

MORTON NATIONAL PARK, BUDAWANG NATIONAL PARK

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

October 2001

A plan of management for Morton National Park and Budawang National Park was adopted by the Minister for the Environment on 20th September 2000. Amendments to the plan were adopted by the Minister on 11th October 2001. This plan combines the 2000 plan with the amendments adopted in 2001.

Acknowledgments

This plan of management was prepared by the Field Services Division and South Coast Region of the National Parks and Wildlife Service with assistance by specialists in Southern Directorate and Head Office.

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FOREWORD

Morton and Budawang National Parks are located on the rugged eastern escarpment of the Southern Tablelands between Bundanoon and Braidwood. They have a combined area of 194 193 ha. The two parks cover a varied and spectacular landscape including plateaus, mesas, scarps, deep gorges and high ranges. In particular the Northern Budawang Range, with its mesa-like peaks, terraced slopes and sculptured rock faces is unique in NSW.

The parks are geologically complex and important for research. They protect a number of significant features including the southern edge of the Sydney Basin, the Hawkesbury Sandstone/Permian plateau scarp, the only proven occurrence of upper Devonian limestone in NSW and an important fossil site.

Because of the varied geology and landform, altitude range and climatic location, the parks contain a very large range of vegetation types and native animal species. The vegetation includes a number of forest and woodland associations, extensive areas of heathland/sedgeland and several types of rainforest. The parks provide important habitats for a large number of threatened plant and animal species including several endemic plants.

The parks are rich in Aboriginal sites including several major complexes. Many of the sites are of considerable age and have high research value. A considerable proportion are paintings and drawings in rock shelters, often with occupation deposits.

The parks are close to major population centres and the northern part of Morton National Park is within day trip distance of Sydney. Morton National Park provides a range of easily accessible day use and camping areas on its perimeter including popular tourist facilities. Both parks provide outstanding opportunities for wilderness recreation. The Ettrema and Budawang Wilderness areas cover a large proportion of the central and southern parts of Morton National Park and most of Budawang National Park.

The plan of management provides for protection of the diverse values of the two parks, with emphasis on maintenance of biodiversity, protection of populations of threatened plant and animal species, protection of significant Aboriginal sites and protection of wilderness values.

Popular bushwalking areas, particularly the 'Budawangs', are suffering environmental damage caused by high visitor numbers. The plan includes a number of measures to address this.

Some of the developed facilities and popular walking tracks in Morton National Park have deteriorated or are unsatisfactory by today's standards. The plan of management provides for redevelopment of the Bundanoon area, some minor facility provision or refurbishment in other areas, maintenance of walking tracks and interpretation and educational programs.

This plan of management establishes the scheme of operations for Morton National Park and Budawang National Park. In accordance with the provisions of Section 75 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. INTRODUCTION

The *National Parks and Wildlife Act 1974*, requires that a plan of management be prepared for each national park. A plan of management is a legal document that outlines how the area will be managed in the years ahead. The procedures for adoption of a plan of management are specified in the Act and involve five stages:

- * The Director-General gives notice that a plan of management has been prepared.
- * The plan is placed on public exhibition for at least one month and any person may comment on it.
- * The plan and copies of all representations are referred to the National Parks and Wildlife Advisory Council for consideration.
- * The Director-General submits the plan, together with the recommendations of the Advisory Council, to the Minister.
- * The Minister may adopt the plan after considering the recommendations of the Advisory Council or may refer the plan back to the Director-General and Council for further consideration.

Once a plan has been adopted by the Minister, no operations may be undertaken within the national park except in accordance with the plan.

Morton and Budawang National Parks have been considered together in this plan of management as they form a contiguous area of reserved land and are managed as a single unit.

A plan of management for Morton National Park and Budawang National Park was placed on public exhibition from September to December 1998. One hundred and eighty one representations were received during the period of public exhibition which raised twenty two issues. All comments received were considered by the Minister.

Additional information or enquiries about any aspect of the plan may be obtained from the Service's South Coast Regional Office at 55 Graham Street, Nowra or by phone on (02) 4423 2170.

2. MANAGEMENT CONTEXT

2.1 NATIONAL PARKS IN NEW SOUTH WALES

The national park concept was introduced into Australia through the establishment of Royal National Park in 1879.

The International Union for the Conservation of Nature and Natural Resources (IUCN) in 1994 defined a national park as:

"A natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area, and (c) provide a foundation for spiritual, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible."

National parks are part of the regional pattern of land use. Many land uses, for example agriculture, forestry and mining, require substantial modification of the natural environment. Management of national parks, however, aims to minimise disturbance to natural and cultural resources. National parks, therefore, provide for only a limited part of the range of land uses in a region.

2.2 MORTON AND BUDAWANG NATIONAL PARKS

2.2.1 Location, Reservation and Regional Setting

Morton and Budawang National Parks together comprise an area of 194 193 ha on the eastern escarpment of the Southern Tablelands of NSW roughly 150 km southwest of Sydney (see summary maps). The area of park stretches from Bundanoon in the north to southeast of Braidwood and covers a diverse, rugged and scenically magnificent landscape.

Much of the northern, southern and eastern boundaries join state forest and other public land. Adjacent to the northwestern corner of Morton National Park is Bungonia State Recreation, which is managed in conjunction with the park. The western park boundaries adjoin extensive grazing land on the tablelands. The parks fall within several local government areas, namely Wingecarribee, Tallaganda, Shoalhaven and Kiama.

The two parks lie west of popular residential and holiday areas on the south coast. The Southern Highlands tourist area adjoins the northern part of Morton National Park. This has traditionally been a guest-house/country resort area known for its mountain scenery and air, historic places and annual festivals. Kangaroo Valley is also a popular holiday and tourist area.

Morton National Park was established in 1969 from a number of reserves dating back to 1824. Its formation followed strong support from community groups and prominent citizens. The name of the park commemorates the efforts of Mark Morton, MLA who campaigned assiduously for protection of the lands from Bundanoon to the Shoalhaven River. The Morton family have made distinguished contributions over several generations not only to conservation but to many avenues of community life in the district. Following years of support from community groups the original park was extended south of the Shoalhaven to Pigeon House Mountain to embrace the southern boundaries of the Sydney Basin. Large areas have continued to be added to the park. The current reserved area is 170 462 ha.

Budawang National Park was reserved in 1977 and has also had a number of significant additions. Its current area is 23 732 ha. The park bears the name of one of its dominant features, Mount Budawang. Budawang is a corruption of Buddawong, the Aboriginal word for macrozamia palm (Jones, 1887).

A large number of additions to the two parks have been identified as part of the Southern Region Forest Agreement. Most of these additions are relatively small but there are some substantial additions along the north western, northern and eastern boundaries. Under the *Forestry and National Park Estate Act 1988* the NPWS is required to prepare a plan of management for the new areas and it is intended to work towards this in the near future. Until that time the new lands will be managed in accordance with the principles and policies set out in this plan of management.

