultural significance.

Provision for visitor use of the park has been considered in a regional context. There are several visitor sites managed by Forests NSW close to the park. The recreational opportunities in the park and adjacent state forest will complement more developed and heavily used opportunities along the coastal strip.

### Recreational Vehicle Use

A large number of roads and vehicle trails exist throughout the park (see section 4.3.3). While many of the roads are 4WD standard, there is a well-established 2WD road network. Several of the well maintained 2WD roads will remain open and one of these routes will be identified as an RTA tourist route currently incorporating part of the park in its itinerary.

Numerous 4WD opportunities exist outside the park and this use will be catered for in the park but will be carefully managed. Intensive use of fire trails that are suitable for use by 4WD vehicles, may result in unacceptable impacts on natural and cultural values. Roads

may be closed to public access, either on a temporary or permanent basis, where environmental damage is occurring as a result of misuse or overuse.

Use of unsealed roads during wet weather conditions may damage the road surface and add significantly to the NPWS maintenance liability. Visitors will be encouraged to practice responsible driving.

Driving or riding off public roads and trails within the park is illegal under the NPW legislation.

### **Day use (picnicking and lookouts)**

Existing and proposed day use facilities are listed in the table below. Upgrading of some facilities to NPWS standard is needed, and facilities will be provided at some sites that currently receive informal use. In accordance with the Recreation and Tourism Plan, day use facilities will be grouped in four sections of the park:

- the Yurammie section, in close proximity to the large population centres along the coast;
- the Western Coolangubra section around Waratah Creek and Nunnock Swamp, which has ready access from Bombala,
- the Brown Mountain section, which is currently the most visited part of the park (Pipers Lookout), and
- the Six Mile Creek area, where additional recreation opportunities will be provided around existing camping and day use facilities.

### **Camping**

Vehicle-based camping areas are currently located at Six Mile Creek (2WD access) and Postmans Track (4WD access) in the Tantawangalo section of the park. These sites are located on Travelling Stock Route land and are managed by the NPWS under a Memorandum of Understanding with the Rural Lands Protection Board. Additional vehicle-based camping opportunities exist outside the park at Newton's Crossing (Forests NSW) and at a range of sites in natural settings in the coastal parks, within easy reach of the South East Forest National Park.

Surveys have established a demand for additional camping opportunities in the escarpment areas of the park (NPWS, 1999b). Vehicle-based camping areas have been developed in the vicinity of Waratah Gully and Nunnock Swamp. Subject to environmental assessment approvals, an additional camping area may be constructed in the vicinity of Alexander's Hut in the Tantawangalo section of the park. A walking track is also planned near this site. This will have the benefit of providing a medium distance walking track that will also link with the existing Nunnock Swamp walk and campsite.

Given the size of the park and low use levels, camping will be permitted throughout the park at locations more than 500m from roads, camping and picnic areas but not in the Potoroo Management Area.

### **Walking**

Recent visitor surveys have established that walking opportunities currently available in the park meet the needs of visitors for short walks and, at the other end of the spectrum, for walking in the remote and wilderness sections of the park. The surveys identified a need for a range of middle distance, marked and interpreted walking tracks in association with existing facilities. Proposed new walks are in the table below. Most of these follow existing vehicle trails or informal tracks.

Remote walking and pack camping opportunities exist in the Brogo and Genoa wilderness areas and the White Rock Mountain area in the Coolangubra section of the park. Remote area walkers have identified a need for trackhead facilities to provide access and a focal point for information concerning safety procedures and minimal impact use.



A 'great escarpment walk' running through the park and linking with the Coopracambra and Wadbilliga National Parks to the south and north respectively has been proposed. This may become a reality at some future stage but has not been provided for in this plan of management.

## Bicycling

There is currently little bicycling activity in the park but this activity is becoming increasingly popular in the wider community. The large network of quiet roads in the park provides numerous opportunities for bicycle touring. In accordance with NPWS policy bicycling will be permitted on all roads and management trails (with the exception of the Potoroo Management Area and declared wilderness areas) but not along walking tracks.

## VISITOR FACILITIES

Existing Visitor Destination	Existing Facilities	Proposed Management
<b>Goodenia Rainforest</b> – Yurammie Section	<b>Day Use, Walking Track/s</b>	<b>Day Use Facilities</b> – Maintain recently upgraded day use facilities. <b>Walking Track/s</b> – Maintain recently upgraded and realigned track.
<b>Myrtle Mountain</b> – Yurammie Section	<b>Day Use, Walking Track/s</b>	<b>Day Use Facilities</b> – Finalise upgrade of picnic facilities. <b>Walking Track/s</b> – Investigate options for a constructed loop walking track associated with a viewing area.
<b>Brown Mountain</b> – Glenbog Section	<b>Day Use</b> – picnic facilities at Rutherfords Creek on adjacent Eraring Energy land <b>Walking Track/s</b> – short walk track and boardwalk at Carters Creek	<b>Camping</b> - Investigate options for a basic walk-in camping area. <b>Day Use Facilities</b> – Maintain recently established picnic facility and access road. <b>Walking Track/s</b> – Maintain newly-established walking track. Establish a network of walking tracks to provide a range of walking experiences as required to access and interpret the old growth forest ecosystems. Some of these tracks may be located on Eraring Energy lands (see 4.3.6).
<b>Pipers Lookout</b> – Glenbog Section	<b>Day Use, Lookout, Walking Track/s</b> – loop track, disabled access to first platform, path to second viewing platform	<b>Day Use Facilities</b> – Maintain existing infrastructure. <b>Walking Track/s</b> – Maintain existing infrastructure.
<b>Nunnock Swamp</b> – Tantawangalo Section	<b>Camping, Day Use, Walking Track/s</b> – short walking track with 2 viewing platforms	<b>Camping</b> – Maintain recently established camping area in the vicinity of Nunnock Swamp. <b>Day Use Facilities</b> – Maintain new facilities. <b>Walking Track/s</b> – maintain newly established walking track and viewing platforms.

<b>Postman's Track</b> – Tantawangalo Section	<b>Camping, Day Use</b>	<b>Camping</b> – Maintain existing infrastructure. <b>Day Use</b> – Maintain existing infrastructure.
<b>Myanba Gorge</b> – Coolangubra Section	<b>Day Use, Walking Track/s</b> - Disabled access to 1st viewing platform, path to 2nd viewing platform, marked trail to 3rd platform	<b>Day Use Facilities</b> – Maintain existing infrastructure. <b>Walking Track/s</b> – Maintain existing infrastructure.
<b>Waratah Gully</b> – Coolangubra Section	<b>Camping, Day Use</b>	<b>Camping</b> – Maintain, or subject to public risk assessment relocate, recently established camping area. <b>Day Use Facilities</b> – Maintain recently established facilities. <b>Walking Track/s</b> – Construct a short walking track into adjacent old growth forests and extended marked trails linking Pheasants Peak and Myanba Gorge.
<b>Pheasants Peak</b> – Coolangubra Section	<b>Day Use, Walking Track/s</b> – fire trail to Pheasants Peak	<b>Day Use Facilities</b> – Maintain recently established car park and facilities on Waratah Road with low level interpretation <b>Walking Track/s</b> – Maintain fire trail as access track to peak with minimal signage and erosion control as required.
<b>Waalimma Trackhead</b> – Genoa Section	<b>Camping, Day Use, Walking Track/s</b> – fire trail to Yambulla Creek	<b>Camping</b> – Maintain facilities. <b>Day Use Facilities</b> – maintain as walking trackhead with minimal facilities and safety information. <b>Walking Track/s</b> – maintain fire trail.
<b>White Rock River</b> – Genoa Section	<b>Day Use, Walking Track/s</b> – Short track to river.	<b>Day Use Facilities</b> – Maintain existing infrastructure. <b>Walking Track/s</b> – Maintain existing infrastructure.
<b>Big Jack Mountain Road</b> – Coolangubra Section	<b>Day Use</b>	<b>Day Use Facilities</b> – Maintain existing infrastructure. <b>Walking Track/s</b> – Investigate with landholder options for establishing a walk along historic trail interpreting the Aboriginal and historic heritage values of the trail.
<b>Six Mile Creek</b> – Tantawangalo Section	<b>Camping Day Use Walking Track/s</b> – Disabled access to viewing platform	<b>Camping</b> – Maintain existing infrastructure. Investigate expansion to meet peak demands. <b>Day Use Facilities</b> – Maintain existing infrastructure. <b>Walking Track/s</b> – Maintain existing tracks, install interpretation at viewing platforms. Provide marked walking track with steps to the base of the falls - investigate using existing alignment. Investigate options for the establishment of marked walking trails into adjacent forest, maximising use of existing trails.

<b>Alexander's Hut near Nunnock Swamp</b> – Tantawangalo Section	Nil	<b>Camping</b> – Consider construction of a basic campsite near Alexander's Hut to provide a trailhead for the planned walking tracks. <b>Day Use Facilities</b> – Construct a small day use facility near the proposed camp site. <b>Walking Track/s</b> – Construct a loop walking track from Alexander's Hut and the proposed campsite/day use area. Investigate a walking track with links to the campsite near Nunnock Swamp and the swamp walking track. This will integrate these two adjacent sites and provide a wider range of recreation opportunities in this section of the park.
<b>Wolumla Peak</b> –Yurammie Section	<b>Day Use, Walking Track/s</b> - Marked and cleared track to summit/poor	<b>Day Use Facilities</b> – Upgrade but keep small and basic. <b>Walking Track/s</b> – Upgrade walking track to summit to a high standard, constructed track. Subject to land tenure negotiations and approvals, investigate options for constructing a simple viewing platform with moderate level of interpretation at the summit.
<b>Burragate Peak</b> – Egan Peaks Section	Nil	<b>Walking Track/s</b> – Investigate feasibility of a car park at Ben Boyd Road and marked walking track to the summit from the eastern side, subject to environmental impact assessment.
<b>Mines Road Trackhead</b> – Coolangubra Section	Nil	<b>Day Use Facilities</b> – Provide walking trackhead carpark with minimal facilities and safety information. <b>Walking Track/s</b> – routes into southern Coolangubra.
<b>Saddleflaps</b> – Genoa Section	Nil	<b>Day Use Facilities</b> – Provide walking trackhead carpark with minimal facilities and safety information. <b>Walking Track/s</b> – unmarked tracks into Genoa wilderness

NB: Camping areas have a pump-out sealed pit toilet, fire rings and a picnic table. Day use areas have at least one picnic table and a toilet.

## Horse riding

Horse riding in the park consists mainly of event rides organised by local clubs. Routes used intersect the park and are recognised as an important part of the local culture. The heritage values of these routes will be assessed (refer section 4.2.2).

Recreational horse riding will be permitted on all roads in the park. Requests for use of any other trails which are traditional horse riding routes will be considered and negotiated with user groups. Use of these routes will be by permit only and will be subject to an assessment of natural and cultural heritage values. Horse riding will be excluded from:

- the Potoroo Management Area;
- declared wilderness areas;
- the Identified Coolangubra Wilderness Area; and
- areas where *Phytophthora cinnamomi* fungus is affecting forest health (at present this includes areas within the Yowaka section).

Mapping of routes will be undertaken and made publicly available.

Event rides organised by local horse riding clubs will require a permit. Extended horse riding (with associated camping) activities present a suite of impacts such as trampling and grazing at camping sites, introduction of feed and weeds, and will not generally be

permitted. Consideration may be given on a case by case basis, to limited horse camping regulated by permit, if it can be demonstrated that this is a traditional use at certain locations and can be undertaken with minimal environmental impact.

### **Commercial recreation activities**

A small number of local commercial tour operators are licensed to operate in the park. Commercial operators provide a valuable service by using best practice management whilst permitting sustainable enjoyment and understanding of the park's natural and cultural values. They can also assist NPWS with monitoring programs and in promoting corporate conservation objectives to their clients.

Commercial opportunities within the park will be enhanced by the provision of visitor facilities, upgraded interpretation, expanded promotion and other programs outlined in this plan. Provision of group facilities may be considered at suitable sites in order to reduce conflict.

### **Monitoring**

Monitoring of visitor use is undertaken in the park by a variety of means such as traffic counters, visitor survey and staff observation. This will be used to inform future management decisions. Visitor impact monitoring is needed in popular and sensitive locations and will be undertaken as part of the ESFM program detailed in section 4.3.5.

### **Policies**

- *Recreation use will be managed to be ecologically sustainable and not conflict with the primary conservation objectives of protecting the ecological integrity and natural and cultural heritage values of the park.*
- *Recreation management will be cognisant of, and complement where possible, recreation opportunities provided by other government agencies and private enterprise.*
- *Visitor facilities will be designed, where practicable, to maximise access for disabled visitors and will utilise appropriate technology, designed to protect water catchment values and minimise impacts.*
- *Walk-in camping will be allowed outside designated camping areas throughout the park at locations more than 500m from roads, camping and picnic areas but not in the Potoroo Management Area. It may be restricted in other areas if necessary for protection of significant natural and cultural features. Minimal impact camping and walking will be promoted through the park information program.*
- *Bicycle riding will be allowed on all roads and management trails in the park (with the exception of the Potoroo Management Area). It will not be allowed on walking tracks or in declared wilderness areas.*
- *Horse riding will be permitted on roads in the park. Requests for use of any other trails which are traditional horse riding routes will be considered and negotiated with user groups. Use of these routes will be by permit only and will be subject to an assessment of natural and cultural heritage values. Horse riding will not be allowed on walking tracks, in the Potoroo Management Area, in declared wilderness areas, in the Identified Coolangubra Wilderness Area or in areas where *Phytophthora cinnamomi* fungus is affecting forest health. Riders will be encouraged to follow the horse riding code of practice developed by the Australian Trail Horse Riders Association and the NPWS.*
- *Horse camping will be allowed only by permit, where it can be demonstrated that this is a traditional use at particular locations and can be undertaken with minimal environmental impact.*
- *Organised horse riding events will require a permit to ensure that routes are appropriate and that minimal impacts result from the activities.*

- *Commercial recreation and education activities that are consistent with conservation and appreciation of the natural and cultural values of the park will be encouraged and licensed in accordance with NPWS policy and the directions outlined in this plan.*
- *The NPWS will continue to work with the local Aboriginal community to promote and support appropriate commercial cultural tourism opportunities in and adjacent to the park.*
- *The NPWS will monitor visitor use sites and roads, walking tracks and trails. Where monitoring shows unacceptable impacts on park values, action will be taken to either restrict access or change use and rectify impacts.*

### **Actions**

- *Camping, day use and walking track facilities will be maintained, upgraded or developed in accordance with the 'Visitor Facilities' table above.*
- *The NPWS will enter into agreements with clubs about codes of conduct (eg. small group size) in naturally and/or culturally sensitive areas.*
- *A comprehensive monitoring program will be established to ensure that impacts from both commercial and non-commercial visitor use are managed to within acceptable levels, and action taken to remedy unacceptable impacts if and when they occur.*

### **4.3.3 Vehicle Access and Maintenance of Roads and Trails**

Much of the park was formerly managed by Forests NSW for forestry purposes and is networked with an extensive array of 2WD and 4WD roads and management trails. There are approximately 288 kilometres of 2WD roads and 525 kilometres of 4WD roads and trails in the park (see Appendix 2). The type of access varies from disused logging roads, trails and snig trails to more frequently used routes which link major roads, provide access to private property or leasehold land, or are used for recreational access or park management purposes. A proportion of the disused forest logging routes is not deemed essential for the purposes of recreational, natural and cultural heritage management, particularly in the eastern Coolangubra section of the park

It is estimated that approximately 120 kilometres of roads and trails within the park provide some form of access to private property.

Rationalisation of the road and trail network is needed throughout the park, for environmental protection reasons, to ensure all access routes are safe and to reduce ongoing maintenance costs. A number of the roads and trails are shortcuts or are dead-ends and do not lead to features or sites of recreational interest, and can have significant and unnecessary environmental impacts. Maintenance of these roads and trails of little functional value also contribute significantly to the NPWS overall annual road maintenance costs.