2.2.2 Importance of Morton and Budawang National Parks

Morton and Budawang National Parks together form one of the largest conservation reserve areas in NSW and protect diverse and unique natural and cultural resources.

The two parks adjoin Bungonia State Recreation Area and large areas of state forest and are linked by forested land to Deua, Wadbilliga, Murramarang and Wallaga Lake National Parks to the south and to Budderoo National Park/Barren Grounds Nature Reserve, Macquarie Pass National Park and large areas of land managed by Sydney Catchment Authority and hence Blue Mountains and Royal National Parks to the north. This linked system of reserve and other public land protects large areas of natural environments and habitats and greatly enhances the viability of the natural systems of each area.

Morton National Park, together with Royal, Blue Mountains and other parks further north is one of a large group of sandstone national parks and reserves in the Sydney Bowen Basin. Morton National Park, however, is composed mainly of Permian sediments and hence contains different natural systems to those developed on the Triassic sandstone of the other parks.

The major values of Morton and Budawang National Parks are briefly described below in order to provide an overview and a basis for the objectives of management in section 3. More detailed description of the natural and cultural heritage of the two areas is in chapter 4, along with policies and actions for management.

Geological and Geomorphological Values

The area of the parks is geologically and geomorphologically diverse.

The basement rocks consist of marine sediments of the Lachlan Fold Belt laid down during the Ordovician period (400 million years ago). These were subsequently folded and metamorphosed.

Large scale tectonic movement produced a north-south trough which was filled during the Devonian Period (395-345 million years ago) with a basal volcanic flow and a series of sediments. This was compressed and folded as the whole area uplifted, producing the Budawang Synclinorium, part of which is now protected in Budawang National Park.

Weathering of the area over a long period produced a peneplain. This was covered by marine sediments during subsidence in the Permian Period (280-225 million years ago). Freshwater sedimentation continued into the Triassic Period.

Much of the present landscape of the two parks is the result of a series of uplifts and subsequent erosion during the Tertiary Period (65-1 million years ago). Tertiary

vulcanism produced extensive lava flows which partly filled the eroded surface. These have since been eroded to small patches. An occurrence of Tertiary basalt in the upper part of the Endrick River valley floor demonstrates that the Endrick Valley and adjacent streams are of very great age (Young, 1977).

Morton National Park covers a major part of the southern Sydney Basin (Permian sediments). The southern margin of the Sydney Basin outcrops in the northern Budawang Range at the southern end of Morton National Park. Here the escarpment formed by the northern Budawang Range towers abruptly above the evenly sloping landscape to the south formed on older Palaeozoic rocks. The southern edge of the Triassic Hawkesbury Sandstone plateau lies at the northern end of the park and is marked by the cliffs of Bundanoon, Fitzroy Falls and Belmore Falls. The park thus contains two major retreating scarps.

Deep erosion of the area has clearly revealed the geological record and provided a valuable research and educational resource. Geomorphological research within and adjacent to Morton National Park has demonstrated great antiquity of the landscape and low rates of erosion by world standards. This has challenged past theories of landform evolution (Young, 1977).

Fossils occur in some of the Ordovician, Devonian and Permian sediments, both marine and terrestrial. The most important fossil area is in limestone exposed in the gorges of Ettrema and Jones Creek. This contains a diverse assemblage of Devonian age fossils including rare placoid phillipsastroid corals and the conodont subspecies *Polygnathus nodocastatus ettremae*. It is the type locality for this subspecies. The area is of considerable scientific importance as it provides 'data from a rarely occurring and relatively unstudied part of the NSW succession' (Stevenson, 1981).

The limestone also contains lead, copper and zinc ores in fissures and bedded veins and some small caves and is the only proven example of Frasnian (Upper Devonian) limestone in NSW. It has been listed in the Geological Heritage of NSW (Stevenson, 1981).

Long Point, in the northwestern corner of Morton National Park, is a significant geomorphological feature. Here the Shoalhaven River takes a sharp turn from north to east. It has been suggested that a former tributary captured the ancestral Shoalhaven at this point following Tertiary uplift.

Contour trenching in sedge land on Little Forest Plateau is an interesting and unusual feature. This consists of ridges and furrows about 1m metre wide, 10m long and 30cm deep and produces a distinct vegetation pattern (Young, 1982). The origin of the trenching is unclear.

Landscape

The two parks cover a large area of the rugged eastern edge of the Southern Tablelands, stretching from the coastal escarpment to the tableland plateaus.

The landscape of Morton National Park consists of plateaus dissected by deep gorges featuring cliffs, crevices, caves, waterfalls and rocky river beds. This provides outstandingly magnificent scenery. Panoramic views are available from a number of sites but equally important is the great variety on a small scale as one moves through the landscape.

The northern Budawang Range (the 'Budawangs') is particularly spectacular and interesting and with its sculptured rock faces, terraced slopes, hidden valleys and mesa-like peaks is unique in NSW. Pigeon House Mountain is a well known feature and is visible from a large area of the coast. Its peak, along with several others with

known Aboriginal names, form and integral part of the area's pre-European cultural landscape.

The escarpments and forested slopes of the parks are major contributors to the scenic quality of adjoining areas such as Kangaroo valley, the Shoalhaven coastline and the Clyde Valley. The southern Budawang Range is a prominent feature in the Braidwood-Mongarlowe area.

The Ettrema and Shoalhaven Gorges and the sandstone escarpment at Bundanoon, Fitzroy Falls and Belmore Falls are other areas of acknowledged high landscape value.

Biological Values

The complex geology, variety of landforms, altitude range and climatic variation of the two parks have produced a wide range of vegetation types and habitats. These support a large number of species including more than 31 native mammal species, 176 bird species, 19 species of frog, 14 species of snake and 24 species of lizard.

Nearly 100 vegetation types have been identified including a range of rainforest types and extensive areas of heathland/sedgeland. Both of these vegetation types are limited in extent in NSW.

There is a very significant altitude gradient across the parks from east to west and changes in altitudinal occurrence of vegetation types from north to south. It is unusual in one reserve area to conserve such a large sample of vegetation along two major environmental gradients.

The large reserve size and variety of habitats enables protection of a range of species and genetic variation and contributes to maintenance of biodiversity.

The heathland of Tianjara and Little Forest Plateaus in the south eastern part of Morton National Park is one of the largest heathland areas in NSW and one of four significant areas on the South Coast, the others being at Barren Grounds Nature Reserve, Jervis Bay and Nadgee Nature Reserve. Many species of plants and animals are restricted to heathland, including a number of threatened species.

The complex arrangement of habitats in the two parks is valuable as animals often utilise several components of an area.

Budawang National Park has exceptional habitat diversity and a number of unusually species rich plant communities because of the park's location adjacent to the coast and highlands and on the edge of the Permian plateau and Ordovician landscapes. Pinkwood *Eucryphia moorei* and Budawang ash *Eucalyptus dendromorpha* have major occurrences in the park. Currowan Creek near the southern end of the park appears to be a floristic transition zone, with marked differences in vegetation to the north and south of this area.