Because of the complexity of access issues in the park, an Access Strategy was prepared which mapped all roads and trails, assessed their condition and use and classified them according to on-going maintenance requirements. When reviewing the access network, the strategy determined essential access for recreational use, fire management, pest species management, research and access to private property, along with information about topography, road condition, and the proximity to significant vegetation communities and fauna habitats. In particular, the following considerations were considered in the development of the Access Strategy:

- roads and trails can provide ingress for introduced carnivores which prey on wildlife, affect movement of small animals across the landscape and aid the introduction and spread of weeds and pathogens. Reduced access throughout conservation reserves is desirable to reduce these impacts;
- minimising the extent of access across the landscape has the beneficial effect of reducing sediment run-off, simply by decreasing the area of surface to be maintained;

- roads on ridges provide the most effective access for fire management and minimise the impact on sub-surface drainage, thus providing for a more environmentally efficient and cost effective road base;
- while access is important for private property, park management and appropriate recreational use, access not required for such use is a burden on the financial resources of the NPWS and thus the community;
- road construction opens up the forest, increasing the 'edge effects' that may be detrimental to the environment well beyond the construction edge of the road.

In order to reduce environmental impacts and maintenance costs, access not deemed essential for private property, recreation or management purposes will be closed and rehabilitated completely or may be downgraded to a state that is negotiable for fire and other emergency management purposes. Roads and trails may be temporarily closed to the public during times of prolonged wet weather and high fire danger to prevent environmental damage and ensure public safety.

Within the eastern Coolangubra and Genoa (Potoroo Management Area) sections of the park, this plan identifies a number of roads and trails for immediate closure and rehabilitation. This process has begun. It also identifies management trails which will be retained, with restricted access to private property in some cases and in others restricted access to allow for effective management of degraded forest areas towards restoring their full suite of forest values (ecological integrity). This plan also identifies a limited number of management trails within the eastern Coolangubra that will be reclassified once they are no longer required for essential management purposes.

### **Wog Way**

In the Coolangubra Section, the plan proposes that the Wog Way be closed to public access (east of Kanoonah Road), but retained for fire and other park management-related purposes.

The Wog Way was constructed in the late 1980s in highly controversial circumstances. Its route largely follows that of an old, pre-existing (and now largely overgrown) trail known as the Wog Fire Trail. The new road was intended to facilitate heavy vehicle access to, and permit logging within, the then Coolangubra State Forest.

Part of the Wog Way now passes through land that was in 1989, identified by the National Parks and Wildlife Service (NPWS) as wilderness under the Wilderness Act 1987. However, the then NSW Government ruled out formally declaring the area as wilderness, and instead approved logging activity in a number of areas. Logging subsequently occurred in various parts of the Coolangubra State Forest until the mid-1990s. Logging activity caused damage to the wilderness values, through the construction of a network of logging roads and intensive integrated harvesting operations.

The present NSW Government ceased logging in the Coolangubra State Forest in 1995 and established the South East Forest National Park in 1997.

Since its construction, the Wog Way has been used by a relatively small number of people. It is not generally used as a road through the park, and is no longer used for forestry-related purposes. It is, however, used for fire and other essential park management purposes, in much the same way that the now over-grown Wog Fire Trail was used.

For these reasons, it is proposed that the Wog Way be closed to the general public. However, the small section of the Wog Way from the Coolangubra Forest Way to Kanoonah Road will remain open to the public because it allows public access to the new NPWS visitor facilities at the Myanba Gorge.

This action will allow the NPWS to carry out its core fire and pest control activities to the current standards. The Wog Way has also been identified as a primary fire trail in the

South East Forest National Park Fire Management Strategy. In the event of a major wildfire, the Wog Way would be used as major fire control line, which could be accessed by Category One fire tankers along its entire length. The road provides a crucial control line and would help in containing a fire that was moving towards the Towamba Valley in the east. In severe conditions, the road may also allow a major fire to be contained which would otherwise burn to the Imlay Road. This would help provide fire protection to the Nalbaugh Plateau and the northern part of the Potoroo Management Area.

While this option precludes the use of Wog Way by recreational drivers and commercial operators, it will ensure that access remains available for essential park management related purposes. In addition, this proposal will also allow for the rehabilitation of Doughy's Link and Bold Granite Road over time.

Once closed to public vehicular access, the area will be able to be managed according to wilderness principles, noting that NPWS policy specifically allows management trails to be maintained in wilderness areas if they are considered to be essential for activities such as fire management and suppression, or feral animal control.

NPWS will monitor the rate and extent of ecological recovery of those parts of the formerly identified Coolangubra Wilderness Area that were damaged by logging in the 1980s and 1990s. However, the damage caused by logging is reversible and the area will recover over a considerable period of time.

## **The road network**

An integrated monitoring program will be introduced to selected roads and trails across the whole park to provide accurate information on levels of use. The information will be used to guide future management decisions. The park roads and management trails in South East Forest National Park are individually listed in Appendix 2 and shown on the Access Strategy Maps at the back of the plan. The road and trail categories are as follows:

**Park roads** are essential for primary management or strategic purposes that include the provision of recreational opportunities, fire management, pest species management and private property access. Park roads have the highest priority for maintenance by NPWS. Where practicable, and without compromising access and safety, a small number of these roads will be downgraded in standard to reduce maintenance costs and sediment runoff.

Public vehicle, horse and bicycle use will be permitted on all park roads. Where access to these roads is through private property, public use will require permission from property owners.

**Management trails** are necessary for private property access, research or other specific management purposes such as fire and pest species management, but may be located in environmentally sensitive locations, or be shared with another agency and restricted access is needed to protect infrastructure.

Management trails will be clearly marked and available for use during emergency incidents, and will be given medium priority for maintenance. The use of management trails by the public will not be permitted other than for bushwalking, bicycling (with the exception of the Potoroo Management Area and wilderness), or access to private property with approval of the relevant landholder.

Some roads or trails are not considered essential for park management, private property access or recreational use. Such routes will be closed and rehabilitated as soon as is practicable. Planning for the closure of such routes will:

- be based on a condition assessment, setting priority order for closure;
- apply best practice drainage and erosion control techniques that minimise disturbance of the road surface; and
- include revegetation works where it is considered necessary to enhance rehabilitation and habitat potential.

Within the eastern Coolangubra section of the park, three management trails have been identified for closure once access is no longer required for essential management purposes.

Ongoing use of park roads and management trails, and the rehabilitation of Category C trails, will be kept under review to monitor environmental impacts and safety issues. The category of individual roads and trails may be altered either temporarily or permanently where deemed appropriate by the Regional Manager if patterns of use change or environmental impacts are found to be unacceptable.

A former Forests NSW quarry is located in Coolangubra section of the park. A quantity of crushed rock stockpiled in the quarry will continue to be used for road maintenance within the park. Before any decision to quarry additional material, the NPWS will undertake environmental impact assessment in accordance with the provisions of the *Environmental Planning and Assessment Act 1979*. Concomitant with this continued use will be a program to shape and rehabilitate the quarry in accordance with guidelines established in the Wog Quarry Rehabilitation Plan prepared by Resource Allocation Pty Ltd 1998.

### **Policies**

- *Public vehicle use will be permitted on all park roads.*
- *Use of roads and trails outside the park boundary on private property will require prior permission from relevant land owners.*
- *Park roads not deemed essential for high volume community and management use will be downgraded to reduce maintenance liability. The priority for such work will be subject to funding availability and based on monitoring of road condition, environmental impacts, safety issues, changing patterns of use and management requirements.*
- *Management trails will only be available for management, research and emergency use, and access to private property where relevant. General public vehicle and horse riding use will not be permitted. These trails may be temporarily closed to all public access (including walking) during management programs.*
- *Category C roads and trails will be closed to all vehicle use, with the aim of eventual revegetation.*
- *Road and trail categories may be altered and roads and trails may be closed to protect significant natural or cultural features, if no longer needed or if environmental impacts prove unacceptable.*
- *Where roads or trails provide access to private property, they will not be closed except in consultation with the landholder and where alternative access is available.*
- *Areas of forest in the eastern Coolangubra section of the park which have been degraded as a result of past logging activities will be restored to maximise forest structural diversity and habitat values. This will involve any works necessary to complete the rehabilitation of Category C roads, the immediate downgrading of others to management trail status to allow restricted access for management purposes and private property access, and the eventual reclassification of three management trails to Category C.*
- *Access to the sensitive Potoroo Management Area within the Genoa Section of the park is also subject to a process of access rationalisation, in order to protect the high conservation values.*
- *Extraction of materials and the reshaping of the Wog Way quarry will continue for road maintenance purposes within the park, consistent with environmental impact assessment and a quarry rehabilitation plan.*
- *Where park roads or management trails become surplus to requirements and/or the costs of maintenance outweigh benefits, they should be downgraded or closed.*



## **Actions**

- *All park roads and management trails will be maintained according to the schedule in Appendix 2.*
- *All management trails will be marked or if necessary closed with gates to restrict access for management and/or private property purposes.*
- *An annual program will be prepared and implemented for the closure and rehabilitation of all Category C roads listed in the Schedule in Appendix 2.*
- *Within the eastern Coolangubra section of the park, when access is no longer required for essential management purposes, and following consultation with the Local Bush Fire Management Committee, the Bold Granite Road South and the Doughy Road will be reclassified and managed as Category C roads.*
- *The NPWS will negotiate an MOU with Forests NSW regarding cooperative operational procedures and joint road and trail maintenance and access arrangements in the park.*
- *A comprehensive road monitoring program will be implemented to assess road conditions and levels of use to provide accurate information to guide future management of roads and trails in the park.*

### **4.3.4 Community Liaison**

Many organisations and individuals have an on-going interest in management of the park. A range of stakeholder issues was identified through the public consultation process during the preparation of this plan of management. The NPWS will continue to provide ongoing opportunities for stakeholders to be consulted and involved in the management of the park. A partnership approach to management of heritage and biodiversity will be encouraged.

Communication with a range of individuals, community groups, peak industry bodies, corporate and agency representatives will be needed. Involvement of stakeholders is expected to relate to specific issues or sites, such as interpretation and education programs, pest and weed control, significant cultural heritage place management, or to conservation management principles across the whole park or the wider landscape.

## **Policies**

- *The Regional Advisory Committee will continue to play an important role in representing the interests of the broader community and facilitating communication with park neighbours and other stakeholders.*
- *The NPWS will cooperate and enter into partnerships with neighbours and other key stakeholders to best manage pest species, fire, recreation, threatened species and more generally, in the protection of natural and cultural resources in the park.*
- *Significant coverage of the park and current issues will be included in an annual region-wide neighbours and key stakeholders newsletter.*
- *Neighbours, stakeholders and Regional Advisory Committee members will be invited to attend relevant forums dealing with planning and management of the park.*
- *Bega Valley and Bombala Shire Councils will be kept informed of management strategies and priorities for the park, to ensure better outcomes for conservation and recreation across the broader landscape.*
- *Local print and electronic media will be used to provide information about management issues and present the NPWS as a role model to the wider community.*
- *The NPWS will continue to liaise with Forests NSW on management issues of joint concern.*

## **Actions**

- *The Region will continue to support the operation of the Advisory Committee in accordance with NPWS policy.*

- *The NPWS will arrange field days or other opportunities for neighbours to meet with NPWS staff and discuss common concerns.*
- *Produce annual newsletter.*

### **4.3.5 Ecologically Sustainable Forest Management, Research and Monitoring**

#### **Ecologically Sustainable Forest Management**

Under the Eden Regional Forest Agreement (RFA) all forest managers including Forests NSW, Department of Infrastructure, Planning and Natural Resources and the 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 is an over-riding management principle but will be implemented primarily through monitoring to provide feedback on management programs and directions for future adaptive management. Performance indicators of ecologically sustainable forest management have been identified (RACD-DUAP, 1999). Monitoring programs will be developed using these indicators to demonstrate the impact of management actions on the ecological functions within forests. Remedial management actions will then be undertaken and management practices reviewed and adapted accordingly.

Over the next decade the NPWS will:

- establish and implement monitoring protocols and techniques;
- identify research programs to fill knowledge gaps and improve ability to collect and interpret data;
- improve adaptive management;
- develop processes to collate and report on compliance with ESFM requirements; and
- inform the broader community about the ESFM program.

The principles and practices developed will be applied to South East Forest National Park, along with other parks and reserves in the Eden RFA area.

#### **Research and monitoring**

A large number of plant and animal surveys have been undertaken in the park as part of development of forest harvest plans, the Eden Regional Forest Agreement, recovery plans and other purposes. On-going scientific study is needed to improve understanding of the park's natural and cultural heritage and the processes that affect them, and to improve management strategies. The park will be subject to further research and monitoring as a result both of the issues identified in this plan of management and as part of requirements of the Eden Regional Forest Agreement and ESFM.

Research in the park over the next five years will mostly be directed towards testing and improving the conservation benefits of management. Research priorities identified under the RFA will be pursued along with topics identified in this plan of management. Key areas of research will be:

- surveying and monitoring of threatened plants and animals (as identified by species recovery plans);
- validating the locations and extent of rare vegetation ecosystems and old growth;
- monitoring the impact of fire, weeds and dieback on rare vegetation ecosystems, old growth and rare plants;
- mapping locations where previous forest management has significantly changed forest structure or species content;

- long term monitoring of forest structure and biodiversity change over medium to long time periods and determining what, if any, actions are required to promote the efficient regeneration of severely disturbed forest stands and restoration of hydrological regimes;
- recording and assessment of cultural heritage places;
- recording oral histories for historic places;
- recording and monitoring visitor numbers and attitudes with respect to park recreation opportunities; and
- the impacts of visitor use.

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 can provide valuable information for management. Research is being undertaken in and around the park by CSIRO, Forests NSW, Melbourne University and other organisations. Such research will be supported by the NPWS.

### **Policies**

- *The principles of Ecologically Sustainable Forest Management will guide management operations in the park and monitoring and research will be carried out in accordance with ESFM requirements.*
- *The NPWS will work with other authorities and stakeholders in implementing ESFM principles across the landscape.*
- *The NPWS will undertake research to provide information about the park's natural and cultural heritage and human use in order to improve management. Priority will be given to those topics listed in this plan and other areas developed under ESFM programs.*
- *The park will be available for appropriate research by other organisations and individuals. External researchers will be encouraged to participate in the identified priority research topics.*
- *Research activities must comply with the objectives and policies of this plan of management. Research structures and long term markers must be placed in locations that will minimise their visual impact and be removed upon completion of the research.*
- *The Aboriginal community will be involved in the design and implementation of research relating to Aboriginal heritage and in the use of the research information.*

### **Actions**

- *Research and monitoring programs and codes of practice developed under ESFM will be implemented in the park.*
- *Develop criteria and a program for monitoring the impacts of the access network on the park.*

#### **4.3.6 Inholdings, Leases and Licences**

The park contains a number of privately owned inholdings and public facilities not related to national park purposes. The condition of inholdings varies considerably with some extensively cleared and others relatively undisturbed.

**Geodetic stations** are located at Wolumla, Burragate, Neenah, Nungatta, Wog Wog, White Rock and Mataganah. Access for maintenance of the stations is generally undertaken by foot or helicopter and is very infrequent. These stations were constructed prior to reservation of the park and have low impact on park values.

**Tantawangalo Weir**, on the lower section of Tantawangalo Creek, supplies domestic water to towns in the Bega Valley. It is maintained by Bega Valley Shire Council. No equipment exists on site. An inholding of 8.5 hectares surrounds the weir and includes the access road and a gravity-fed water pipe along Tantawangalo Creek north of the weir.

**Travelling Stock routes** exist on Postman's Track, Cattleman's Track and Tantawangalo Mountain Road. Travelling Stock Reserves are located on Postmans Track adjacent to Tantawangalo Creek and on Tantawangalo Mountain Road (Six Mile Creek Bridge Reserve). A Memorandum of Understanding has been developed between the South Coast Rural Lands Protection Board and the NPWS regarding co-operative management of the Six Mile Creek and Tantawangalo Creek Reserves. The areas are managed by NPWS staff in accordance with the regulations that apply within a national park and only in extreme circumstances (fire or drought) will the travelling stock routes and reserves be used for the movement of stock.