The northern Budawang range and Ettrema/Yarramunmun plateaus are other areas of very varied vegetation communities and animal habitat, including a significant number of threatened species.

The parks contain 41 plant species listed in Briggs and Leigh (1996) as rare or threatened (ROTAP), 15 listed in the *Threatened Species Conservation Act 1995* and a large number of others of limited numbers and distribution. Of the ROTAP plants nearly half are protected only within Morton or Budawang National Parks. Several of these occur only within the parks. For example Pigeon House ash *Eucalyptus triflora*, *Budawangia gnidioides*, *Grevillea renwickiana* and *Leptospermum grassifolium* are endemic to the northern Budawang Range, most occurring on the mesa tops. The high

degree of endemism in the 'Budawang's' is attributed to a combination of low fire frequency and the cool moist climate, indicating that the species may be relics from past climatic conditions.

ROTAP Plants

Species	Risk Code	Species	Risk Code
<i>Acacia jonesii</i>	3RCa	<i>Haloragodendron monospermum</i>	3RC-
<i>Acacia pubescens</i>	3VCa	<i>Helichrysum calvertianum</i>	2KC-
<i>Acacia subtilinervis</i>	3RCa	<i>Leptospermum crassifolium</i>	2RCi
<i>Boronia deanei</i>	3VCa	<i>Leptospermum epacridoideum</i>	2RC-
<i>Boronia subulifolia</i>	2RCa	<i>Leptospermum subglabratum</i>	3RC-
<i>Budawangia gnidioides</i>	2VC-t	<i>Lomandra fluviatilis</i>	3RCa
<i>Callitris oblonga</i>	3VCa	<i>Melaleuca deanei</i>	3RC-
<i>Darwinia briggsiae</i>	2RC-	<i>Persoonia oxycoccoides</i>	2RCa
<i>Dillwynia sp.2</i>	2RC-	<i>Plinthanthesis rodwayi</i>	2VC-t
<i>Dillwynia stipulifera</i>	3RCa	<i>Pomaderris cotoneaster</i>	3ECi
<i>Dodonaea rhombifolia</i>	3RCa	<i>Prostanthera porcata</i>	3RC-t
<i>Eucalyptus apiculata</i>	3RC-	<i>Pseudanthus divaricatissimus</i>	3RCa
<i>Eucalyptus baeuerlenii</i>	3RCa	<i>Pterostylis pulchella</i>	2VC-
<i>Eucalyptus gregsoniana</i>	3RCa	<i>Pultenaea baeuerlenii</i>	2VCit
<i>Eucalyptus sturgissiana</i>	2RCa	<i>Pultenaea sp.4</i>	2RC-
<i>Eucalyptus triflora</i>	3RCa	<i>Pultenaea villifera</i>	3RC-
<i>Genoplesium superbum</i>	2RC-	<i>Restio longipes</i>	3VC-
<i>Goodenia glomerata</i>	2RCa	<i>Rulingia hermanniifolia</i>	3RCa
<i>Grevillea barklyana</i>	3RC-	<i>Sphaerocionium lyallii</i>	3RC+
<i>Grevillea renwickiana</i>	2RCa	<i>Zieria murphyi</i>	2VC-
<i>Haloragis exalata</i>	3VCa		

- 2 geographic range in Australia less than 100 km
 3 geographic range in Australia greater than 100 km
 V vulnerable
 R rare
 K poorly known
 C reserved
 a 1000 plants or more are known to occur within a conservation reserve
 i less than 1000 plants are known to occur within a conservation reserve
 - reserved population size is not accurately known
 t total known population reserved
 + overseas occurrence

Threatened Plants (TSC Act)

Endangered species	
<i>Irenepharsus trypherus</i>	
Vulnerable species	
<i>Budawangia gnidioides</i>	<i>Restio longipes</i>
<i>Pultenaea aristata</i>	<i>Boronia deanei</i>
<i>Pultenaea baeuerlenii</i>	<i>Zieria murphyi</i>
<i>Haloragis exalata</i>	<i>Leptospermum thompsonii</i>
<i>Eucalyptus sturgissiana</i>	<i>Plinthanthesis rodwayi</i>
<i>Cryptostylis hunteriana</i>	<i>Correa baeuerlenii</i>
<i>Pterostylis pulchella</i>	

A number of plant species are at their southern limit of distribution in the parks including *Quintinia sieberi*, *Actephila lindleyi*, *Cayratia clematidea*, heath-leaved banksia *Banksia ericifolia* and Sydney peppermint *E. piperita*. At least 5 other species (narrow-leaved stringybark *E. oblonga*, Beyer's ironbark *E. beyeriana*, yellow bloodwood *E. eximia*, brown stringybark *E. capitellata*, narrow-leaved *Angophora bakeri*) which are common in the Sydney sandstone flora reach their southern limit in the Ettrema/Yarramunmun area, indicating physiographic change further south (Black, unpublished report to NPWS). Common heath *Epacris impressa* is at its northern limit of distribution in the parks. Port Jackson mallee *E. obstans* is at its western and southerly limits and whipstick ash *E. multicaulis* is at its southern limit.

Semi-deciduous vine thicket (see section 4.1.2) is at its southern limit of distribution in the Shoalhaven Gorge and the northern escarpment areas of Morton National Park contain some of the best stands of coachwood near its southern limit. *E. beyeriana*-*E. sclerophylla*-*Angophora bakeri* forest is at its southern limit on the Ettrema/Yarramunmun plateau.

There are substantial areas of old growth forest throughout the two parks. Old growth forest has high aesthetic and habitat value, particularly for arboreal mammals and birds dependent upon tree hollows.

Several species of threatened native animals (listed in the Threatened Species Conservation Act) have been recorded in the two parks. These are listed in the table below.

Threatened Fauna (TSC Act)

Endangered species	
<i>Dasyornis brachypterus</i>	Eastern bristlebird
<i>Isoodon obesulus</i>	Southern brown bandicoot
<i>Hoplocephalus bungaroides</i>	Broad-headed snake
Vulnerable Species	
<i>Calamanthus fuliginosus</i>	Striated fieldwren
<i>Calyptorhynchus lathami</i>	Glossy black-cockatoo
<i>Pezoporus wallicus</i>	Ground parrot
<i>Ninox strenua</i>	Powerful owl
<i>Tyto tenebricosa</i>	Sooty owl
<i>Neophema pulchella</i>	Turquoise parrot
<i>Lophoictinia isura</i>	Square-tailed kite
<i>Phascolarctus cinereus</i>	Koala
<i>Potorous tridactylus</i>	Long-nosed potoroo
<i>Dasyurus maculatus</i>	Tiger quoll
<i>Petaurus australis</i>	Yellow-bellied glider
<i>Petrogale penicillata</i>	Brush-tailed rock wallaby
<i>Miniopterus schreibersii</i>	Common bentwing-bat
<i>Varanus rosenbergi</i>	Heath monitor
<i>Heleioporus australiacus</i>	Giant burrowing frog
<i>Falsistrellus tasmaniensis</i>	Eastern false pipistrelle
<i>Chalinolobus dwyeri</i>	Large pied bat
<i>Myotis adversus</i>	Large-footed myotis

The rock warbler *Origma solitaria* and striated fieldwren are at the limits of their normal ranges in the 'Budawang's'.