**Wolumla Peak Fire Tower** and the land around the tower is excluded from the park. The tower was erected by Forests NSW for fire surveillance. It plays a vital role in the early detection of wildfires. The tower view covers a range of land tenure with NPWS and Forests NSW being the major landholders. A co-operative approach to management of the fire tower has been developed and an MOU between Forests NSW and NPWS is in place for the operation of the tower.

**Communications Towers** located on Wolumla Peak near the fire tower are maintained by a number of different authorities. Removal of any towers no longer needed would be desirable as the towers present an unattractive appearance to visitors to the peak.

**Eraring Energy** manages an inholding on Brown Mountain around Cochrane Dam. The land is mostly undisturbed vegetation with high conservation values. It is intended that recreation facilities linked to Pipers Lookout will be placed on these lands (see section 4.3.2). The NPWS has entered into an MOU with Eraring Energy for the management of the lands. Eraring Energy infrastructure includes Cochrane Dam, dam wall, spillway, header tower, Rutherfords Creek Dam, a pipeline that runs to Carters Creek and a number of gated fire trails

### **Policies**

- *The NPWS will maintain close liaison with the owners of inholdings regarding park management issues and other matters of mutual concern.*
- *The NPWS will not close any road which is the only practical means of access to any inholdings.*
- *Maintenance access to the geodetic stations will be permitted by foot or, if essential, by helicopter.*
- *NPWS recognises the importance of early detection of wildfires and the valuable role of fire tower surveillance. The NPWS will continue to work cooperatively with Forests NSW to ensure the effective utilisation of Wolumla Peak Fire Tower.*
- *No new leases or licences for individuals or other organisations will be permitted unless they are for purposes of conservation, education or public enjoyment of the natural and cultural resources of the park, consistent with the NPW Act.*
- *Liaison will be maintained with owners of the communications towers on Wolumla Peak.*

### **Actions**

- *The NPWS will seek to have Wolumla Peak reserved as part of the park.*

## 5. PLAN IMPLEMENTATION

This plan of management is part of a system of management developed by the National Parks and Wildlife Service. The system includes the National Parks and Wildlife Act, management policies, established conservation and recreation philosophies, and strategic planning at corporate, Branch and Regional levels.

The implementation of this plan will be undertaken within the annual programs and budgetary processes of the NPWS Far South Coast Region. Priorities, determined in the context of branch and regional strategic planning, will be subject to the availability of necessary staff and funds and to any special requirements of the Director-General or Minister.

Regional programs are subject to ongoing review, within which works and other activities carried out in South East Forest National Park and Egan Peaks Nature Reserve are evaluated in relation to the objectives laid out in this plan. A review of the Plan's actions will be part of the annual planning cycle to ensure actions are incorporated into annual area works programs.

The environmental impact of all development proposals will continue to be assessed at all stages of the development and any necessary investigations undertaken in accordance with established environmental assessment procedures.

Section 81 of the Act requires that this plan shall be carried out and given effect to, and that no operations shall be undertaken in relation to the national park or nature reserve unless they are in accordance with the plan.

No term is proposed for this plan of management. If after adequate investigation, operations not included in the plan are found to be justified, this plan may be amended in accordance with section 73B of the Act.

As a guide to the implementation of this plan, relative priorities for identified activities are summarised in the following table.

### ACTIVITY

High Priority Actions – to be completed within 2-3 years	Plan ref.
Establish monitoring programs to measure long term changes in the abundance and distribution of rare plant species and ecosystems.	4.1.2
Remove non-local trees and shrubs and replace with indigenous species.	4.1.2
Finalise and implement weed and pest animal control plans.	4.1.4
Consult with other authorities and organisations with a view to reducing the invasion of pine seedlings into the park.	4.1.4
Develop and implement deer management programs.	4.1.4
Implement fire management strategies for the park.	4.1.5
Establish formal consultation mechanisms for discussion of Aboriginal heritage management issues.	4.2.1
Develop a Memorandum of Understanding (MoU) between the NPWS and organisations representing the interests of the broader Aboriginal community which will establish principles for a range of cultural heritage management issues.	4.2.1
Continue with surveys and recording of Aboriginal sites, places and landscapes within the park and identify priorities.	4.2.1
Gather oral histories.	4.2.2

Construct a walking trail linking Waratah Gully, Pheasants Peak and Myanba Gorge.	4.3.2
Mark or if necessary install gates on management trails to restrict access to management and/or private property purposes.	4.3.3
Implement a road monitoring program to assess road conditions and levels of use to provide accurate information to guide future management of roads and trails in the park.	4.3.3
Conduct field days for neighbours to meet with NPWS staff.	4.3.4
<b>Medium Priority Actions – to be completed within 3 – 5 years</b>	
Develop and implement management guidelines for threatened and rare plant species and ecosystems.	4.1.2
Investigate areas of noticeable dieback, monitor areas subject to dieback, assess access and management practices with the aim of avoiding the spread of phytophthora.	4.1.2
Assess regeneration success in logging coupes and implement works to assist regeneration.	4.1.2
Develop and implement cooperative wild dog / fox management plans.	4.1.4
Record and assess historic places and routes and prepare management and interpretation strategies.	4.2.2
Provide promotional and orientation information to Tourist Information Centres and publishers.	4.3.1
Produce of tourist driving guides.	4.3.1
Complete visitor facilities in the Brown Mountain area.	4.3.2
Enter into agreements with clubs about codes of conduct.	4.3.2
Negotiate an MOU with Forests NSW regarding joint road and trail maintenance and access arrangements.	4.3.3
Develop criteria and a program to monitor impacts of the access network on the park.	4.3.5
<b>Low Priority Actions – to be completed within 5 – 10 years if resources available</b>	
Implement horse and rabbit control in response to sightings, and cat control when methods are developed.	4.1.4
Research information on suitable fire intervals for sensitive areas within the park and monitor unplanned and prescribed fire events to ensure the management objectives are met as far as possible.	4.1.5
Conduct tourism industry workshops and familiarisation tours.	4.3.1
Investigate/upgrade/develop additional facilities at Six Mile Creek, Big Jack Mountain, Wolumla Peak and Burragate Peak.	4.3.2
Develop visitor facilities at Mines Road and Saddleflaps.	4.3.2
Establish a comprehensive visitor impact monitoring program.	4.3.2
Seek to have Wolumla Peak reserved as part of the park.	4.3.6
<b>Ongoing Actions</b>	
Establish field validation and GIS programs to improve the accuracy of rare forest ecosystem and growth stage maps.	4.1.2
Implement actions in threatened species recovery plans.	4.1.2,4.1.3
Continue monitoring for threatened species.	4.1.3
Continue research and monitoring in the Potoroo Management Area.	4.1.3
Implement ongoing treatment of noxious and significant environmental weeds.	4.1.4

Implement on-going fox, dog, pig and goat control programs.	4.1.4
Develop and implement annual prescribed burning, trail maintenance and other fire management programs in accordance with fire management plan.	4.1.5
Develop and install orientation information, directional signs and interpretation for new visitor facility developments.	4.3.1
Maintain all roads and management trails according to the schedule in Appendix 2.	4.3.3
Prepare and implement an annual program for closure and rehabilitation of all roads and trails listed for closure in the Schedule in Appendix 2.	4.3.3
Continue to support the operation of the Advisory Committee.	4.3.4
Produce annual newsletter.	4.3.4
Implement ESFM research and monitoring programs and codes of practice.	4.3.5

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## APPENDIX 1 : Description of SEFNP Vegetation Ecosystems

**Wet eucalypt forest ecosystems** are generally found in the upper catchments, in gullies or on sheltered slopes and cover 42.4% of the park. Common canopy species include monkey gum (*Eucalyptus cypellocarpa*), brown barrel (*E. fastigata*), messmate (*E. obliqua*), ribbon or manna gum (*E. viminalis*), river peppermint (*E. elata*) and shining gum (*E. nitens*), with understoreys characterised by the presence of *Bedfordia arborescens*, *Blechnum nudum*, *Clematis aristata*, *Coprosma quadrifida*, *Dicksonia antarctica*, *Pomaderris aspera*, *Poa meionectes*, *Tylophora barbata* and *Viola hederacea*.