Catchment Value

The two parks cover the headwaters of a large number of rivers and creeks, most notably the Yadboro and Clyde Rivers to the south and several tributaries of the Shoalhaven, including the Endrick and Corang Rivers, to the west and north.

The catchments of Porters Creek and Danjera Dams, which provide water for the Ulladulla and Nowra areas, are located within Morton National Park. The park also protects part of the catchment for Lake Yarrunga, part of Sydney's water supply system.

Wilderness Values

Most of Budawang National Park and a large proportion of the central and southern sections of Morton National Park have been declared wilderness area under the *Wilderness Act* 1987 and National Parks and Wildlife Act. Wilderness declaration provides for protection of the relatively unmodified state of the area, preservation of natural processes and opportunities for self reliant recreation. The Ettrema and Budawang Wilderness areas contain an important array of natural and cultural features including vegetation communities of restricted distribution and a large number of threatened plant and animal species. Their landscapes are spectacular and they provide important opportunities for wilderness recreation relatively close to the large population centres of Sydney, Wollongong and Canberra.

Cultural Values

The parks contain a large number and variety of Aboriginal sites including several major complexes of high scientific importance and sites which are spiritually significant to Aboriginal people. The sites are largely undisturbed. Many are of considerable antiquity and have high research value (Boot, 1996i).

A considerable proportion of the sites are paintings and drawings in rock shelters, often with occupation deposits. Several of the art motifs and a patterned arrangement of axe grinding grooves are, as far as is known, unique. Large undisturbed rock shelters with art are rare in southeastern Australia.

The area contains few known engravings and thus differs considerably from the Hawkesbury Sandstone plateau to the north. The art sites show affinity with sites on the southern tablelands and western NSW.

A number of sites demonstrate cultural links between coastal and inland Aboriginal groups. Myths associated with Fitzroy Falls link this site with the coastal communities of Kioloa and Beecroft Peninsula while myths centred on Pigeon House Mountain link the tablelands to coastal inlets between St Georges Basin and Narooma (Officer, 1991).

Aboriginal sites in the parks are important in adding to the limited information about Aboriginal use of the coastal escarpment. In 1977 less than 10 sites had been recorded in the parks and the pre-European cultural value of the area was considered low. Close examination by R. Snedden over a limited area had by 1990 revealed over 100 sites. This work was continued by P. J. Hughes (Hughes et al, 1982) on the Tianjara Plateau and more recently by P. Boot covering a wider area, revealing several hundred more (Boot, 1994). A site near Sassafras has been recently dated at 19 000 years before present (Boot, 1996ii). These studies have greatly elevated the importance of the cultural heritage of the region. Much of the park area is still to be closely examined, particularly north of Sassafras, and the gain from further study is likely to be very high.

Many of the valleys and ridge lines of the two parks were routes used by Aborigines for movement throughout the hinterland and between the highlands and coast. After European settlement many of the ancient routes became an important part of the early bridle trail network used for movement of stock.

The non-Aboriginal history of the area of the two parks dates from the naming of Pigeon House Mountain by Lieutenant (later Captain) James Cook as he sailed along the coast in 1770. Early exploration of the area concentrated on finding routes across the rugged escarpment country to link the tablelands and coast. Evidence is scattered throughout the parks illustrating the pattern of settlement and early use of the area for mining, logging, farming and recreation.

Part of Morton National Park's original area was the Tallowa Primitive Reserve. This was Australia's first primitive area, gazetted in 1934 as a result of early pressure for protection of wilderness. The park also played an important role in the rising popularity of bushwalking early this century.

Recreation and Tourism Values

Morton and Budawang National Parks are located close to the major population centres of Sydney, Wollongong and Canberra, and the Shoalhaven and Southern Highlands areas. The convenient access, spectacular scenery and range of recreation opportunities attract nearly 1 million visitors per year.

Morton National Park has an important role as a tourist destination to several sites on the northern escarpment. Lookout, walking and picnicking facilities in this area, particularly Fitzroy Falls and Bundanoon, have been popular destinations since last century and continue to receive very large numbers of visitors.

The two parks also provide a wide range of other recreation opportunities including car and walk-in camping, picnicking, car touring, cycling, canoeing, scenery viewing and nature study. Pigeon House Mountain is a well-known and rewarding day walk and is promoted by tourist organisations. Opportunities for day or shorter walks are also available on the Little Forest Plateau and at many other locations in Morton National Park. The recreational opportunities in the two parks (along with nearby escarpment parks such as Bungonia State Recreation Area and Budderoo National Park) complement facilities in nearby coastal parks.

The Shoalhaven River (from upstream of Morton National Park) is a long established and challenging white water canoeing trip while Lake Yarrunga provides for still water canoeing in a spectacular setting.

Provision for self-reliant recreation in a large and scenically spectacular bushland area is a major recreation value of the two parks. They provide a range of settings from the rugged and difficult Ettrema Wilderness Area to the gentle grades and relatively easy access of the lower Yarrunga Creek valley. The 'Budawangs' area is well known and heavily used for walking.

Educational Values

The heavily visited northern areas, Little Forest Plateau and other parts of the two parks provide opportunities for community education about the area's environment and the importance of conservation.

Several areas are popular for educational/adventure tours by schools and commercial groups.

Summary of Significance

The two parks have state and regional conservation significance as summarised below:

Nature conservation value:

- the parks are geologically complex and protect a major sample of the region's geological character;
- they provide an important and relatively undisturbed area for research into geology and landscape formation;
- Morton National Park contains the southern boundary of the Sydney Basin and a large part of the Permian/Triassic escarpment;
- Morton National Park contains the only proven example of Frasnian limestone in NSW and an important fossil assemblage;
- the parks protect a very large and varied area of native vegetation communities and habitats, a number of which are limited in extent in NSW;
- a large number of endemic and threatened species occur in the parks and they also contain several species and communities at their limits of occurrence;
- the parks are linked to other extensive natural areas, contributing to maintenance of biodiversity and the viability of natural systems in the region;
- the parks contain extensive wilderness areas; and
- the parks protect the upper catchments of a large number of watercourses, including water supply reservoirs for local towns and part of the catchment for Sydney's water supply.

Aboriginal site value:

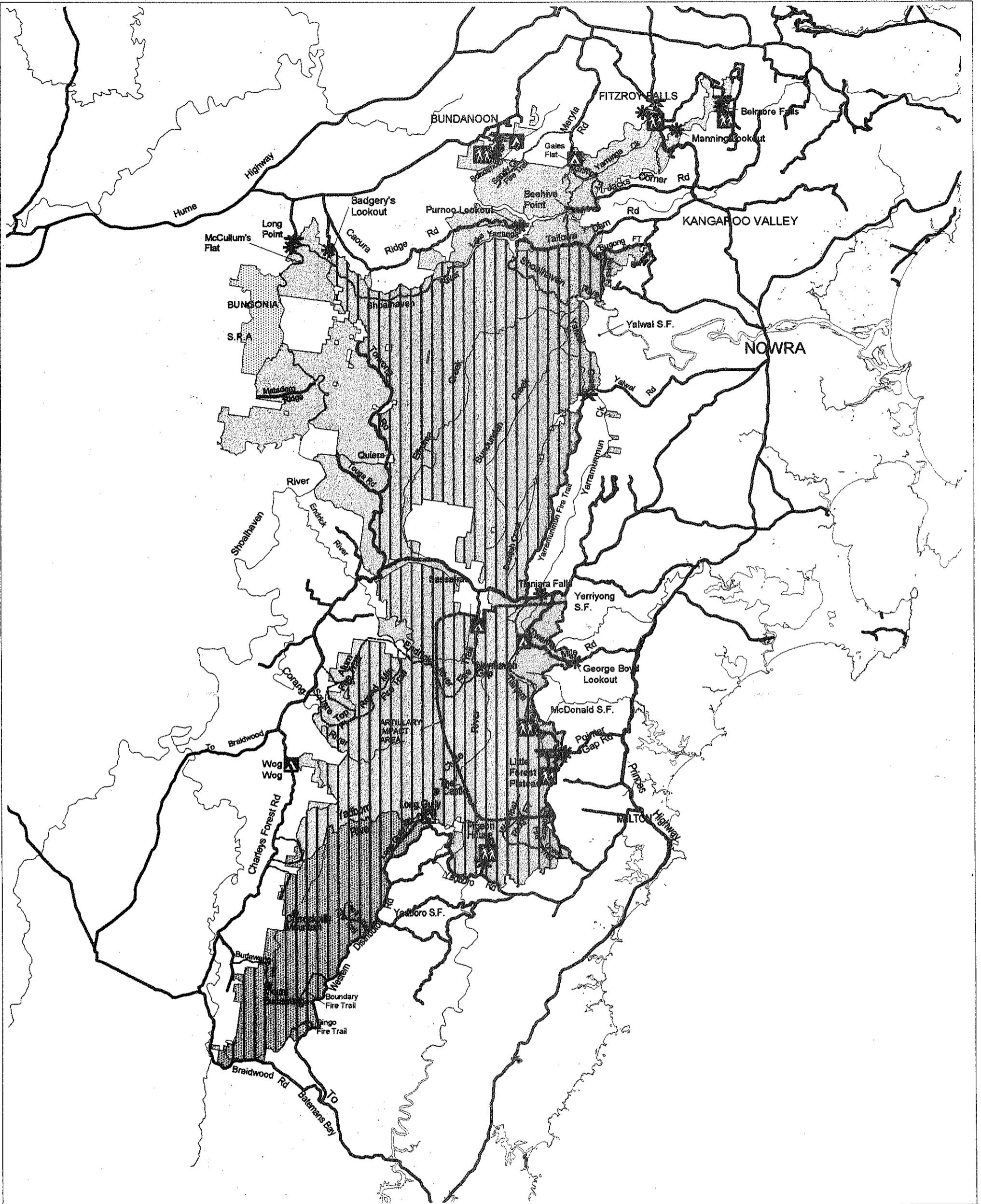
- the parks contain a large number and variety of undisturbed Aboriginal sites including major art sites with unique features;
- several sites are of very high Aboriginal cultural significance;
- several sites are of great antiquity;
- many of the sites have high research value and the whole area is important for adding to the limited knowledge about Aboriginal use of the coastal escarpment.

Historical value:

- Morton National Park played an important role in the rising popularity of bushwalking and pressure for conservation of natural areas early this century and was Australia's first gazetted primitive area, an early form of wilderness protection;
- the parks contain a large number and variety of historic places which are valuable for understanding and interpretation of the history of European settlement of the district, in particular the difficulty of establishing travel routes between the tablelands and the coast.

Recreation, tourism and educational value:

- the parks provide opportunities for a wide range of recreation activities within convenient distance of large populations centres;
- the parks contain well known, scenically spectacular bushwalking locations;
- the parks contain several heavily used tourist areas including Fitzroy Falls, Bundanoon and Pigeon House Mountain;
- the parks provide important opportunities for community education and adventure training activities.



- Public Roads
- Management Tracks
- Walking tracks
- Lookout
- Camping Area
- Picnic Area
- Wilderness
- Budawang National Park
- Morton National Park

Morton and Budawang National Parks



4 0 4 8 Kilometers



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3. OBJECTIVES OF MANAGEMENT

3.1 GENERAL OBJECTIVES FOR NATIONAL PARKS

The following general objectives, derived from the National Parks and Wildlife Act, relate to the management of national parks in New South Wales:

- * protection and preservation of scenic and natural features, including significant geological and geomorphological features;
- * conservation of wildlife, including maintenance of biodiversity and populations of threatened species;
- * maintenance of natural processes as far as is possible;
- * preservation of catchment values;
- * preservation of Aboriginal sites in consultation with the Aboriginal community;
- * conservation of non-Aboriginal historic features;
- * provision of appropriate recreation opportunities; and
- * encouragement of scientific and educational enquiry into environmental features and processes, cultural features and use patterns.

3.2 SPECIFIC OBJECTIVES FOR MORTON AND BUDAWANG NATIONAL PARKS

In addition to the above general objectives, the management of Morton and Budawang National Parks will be subject to the following specific objectives:

- * conservation of Morton and Budawang National Parks as part of the system of protected lands of the Sydney Basin and Coastal Escarpment;
- * conservation of representative samples of the diverse plant and animal communities of the Southern Sydney Basin, central Eastern Escarpment and upper South Coast hinterland;
- * conservation of areas of significant vegetation communities and threatened plant species, particularly areas of heathland and endemic species such as *Eucalyptus triflora*, *Budawangia gnidioides*, *Grevillea renwickiana* and *Leptospermum grassifolium*;
- * maintenance of populations of threatened native animals, particularly the ground parrot, eastern bristlebird, koala, brush-tailed rock wallaby, broad-headed snake and other species for which the two parks provide significant habitat;
- * protection and where necessary recovery of wilderness values in the Ettrema and Budawang Wilderness areas;
- * protection of significant Aboriginal art sites and the value of the parks for research into past Aboriginal use of the coastal escarpment;
- * recognition and conservation of significant early features associated with exploration, mining, agriculture, forestry and tourism activities in the area;

- * promotion of public appreciation of the diversity and high conservation significance of the two parks, their wilderness values, and the need for protective management and non-damaging use;
- * provision of opportunities for low key day and overnight recreation use on the edges of Morton National Park;
- * promotion of visitor use and appreciation of the northern rim and southeastern corner of Morton National Park; and
- * provision of community educational opportunities at Fitzroy Falls and other locations suitable for interpretation.

3.3 OVERALL STRATEGY

The highly diverse and significant natural and cultural resources of the two parks will be protected through applying appropriate levels of promotion and access and major management programs such as:

- appropriate fire management;
- weed and feral animal control;
- rehabilitation of former quarries, air strips and other highly disturbed areas;
- survey for threatened species such the eastern bristlebird; and
- progressive recording and assessment of historic places.