It should be noted that while some of the wetter forest ecosystems are typically tall, high rainfall wet sclerophyll forests, most fall somewhere between the traditional wet to dry sclerophyll divide (Miles 1999).

**Dry shrubby forest ecosystems** prevail on the more infertile metasedimentary soils, exposed ridges and slopes and cover 28.9% of the park. Canopy species associated with the common types include white stringybark (*Eucalyptus globoidea*), yellow stringybark (*E. muelleriana*), woollybutt (*E. longifolia*), coast grey box (*E. bosistoana*) and silvertop ash (*E. sieberi*). The understorey tends to be dominated by shrubs with only sparse or open groundcover of herbs and grasses. Some of the more common understorey species include *Acacia falciformis*, *Allocasuarina littoralis*, *Cassinia longifolia*, *Epacris impressa*, *Monotoca scoparia*, *Leucopogon lanceolatus* and *Lomandra* spp.

**Dry grassy forest ecosystems** are normally associated with the more fertile granitoid or basalt derived soils of the less steep hinterland and tablelands. They cover 24.9% of the park. Typical trees of the more common dry grassy forests are Maiden's gum (*E. maidenii*), coast grey box, white stringybark, *Angophora floribunda*, *Acacia mearnsii* and *A. implexa*. Shrubs can be dense or patchy, typically including *Bursaria lasiophylla*, *Cassinia* and *Ozothamnus* spp. Ground cover consists of a wide range of herbs and grasses commonly including *Danthonia longifolia*, *Microlaena stipoides* and *Themeda australis*. The typical canopy species of the rare dry forest ecosystems are *Eucalyptus angophoroides*, white stringybark, *E. agglomerata* and occasionally red box (*E. polyanthemus* ssp. *vestita*). The understorey commonly contains some shrubs but always has a dense and diverse ground cover of grasses, herbs and sedges.

**Rainforest** occurs in small patches throughout the park, mainly in sheltered, wet but reasonably well-drained gullies and on sheltered slopes.

Dry rainforest occurs on north facing slopes and gully heads in the Coolangubra section. It is associated with large granitoid bedrock outcrops and sometimes with Ordovician metasediments. The canopy is dominated by Port Jackson fig (*Ficus rubiginosa*), often with *Pittosporum undulatum* and sometimes *Alectryon subcinereus*. *Eucalyptus agglomerata* is a common emergent. The understorey is generally very sparse. The vine *Celastrus australis* is characteristic of the ecosystem along with other vines, herbs, grasses and ferns.

Myanba Eucalypt-Fig Forest can be found in the Coolangubra section on steep granitoid slopes at 500m around Myanba Gorge and environs. The indicator species of this ecosystem are in the shrubby understorey: *Ficus rubiginosa*, *Hymenanchera dentata*, the vine *Celastrus australis* and the rock orchid *Dendrodium speciosum*. The canopy usually contains various eucalypts, though these are not indicative.

Warm temperate rainforests are restricted to steep sheltered gullies, usually south-facing to east-facing on metasediments, and occasionally on granitoids. Coastal warm temperate rainforests occur mainly below 300 m on coastal ranges in the Yowaka and Yurammie sections while hinterland warm temperate rainforest is generally at higher elevations throughout the park. There is considerable species overlap between the two warm temperate rainforest ecosystems. Common species include lilly pilly (*Acmena smithii*), pittosporum (*Pittosporum undulatum*) and sassafras (*Doryphora sassafras*) with pencil cedar (*Polyscias murrayi*). Hinterland rainforest ecosystems can be distinguished by the presence of *Acacia melanoxylon*, *Hedycarya angustifolia*, *Eucryphia moorei*, *Olearia argophylla*, *Coprosma quadrifida* or *Pomaderris aspera*.

Cool temperate rainforest occurs in similar locations to the warm temperate rainforest but at higher elevations again (generally above 700 m). This ecosystem is characterised by a canopy of black oliveberry (*Elaeocarpus holopetalus*) with blackwood (*Acacia melanoxylon*) and southern sassafras (*Atherosperma moschatum*) also occurring. Emergent brown barrel (*Eucalyptus fastigata*) may occur. The understorey is very sparse, containing mostly ferns. Occasional stands are dominated by pinkwood (*Eucryphia moorei*).

**Freshwater swamps and riparian ecosystems** are a diverse group that includes shrub and forest ecosystems along rivers and in poorly drained ephemeral or permanent wetlands.

Swamp forest is found along small drainage lines at 300 to 650m in the Genoa section of the park. It occurs principally on granitoids in small stands with a widespread distribution. Soils are generally permanently waterlogged. The dominant canopy species are swamp gum (*E. ovata*) and occasionally ribbon gum (*E. viminalis*). The understorey consists of a dense groundcover of *Lomandra longifolia* or various sedges (*Carex appressa*, *Cyperus lucidus*), grasses and herbs.

Subalpine bog occurs in patches along the escarpment at high elevations. It is found on waterlogged soils in broad flat valleys on the headwaters of mostly west flowing streams. Subalpine bog consists of a mixture of wet heath (*Baeckea utilis*, *Epacris paludosa*, *Hakea microcarpa*) and wet grassland (*Poa costiniana* and numerous herbs) with various rushes (e.g. *Empodisma australis*).

Two riparian scrub types occur along rocky river beds and on the lower banks of major water courses in the park. Southern riparian scrub can be found along the Yowaka, Wallagaraugh and Towamba Rivers. Northern riparian scrubs are confined to rivers draining the drier slopes such as parts of the Tantawangalo and Candelo Creeks and Bemboka River. Both riparian scrubs share some indicator species: *Acacia floribunda*, *Callistemon subulatus*, *Lomatia myricoides* and *Leptospermum emarginatum*. Additional indicator species of northern riparian scrub are *Melaleuca parvistaminea*, *Hakea microcarpa* and *Acacia elongata*. Additional indicator species of southern riparian scrub are *Melaleuca armillaris*, *Calytrix tetragona*, *Grevillea linearifolia* and *Leptospermum scoparium*.

**Rocky scrublands** occur on shallow soils of rocky outcrops and steep slopes.

Rhyolite rock scrub is found in the Yowaka section and adjacent Forests NSW flora reserves. It is typically covered with *Melaleuca armillaris* and *Kunzea ambigua*.

Mountain rock scrub occurs on granitoid outcrops at 500-1000 metres in the Coolangubra and Genoa sections of the park, especially around Mount Poole and White Rock Mountain. It typically contains the shrubs *Kunzea ambigua*, *Hakea macraeana*, *Boronia anemonifolia*, *Hibbertia hermaniifolia* and *Hovea purpurea* with the herbs *Bulbine semibarbata* and *Calandrinia calypttrata*.

Rocky tops dry shrub forest, while sometimes having a canopy of *Eucalyptus smithii*, is typified by shrubs. *Beyeria lasiocarpa*, *Cassinia longifolia*, *Haloragodendron bauerlenii* and *Olearia iodochroa* are common on the drier sites, while *Pittosporum undulatum* and *Ficus rubiginosa* are found on wetter sites. This ecosystem can typically be found on Ordovician and Devonian metasediments in the Coolangubra and Genoa sections of the park.

Acacia scrub is the most common rocky scrub found in the Eden region though not in the park. Acacia scrub is typified by a dense seemingly even aged growth of wattles, usually *Acacia silvestris* in the central and southern sections of the park and occasionally *Acacia blayana* in the Bemboka section. This scrub occurs on steep slopes and should not be confused with the dense stands of wattle regrowth (*A. dealbata* and *A. mearnsii*) that result from clearing and fire.

**Heathlands** have a very limited extent in the park. Hinterland heath is dominated by *Allocasuarina paludosa* and *Leptospermum continentale*. It occurs on granitoid soils in the Genoa and Coolangubra sections of the park mostly below 500 metres, associated with small seepage areas on hill slopes. Individual patches are quite small. Montane Heath, dominated by *Allocasuarina nana*, occurs to the north and west of the park and may occur in the Bemboka section.

## APPENDIX 2: Vehicle Access and Maintenance of Roads and Trails

MANAGEMENT UNIT	ROADS AND TRAILS	LENGTH KMS	CONDITION ASSESSMENT	ACCESS CATEGORY
<b>BEMBOKA</b>				
	Mistake FT	8.2	4WD DRY WEATHER	Park road
	Tin Hut FT	11.1	4WD DRY WEATHER	Park road
	Warrigal FT	12.9	4WD DRY WEATHER	Park road
	Bemboka Peak FT	11.7	4WD DRY WEATHER	Park road
	Werri Berri FT	5.4	4WD DRY WEATHER	Management trail
	White Rock FT	8.7	4WD DRY WEATHER	Management trail
	Ooranook FT	2.7	4WD DRY WEATHER	Management trail
	Yankees Gap FT	3.1	4WD DRY WEATHER	Management trail
	Numbugga Walls FT	9.0	4WD DRY WEATHER	Management trail
	Brogo FT	9.8	4WD DRY WEATHER	Management trail
	Nelsons Creek FT	3.4	4WD DRY WEATHER	Management trail
	No 1 FT	1.1	CLOSE	Closed
	No 2 FT	2.7	CLOSE	Closed
	No 2 FT ext	1.4	CLOSE	Closed
<b>COOLANGUBRA</b>				
	Conga Rd south	5.1	ALL WEATHER 2WD	Management trail
	Station Rd south	1.3	ALL WEATHER 2WD	Management trail
	Waratah Rd	5.9	ALL WEATHER 2WD	Park road
	Kanoonah Rd	6.8	ALL WEATHER 2WD	Park road
	Myanba Access Rd	0.8	ALL WEATHER 2WD	Park road
	Maidens Road north	1.4	2WD DRY WEATHER	Park road
	Stoves Rd	5.1	2WD DRY WEATHER	Park road
	Stoves FT	2.9	4WD DRY WEATHER	Park road
	Old Mines Rd	2.2	4WD DRY WEATHER	Park road
	Cow Bail FT	5.5	4WD DRY WEATHER	Park road
	Big Jack FT	4.6	ALL WEATHER 4WD	Park road
	Wog Way west	1.6	ALL WEATHER 2WD	Park road
	Mataganah Rd	9.0	2WD DRY WEATHER	Management trail
	Wog Way (in park)	19.8	ALL WEATHER 2WD	Management trail
	Bold Granite Rd south *	5.5	2WD DRY WEATHER	Management trail*
	Bruin Mtn Rd west *	2.9	2WD DRY WEATHER	Management trail*
	Doughy's Rd *	3.1	ALL WEATHER 4WD	Management trail*
	Wog Quarry Rd	0.9	2WD DRY WEATHER	Management trail
	Logging Rd off Wog Wog TI	1.0	2WD DRY WEATHER	Management trail
	Farrells FT	4.3	4WD DRY WEATHER	Management trail
	Mataganagh FT	34.2	4WD DRY WEATHER	Management trail
	Doughy's FT	0.8	4WD DRY WEATHER	Management trail
	Conga/Mines Rd Link	5.8	4WD DRY WEATHER	Management trail
	Wog Wog Trail South	2.5	4WD DRY WEATHER	Management trail
	Pheasants Pk FT	3.3	4WD DRY WEATHER	Management trail
	Maidens Rd south	2.4	CLOSE	Closed
	Station Rd north	0.9	CLOSE	Closed
	Peak Rd	1.5	CLOSE	Closed
	Bruin Mtn Rd east	3.5	CLOSE	Closed
	Yards Rd	1.0	CLOSE	Closed
	Bold Granite Rd north	2.4	CLOSE	Closed
	Cobaco Rd	2.6	CLOSE	Closed
	Conga Rd north	1.1	CLOSE	Closed
	Reedy Creek Rd	2.6	CLOSE	Closed
	Basin Ck Rd	3.1	CLOSE	Closed
	Mataganah-Doughy Link	2.0	CLOSE	Closed
	Reedy Creek FT	0.9	CLOSE	Closed
	Campbells Knob Trail	2.0	CLOSE	Closed
	Wog Wog Trail North	11.0	CLOSE	Closed
	Unnamed trail Nth off Mataganah Rd	1.7	CLOSE	Closed
	Mines Rd north	0.9	CLOSE	Closed

	Wog Wog Link FT	7.0	CLOSE	Closed
	Big Jack Ext	1.0	CLOSE	Closed
<b>GENOA</b>				
	Laings Rd east	5.4	2WD DRY WEATHER	Park road
	Reef Rd east	4.3	2WD DRY WEATHER	Park road
	Merv's FT (west)	4.6	ALL WEATHER 4WD	Park road
	Outlands Access	2.8	2WD DRY WEATHER	Management trail
	Hayes Rd South	3.1	2WD DRY WEATHER	Management trail
	Laings Rd west	4.1	2WD DRY WEATHER	Management trail
	Reef Rd west	3.8	2WD DRY WEATHER	Management trail
	Rockton Rd	2.5	ALL WEATHER 4WD	Management trail
	Fox Trail	3.2	4WD DRY WEATHER	Management trail
	Alex Hut FT	6.0	4WD DRY WEATHER	Management trail
	Kelly's Mtn Rd	2.7	4WD DRY WEATHER	Management trail
	Genoa River Rd (East)	4.3	4WD DRY WEATHER	Management trail
	Nungatta Fire Break	10.9	4WD DRY WEATHER	Management trail
	Kingsley Rd	4.5	4WD DRY WEATHER	Management trail
	Camo's FT	2.4	4WD DRY WEATHER	Management trail
	Hayes Rd North	1.2	CLOSE	Closed
	Genoa River Rd (West)	2.3	CLOSE	Closed
	Imlay Track #1	2.4	CLOSE	Closed
	Imlay Track #2	1.0	CLOSE	Closed
	Imlay Track #3	6.3	CLOSE	Closed
	Laings/Imlay Links	2.7	CLOSE	Closed
	Dingo Rd	0.4	CLOSE	Closed
	Bondi Track	3.7	CLOSE	Closed
<b>GLENBOG</b>				
	Nitens Rd	4.9	ALL WEATHER 2WD	Park road
	Fastigata Rd	7.6	ALL WEATHER 2WD	Park road
	Bemboka River Rd	7.9	ALL WEATHER 2WD	Park road
	Xi Rd	2.4	ALL WEATHER 4WD	Management trail
	Cochrane Dam Rd	1.9	ALL WEATHER 2WD	Management trail
	Unnamed Trail	8.2	CLOSE	Closed
<b>TANTAWANGALO</b>				
	Boben Rd	6.0	2WD DRY WEATHER	Park road
	Carey's Rd	1.4	2WD DRY WEATHER	Park road
	Bull Rd	2.9	2WD DRY WEATHER	Park road
	Mount Harriet Rd	5.1	2WD DRY WEATHER	Park road
	Apogee Rd west	2.3	ALL WEATHER 2WD	Park road
	Obliqua Rd	4.6	2WD DRY WEATHER	Park road
	Mt Darragh FT	5.7	4WD DRY WEATHER	Park road
	Private Property access from Link TI	0.3	4WD DRY WEATHER	Park road
	Loves Trail	4.8	4WD DRY WEATHER	Park road
	Wyndham FT	2.6	4WD DRY WEATHER	Park road
	Summerills FT	5.7	4WD DRY WEATHER	Park road
	New Station FT	0.5	4WD DRY WEATHER	Park road
	Chalk Hills West FT	10.9	4WD DRY WEATHER	Park road
	Careys Fire Trail	3.5	4WD DRY WEATHER	Park road
	TI from Chalk Hills TI to Boben Rd	1.1	4WD DRY WEATHER	Park road
	Link TI to Wyndham FT	0.5	4WD DRY WEATHER	Park road
	Wyndham Trig Trail	1.1	4WD DRY WEATHER	Park road
	McCarthy's FT	6.6	4WD DRY WEATHER	Park road
	Postmans Track	8	ALL WEATHER 4WD	Park road
	Cattlemans Track	10.2	4WD DRY WEATHER	Park road
	Cattlemans Link Track	3.6	4WD DRY WEATHER	Park road
	Robinson's Rd west	4.0	ALL WEATHER 2WD	Management trail
	Robinson's Rd east	1.5	ALL WEATHER 2WD	Management trail
	Solomon's Rd	1.4	ALL WEATHER 2WD	Management trail
	Constitution Trail, Mt Darragh end	0.8	4WD DRY WEATHER	Management trail
	Bennetts Creek Trail	1.5	2WD DRY WEATHER	Management trail