Protection of significant natural and cultural values will be given priority over providing for visitor use, and all use will be managed to be ecologically sustainable.

Most of both parks will be managed as wilderness or remote natural area. In these areas there will be a major emphasis on promotion of minimal impact use. In heavily used parts of the Budawang Wilderness walking tracks will be rationalised and limits will be placed on use for environmental protection reasons.

Day and overnight recreation facilities will be provided near the boundaries at existing locations, which are primarily on the northern and southeastern edges. Fitzroy Falls, Bundanoon and to a lesser extent Little Forest Plateau will be managed as the prime visitor foci for the two parks, with a range of recreation opportunities at each location. Facilities at other locations (Belmore Falls, Manning Lookout, Sassafras, Tianjara Falls, Long Point, Wog Wog, Long Gully, Pigeon House Mountain, George Boyd Lookout, Yalwal Creek and Granite Falls) will be maintained at a basic level.

Restoration and some redevelopment of unsatisfactory or damaged recreation facilities will be progressively undertaken, with priority given to the Bundanoon area.

The Aboriginal community will be consulted about all aspects of management of Aboriginal sites and close liaison will be maintained with park neighbours. A cooperative approach will be taken to management of fire, pests, the impacts of visitor use and other issues with adjoining landholders.

4. POLICIES AND FRAMEWORK FOR MANAGEMENT

This chapter contains the policies and framework for the management of Morton and Budawang National Parks 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

The policies outlined in this plan of management provide the long term framework for management of Morton National Park and Budawang National Park. The actions identified in the plan are those to which priority will be given in the foreseeable future. Other management actions may be developed over the life of this plan consistent with the policies set out in the plan.

Where not specifically provided for in this plan, management will also be in accordance with the National Parks and Wildlife Act and with general Service policies.

4.1 NATURE CONSERVATION

Natural heritage comprises all aspects of the natural environment including physical features such as geology and soils, plants and animals and the relationship between these. For convenience, management of landscape values and of fire are also considered in this section.

4.1.1 Geology, Landscape, Soils, Climate, Water Quality and Scenic Values

Morton and Budawang National Parks sample five distinct land systems resulting from differences in geology and weathering. These are the Yalwal Ramp, Nepean Ramp, the High Plain, the southern Budawang Range and the coastal hinterland developed on Ordovician sediments.

Most of Morton National Park consists of very flat plateau dissected by deep gorges. This landscape is developed on horizontal Permian siltstone, sandstone, shale and conglomerate of the Shoalhaven Group and the Clyde Coal Measures in the southern part of the Sydney Basin. The plateau is known as the Yalwal Ramp and dips gently to the north-east where it passes under the Nepean Ramp and younger coastal sediments. Relief is over 600m in most areas.

The main formations of the Shoalhaven Group are the Berry Formation, Nowra Sandstone and Wandrawandian Siltstone. Cliffs have developed in harder rocks of all the formations but the most extensive are in Nowra Sandstone. These form the gorge rims. Contoured weathering of horizontal rock on the plateau gives a terraced appearance.

There are extensive areas of plateau in the central part of the park but at the southern end in the northern Budawang Range (known as the 'Budawangs') most of the plateau has been eroded to form a spectacular landscape of mesas and gorges. The cliffs are often fissured, forming dramatic sculptured shapes. The full sequence of formations of the Shoalhaven Group is revealed in this area with a maximum thickness of 800m being reached in the area between The Castle and Mt Talaterang. Clearly defined changes in vegetation occur at the boundaries between the geological strata, adding to the variation in landscape character.

Small outcrops of Tertiary basalt occur on plateau-top and valley floors throughout the western part of the Yalwal Ramp.

The Permian sediments unconformably overlies much older and tightly folded rocks of the coastal hinterland to the south. These are Devonian, Silurian and Ordovician sediments of quartzite, phyllite, sandstone and shale. They are also exposed in the base of the Clyde, Ettrema, Bundundah and tributary gorges. The change from the overlying horizontal sediments to the tightly folded metamorphics is striking, especially in Ettrema Gorge near 'The Jumps'. Small areas of ore-bearing Carboniferous granite intrusions also occur. Bundundah gorge has prominent granite boulders and cliffs.

The northern part of Morton National Park is on the southern edge of the Triassic Hawkesbury Sandstone plateau which covers large parts of the central Sydney Basin and overlies the Permian sediments. The southern part of the plateau is known as the Nepean Ramp. It dips gently northeast towards Sydney. Erosion of the sandstone has formed a massive cliffline around the heads of the Bundanoon Creek, Yarrunga Creek and Kangaroo River valleys. The lower sections of the cliffline are formed of the softer Illawarra Coal Measures and Permian beds.

The western edge of the Sydney Basin lies close to Morton National Park's western boundary. Here the rim of the Shoalhaven Gorge is a short cliff formed of the Snapper Point Formation (the oldest strata of the Shoalhaven Group). The slopes of the gorge and the western parts of the park are tightly folded Upper Ordovician shales, slates, phyllites and quartzites of the Lachlan Fold Belt which forms the High Plain land system. The area of the High Plain in the park consists of moderately to steeply dissected hilly terrain with deeply entrenched streams, some cliff development and scree slopes.

Most of Budawang National Park and the southwestern corner of Morton National Park are located on a narrow prominent range (the southern Budawang Range) of primarily Late Devonian shale, sandstone and quartzite of the Merrimbula Formation overlying Middle Devonian Comerong Volcanics. Together these form the Budawang Synclinorium which extends from Bega to Yalwal west of Nowra. It pitches under the Yalwal Ramp in Morton National Park and appears in the base of the gorges in the Ettrema and Yalwal areas. The volcanics outcrop along the western edge and eastern part of Budawang National Park. The range is rugged with very steep slopes and deeply incised valleys. Two peaks, Mount Budawang and Currockbilly Mountain, rise to over 1100m Above Sea Level.

Scenery

As stated in section 2.2.2, the two parks have outstanding scenic values. The dramatic scenery is a major attraction for park visitors and impacts on views from vantage points must be taken into account when considering proposed works.

Maintenance of the natural forest cover on adjacent state forest, especially in the Bundanoon/Fitzroy Falls and Budawang Range areas is vital to the continued high scenic values and remote recreational values of the two parks.

Soils and quarries

Soils in the parks are of low fertility, apart from those derived from volcanic rocks. The rocky plateaus and steep slopes of the two parks have shallow and easily eroded soils. Bare rock outcrops are common and drainage is often impeded, resulting in extensive heath and sedgeland. The shales of the Berry Formation form a deep boggy soil and this is easily damaged by foot traffic, cycling, horseriding and vehicle use. Track erosion has occurred in many places and is dealt with in section 4.3.2.

Gravel extraction was carried out at several locations prior to their inclusion in the two parks. Rehabilitation of these sites is needed.

Climate

The climate of the parks is broadly humid temperate but is locally greatly influenced by topography. There is a marked temperature difference between the high plateau and range areas, where snow occasionally occurs, and the much warmer gorge and valley floors. Rainfall in the eastern part of the parks is more than double that on the western edge but is also high on the Hawkesbury Sandstone plateau at the northern end and on the Budawang Range at the southern end because of orographic effects. Local climate influences vegetation distribution, soil erosion, fire behaviour and recreational use.

Catchments and water quality

Morton National Park provides high quality catchments for Porters Creek and Danjera Dams which supply water to the Shoalhaven Local Government Area. It also protects the lower reaches of the Tallowa Dam catchment which is linked to the Sydney water supply system.

Water quality within most watercourses in the parks, apart from the Shoalhaven River, is very good. The Sassafras plateau provides the headwaters for most of the creeks in Morton National Park. Unsympathetic landuse or development in this area could therefore greatly affect the natural values of the park.

Localised pollution is occurring at popular camping sites in the 'Budawangs'. This may present a public health problem as well as affecting plant and animal communities. Management of this area is covered in section 4.3.3.

Policy

- * The significant geological and landscape features of the parks will be protected from disturbance.
- * The high scenic values of the two parks will be maintained.
- * The location of fossils will not be publicised and visitor facilities will not be located close to these areas.
- * All works carried out in the parks will be designed and undertaken so as to minimise soil erosion and prevent water pollution.
- * Where soil erosion or water pollution occurs as a result of recreation or management use, measures such as modification of facilities, restriction of use and rehabilitation will be undertaken.
- * Extraction of gravel and other substances will not be permitted except on previously disturbed sites for essential NPWS park management purposes, where no practical alternative is available. Extraction will not be undertaken in wilderness areas. Sites will be rehabilitated following completion of extraction.
- * The cooperation of State Forests of NSW and land use planning authorities will be sought as necessary for protection of scenic areas which are outside, but visible from the parks.
- * The cooperation of relevant authorities will be sought if needed for prevention of pollution of creeks in the parks by landuse and developments in their catchments.

Action

- * Former quarries and gravel extraction sites will be rehabilitated.
- * The Service will work with the Shoalhaven Catchment Management Committee and the Sydney Catchment Authority to protect water quality in Morton National Park.
- * Shoalhaven City Council will be asked to apply planning controls to the Sassafras area which will minimise the impact of any development in the area on water quality and other values in Morton National Park, particularly adjacent wilderness area.

4.1.2 Native and Introduced Plants

The vegetation of the two parks is primarily open forest and woodland with significant occurrences of heath, sedgeland and rainforest. A number of surveys have been undertaken and nearly 100 vegetation types have been mapped. Further survey would be likely to subdivide or regroup a number of these and greatly increase information about the parks' vegetation.

Extensive areas of tall forest occur on sheltered slopes, siltstone benches, in gullies and the gorges. Dominant species include brown barrel *Eucalyptus fastigata*, white ash *E. fraxinoides*, manna gum *E. viminalis*, white-topped box *E. quadrangulata*, grey gum *E. punctata*, Sydney peppermint *E. piperita*, spotted gum *Corymbia maculata* and forest red gum *E. tereticornis*. The species mix varies greatly with altitude, geology, climatic change across the two parks and the topographic moisture regime, with blue gum *E. saligna*-*E. botryoides* and turpentine *Syncarpia glomulifera* occurring in the most sheltered sites. These often have a rainforest understorey.

In drier and more exposed locations open forest occurs. These have many of the same species as the tall forests but commonly are dominated by bloodwood *Corymbia gummifera*, silver-top ash *E. sieberi*, blue-leaved stringybark *E. agglomerata*, white stringybark *E. globoidea* and, in the driest positions, yertchuk *E. consideniiana*.

The open forests grade to woodland on dry rocky slopes, exposed plateau and ridges and poorly drained areas. Dominant species include *C. gummifera*, scribbly gum *E. sclerophylla*, mountain spotted gum *E. mannifera*, *E. consideniiana*, yellow box *E. melliodora* and *E. agglomerata*. The understorey is typically heathy.

Mallee woodlands are widespread on benches in the 'Budawangs', Ettrema plateau and exposed ridges in Budawang National Park. They consist of mixtures of *E. consideniiana*, *C. gummifera*, privet-leaved stringybark *E. ligustrina*, whipstick mallee ash *E. multicaulis* and *E. sclerophylla*.

An unusual and widespread group occurs on the areas of terraced sandstone on the Ettrema plateau. It is an intricate mixture of sedgelands, heaths, mallee and woodlands arranged along the contours in response to differential weathering of the horizontal sandstone beds. The species mix is extremely variable and includes Blue Mountains mallee ash *E. stricta*, *E. sclerophylla*, scrub oak *Allocasuarina distyla*, *Acacia spp*, heath banksia *Banksia ericifolia* and hairy bog-rush *Schoenus villosus*.

One of the most common vegetation types in Morton National Park is dry heathland, occurring on shallow soils on the Ettrema plateau and 'Budawangs' areas and the ridges north of the Shoalhaven River. It is commonly dominated by *Allocasuarina distyla* and *Banksia spp*. but the range of species varies greatly.

Extensive areas of wet heath and sedgeland occur in poorly drained areas. Wet heath is characterised by scale-rush *Lepyrodia scariosa* and blunt-leaf heath *Epacris*

obtusifolia while sedgeland includes *Lepidosperma* spp., button grass *Gymnoschoenus sphaerocephalus*, *Xyris* spp. and *Baumea* spp.

Gallery forests of river peppermint *E. elata*, *E. saligna*-*E. botryoides*, *Syncarpia glomulifera* and rainforest species such as water gum *Tristaniopsis laurina* are widespread along major watercourses and the upper parts of gorges. River oak *Casuarina cunninghamiana* occurs as pure stands along the Shoalhaven River, the Clyde River and their tributaries. This is a poorly conserved species.

Rainforest occurs in sheltered locations such as moist south or east facing slopes, the heads of gullies and fertile soils such as along creeks, on the Illawarra Coal Measures at the northern end of Morton National Park and areas of rhyolite on the eastern slopes of Budawang National Park. Rainforest occurs mainly as small patches but there are extensive areas along the Kangaroo Valley escarpments and the main gullies on the eastern side of Budawang National Park.

The main rainforest type in the parks is warm temperate rainforest. This occurs at moderate to high altitudes at the northern end of Morton and escarpments in the Tianjara area where it is dominated by coachwood, *Ceratopetalum apetalum*, grading to low altitudes and valley floors in Budawang National Park where sassafras, *Doryphora sassafras*, dominates. The understorey is often sparse.

Small areas of subtropical rainforest are found along watercourses and lower slopes throughout the two parks. These are characterised by a number of species including giant stinging tree *Dendrocnide excelsa*, silky beech *Citronella moorei*, grey myrtle *Backhousia myrtifolia* and cabbage tree palm *Livistona australis* and have a fairly dense understorey of ferns and climbers. The species mix varies greatly westwards and southwards across the parks.