	243 FT	1.3	4WD DRY WEATHER	Management trail
	Mogila Track	3.6	ALL WEATHER 4WD	Management trail
	Brittens FT	7.2	ALL WEATHER 4WD	Management trail
	Link Trail	5.5	4WD DRY WEATHER	Management trail
	Constitution Trail, Wyndham End	1.1	4WD DRY WEATHER	Management trail
	Link, Constitution to New Station	0.3	4WD DRY WEATHER	Management trail
	Postmans Link	3.7	ALL WEATHER 4WD	Management trail
	Packers Swamp Trail (off-Back Rd)	2.5	4WD DRY WEATHER	Management trail
	Candelo Creek Rd	3.8	CLOSE	Closed
	Apogee Rd east	1.6	CLOSE	Closed
	Leasehold Rd	1.5	CLOSE	Closed
	Back Rd	2.1	CLOSE	Closed
	Granite Rd	1.2	CLOSE	Closed
	Old Bull Rd	1.4	CLOSE	Closed
	Crossing Rd	1.1	CLOSE	Closed
	Knoz Link Track	1	CLOSE	Closed
	Tk into old pit, off Mt Darragh Rd	0.1	CLOSE	Closed
	Logging access beside pit rd	1.1	CLOSE	Closed
<b>WAALIMMA</b>				
	Waalimma Rd	11.5	ALL WEATHER 2WD	Park road
	Wangarabell Rd	1.7	ALL WEATHER 2WD	Park road
	Poole Rd	15.2	ALL WEATHER 2WD	Park road
	Nungatta Boundary Access	0.8	4WD DRY WEATHER	Park road
	Baelcoola Trail (North)	0.5	4WD DRY WEATHER	Park road
	Baelcoola Western Boundary Trail	0.6	4WD DRY WEATHER	Park road
	Catematzu Trail east	6.7	4WD DRY WEATHER	Park road
	Waalimma Trig Trail (west)	2.1	4WD DRY WEATHER	Park road
	Walak Rd	1.8	ALL WEATHER 4WD	Management trail
	Nungatta Trail	1.6	4WD DRY WEATHER	Management trail
	Walla Walla FT	5.5	4WD DRY WEATHER	Management trail
	Kessers Trail	3.0	4WD DRY WEATHER	Management trail
	Baelcoola Trail (East)	2.0	4WD DRY WEATHER	Management trail
	Waalimma Extension	2.4	4WD DRY WEATHER	Management trail
	Nungatta Southern Access	0.7	4WD DRY WEATHER	Management trail
	Walla Walla Rd north	4.6	CLOSE	Closed
	Jambu Rd	2.3	CLOSE	Closed
	Weatherhead Trail	2.1	CLOSE	Closed
	Black Swamp Creek Trail	2.5	CLOSE	Closed
	Comp't 478 Trail	1.7	CLOSE	Closed
	Catematzu Trail west	1.2	CLOSE	Closed
	Wallagaraugh Trail	2.6	CLOSE	Closed
	Waalimma Trig Trail (east)	0.4	CLOSE	Closed
<b>YURRAMIE</b>	<b>YURAMMIE</b>			
	Rats Valley Rd	3.9	ALL WEATHER 2WD	Park road
	Wyndham Trig Rd	4.1	4WD DRY WEATHER	Park road
	Myrtle Rd North	1.3	ALL WEATHER 2WD	Park road
	Kingfisher Rd	2.5	2WD DRY WEATHER	Park road
	Chalk Hills Rd	5.4	ALL WEATHER 2WD	Park road
	Wolumla Peak Rd	8.1	ALL WEATHER 2WD	Park road
	Myrtle Mt. Picnic Area Rd	0.5	ALL WEATHER 2WD	Park road
	Goodenia Rd	3.1	ALL WEATHER 2WD	Park road
	Monk Trail	1.7	4WD DRY WEATHER	Park road
	Yellow Pinch Trail	4.6	4WD DRY WEATHER	Park road
	Hakea Lane Trail	1.7	4WD DRY WEATHER	Park road
	Chalkhills FT	3.5	4WD DRY WEATHER	Park road
	Rats Valley Trail	2.1	4WD DRY WEATHER	Park road
	Princes Hway Trail, Millingandi	0.7	4WD DRY WEATHER	Park road
	Wolumla Peak Trail	2.8	4WD DRY WEATHER	Park road
	Yurammie Link	1.4	4WD DRY WEATHER	Park Road

	Myrtle Rd South	4.3	ALL WEATHER 2WD	Management trail
	Georges Trail	2.1	4WD DRY WEATHER	Management trail
	Devils Hole Rd (new)	0.4	4WD DRY WEATHER	Management trail
	Access to Allotment 92	1.3	4WD DRY WEATHER	Management trail
	Ridgeline Fire TI to Allot 92	0.6	4WD DRY WEATHER	Management trail
	Myrtle Rd to Old Devils Hole Link	0.2	4WD DRY WEATHER	Management trail
	Access Track to Allot 311	1.2	4WD DRY WEATHER	Management trail
	South Wolumla Trail	1.5	4WD DRY WEATHER	Management trail
	John Speeds Pump Trail	0.9	4WD DRY WEATHER	Management trail
	Pheeneys Nose FT	7.8	4WD DRY WEATHER	Management trail
	Compartment 986 Trail	2.0	4WD DRY WEATHER	Management trail
	Gills FT east	2.4	2WD DRY WEATHER	Management trail
	Pambula Fire Trail	0.9	4WD DRY WEATHER	Management trail
	Millingandi Boundary Trail	0.9	4WD DRY WEATHER	Management trail
	Yellow Pinch Dam Trail	2.4	4WD DRY WEATHER	Management trail
	Myrtle Mtn FT	1.0	4WD DRY WEATHER	Management trail
	Chalkhills Rd north	3	CLOSE	Closed
	Chalkhills FT west	1.6	CLOSE	Closed
	Pheeneys FT	2.8	CLOSE	Closed
	Tk on Myrtle Ck (Bridge washed out)	0.4	CLOSE	Closed
	Wolumla Peak Link Trail	1.9	CLOSE	Closed
	Extraction Trail # 1	0.7	CLOSE	Closed
	Extraction Trail # 2	0.7	CLOSE	Closed
	Gills FT west	5.0	CLOSE	Closed
<b>YOWAKA</b>	<b>YOWAKA</b>			
	Stanton Rock Rd	6.2	ALL WEATHER 4WD	Park road
	Whipstick Rd	3.2	ALL WEATHER 2WD	Park road
	Causeway Rd	4.9	ALL WEATHER 2WD	Park road
	Mitchells Ck Rd	4.5	ALL WEATHER 4WD	Park road
	Copelands Knob Rd	2.5	ALL WEATHER 2WD	Park road
	Ben Boyd Trail	0.7	4WD DRY WEATHER	Park road
	Causeway FT	3.4	4WD DRY WEATHER	Park road
	Causeway Rd Link	1.2	ALL WEATHER 2WD	Park road
	Sugarloaf FT	9.4	4WD DRY WEATHER	Park road
	Jingera Rd	1.9	ALL WEATHER 4WD	Management trail
	Stanton Rock Link	3.6	4WD DRY WEATHER	Management trail
	Stanton Rock Trail south end	8.6	4WD DRY WEATHER	Management trail
	Rhyolite Trail	2.7	4WD DRY WEATHER	Management trail
	Numbat Trail	4.2	4WD DRY WEATHER	Management trail
	Back Creek Link Trail	2.5	4WD DRY WEATHER	Management trail
	Back Creek Fire Trail	4.7	4WD DRY WEATHER	Management trail
	Comp't 752 Trail	1.7	4WD DRY WEATHER	Management trail
	Copelands Knob Trail	1	CLOSE	Closed
	Shrapnel Rd	3.5	CLOSE	Closed
	Barwon Rd	2.9	CLOSE	Closed
	Barwon Rd/Ben Boyd Rd link	3.6	CLOSE	Closed
<b>Note:</b>	* Refers to management trails identified in the plan which are to be closed once access is no longer required for essential management purposes.			