Cool temperate rainforest occurs in very small patches at the highest elevations at the northern end of Morton National Park and extensively on middle and high slopes in the southern Budawang Range. It is dominated by plumwood *Eucryphia moorei*, and has a predominantly tree fern understorey. At high altitudes in Budawang National Park pure stands of plumwood occur heavily hung with moss.

Limited areas of dry rainforest occur. In low altitude gullies in Budawang National Park it is dominated by *Backhousia myrtifolia* while in the Shoalhaven Gorge between Bungonia Creek and Tallowa Dam the main species are red cedar *Toona ciliata*, Port Jackson fig *Ficus rubiginosa* and white cedar *Melia azedarach*. These stands are referred to as semi-deciduous vine thickets (Mills, 1989).

Communities and areas of particular significance include:

- *E. globoidea*-*E. radiata* forests on Tertiary basalt scattered between Quiera and Meryla, *E. fastigata*-*E. viminalis*-*E. radiata* forests on basalt in the Sassafras plateau and Endrick River areas and a small area of rainforest on basalt at the Vines adjacent to the Endrick River Fire Trail. Most forests on basalt have been cleared for grazing and only very small areas are reserved in Morton National Park;
- *E. aggregata*-*E. pauciflora*-*E. ovata* woodland in swampy parts of the Endrick/Corang River area. *E. aggregata* has a limited distribution and is poorly conserved;
- the eastern slopes of the southern Budawang Range. These contain tall eucalypt forests which have been extensively cleared on the highlands, large areas of rainforest, a number of rare and endangered species, the main occurrence of

Budawang ash *E. dendromorpha*, a major occurrence of *Eucryphia moorei* and the limits of distribution of some species;

- stands of rainforest along escarpment areas and sheltered watercourses throughout Morton National Park;
- heaths on Bhundoo Hill which display a very great diversity of species, including rare and threatened species;
- high altitude heaths on the summits of Mount Budawang and Currockbilly Mountain which are limited in distribution and contain rare and threatened species;
- the mesa tops and cliff edges of the 'Budawangs' which contain a large number of endemic, rare and threatened species;
- the Ettrema/Yarramunmun plateaus which contain an unusual complex of vegetation types, a number of endemic, rare and threatened species, the limits of distribution of several species and the southern limit of occurrence of *E. beyeriana*-*E. sclerophylla*-*Angophora bakeri* forest;
- the wet heaths and cliff edges of the Tianjara/Little Forest plateau which contain rare and threatened plants and the habitat of a number of threatened and restricted bird species; and
- other locations of rare and threatened plants and plants at their limits of distribution including Bundanoon, Fitzroy Falls, the Shoalhaven Gorge and the Endrick River area.

Some rare and threatened plants are located adjacent to visitor facilities but these are not presently at risk from recreational activities apart from *Budawangia gnidioides* as outlined below. The most important factor in protection of populations of rare and threatened plants is appropriate fire frequency. This will be discussed in section 4.1.4.

Under the Threatened Species Conservation Act a recovery plan must be prepared for endangered (Schedule 1) and vulnerable (Schedule 2) flora and fauna. The purpose of a recovery plan is to promote the recovery of a threatened species, population or ecological community to a position of viability in nature. Recovery plans for species listed on Schedule 1 must be prepared within five years from December 1995 and within 10 years for species listed on Schedule 2.

Damage to vegetation communities in some areas of the parks has been caused by past logging, grazing and military use, heavy recreational use, unauthorised use of vehicles off roads, feral goats, illegal grazing and frequent burning. Areas of continuing concern are:

- damage by recreational walking and camping in the 'Budawangs'. Camping and firewood collection have had significant impacts in Monolith Valley, The Castle Saddle, Cooyoyo Creek, Hidden Valley and other areas. Tracks are progressively being extended and in many areas are eroded. Recent track rehabilitation in some areas has attempted to confine walkers to single tracks and direct use away from the most sensitive areas. Signs promoting minimal impact bushwalking have been erected at the most popular entrances to the 'Budawangs'. Recreational use of this area is further discussed in section 4.3.3;
- the disappearance of the rare plant *Budawangia gnidioides* from several of the limited number of sites where it is known to occur. This plant grows in crevices at the base of cliffs in the 'Budawangs' and at least three of the remaining

populations are threatened by use of overhangs for camping. Protective measures are in section 4.3.3;

- extension of vegetation destruction and erosion by vehicle parking and camping at Beehive Point on Yarrunga Creek. Measures to deal with this are included in section 4.3.2;
- significant vegetation damage and prevention of regeneration, particularly in the Shoalhaven Gorge, by large populations of feral goats (see 4.1.3);
- continued track creation by unauthorised recreational vehicle use and vehicle camping in an area at the northern end of the Tianjara plateau (see 4.3.2);
- creation of tracks and clearings in the four small areas of park along Yarramunmun Creek (Yalwal) by uncontrolled camping and recreational vehicle use, discussed in 4.3.2;
- extensive and increasing use of the Tallowa Dam/Yarrunga Creek area for adventure training exercises. This is resulting in track formation and vegetation destruction and is further discussed in 4.3.2; and
- two airstrips remaining from past military use of the Tianjara Plateau, which are being prevented from regeneration by unauthorised recreational vehicle use.

There are few areas of troublesome exotic species in the parks and the areas which occur are small. Bathurst burr, *Xanthium spinosum*, occurs in the Shoalhaven Gorge. Its control is not practical unless done on a catchment basis because of difficult access and continual re-infestation from upstream. Serrated tussock is found at Quiltys red ground clearing in the western Budawangs and requires on-going treatment. There are small areas of blackberry, *Rubus fruticosus*, at Belmore and Fitzroy Falls, the Clyde River, clearings in the Yalwal area and Yarrunga Valley. Other minor weed occurrences are mainly on the edges of adjacent grazing land, along some watercourses, formerly logged areas and old clearings in the parks. Mist flower *Ageratina riparia* may pose a threat in disturbed moist forest areas, particularly in Kangaroo Valley. Its extent is not known.

Cooperative introduced species control programs are carried out with park neighbours where appropriate, such as proposed cooperative programs at Yalwal with Shoalhaven City Council.

Extensive areas of broom, blackberry and other weeds occur along the Shoalhaven River upstream from Morton National Park. There is therefore continual potential for infestation of the park.

Policy

- * The two parks will be managed to conserve all plant communities occurring in the parks and to maintain a natural distribution of floristic and structural types and age classes.
- * Stands of rare, threatened or endemic plant species and sensitive or uncommon plant communities will be protected from disturbance. Protection may include monitoring, appropriate fire management, prohibition of recreational or other activities or other management strategies.
- * Recovery plans for threatened plants which occur in the two parks will be implemented.
- * All management programs including prescribed burning will take into account long term impacts on plant communities, with special emphasis on those communities containing species sensitive to frequent burning.
- * Infestations of weed species will be controlled where they pose a threat to native plant communities or threatened species or where the infestation is small and there is a significant risk of invasion into uninfected areas or where they have been declared noxious. Efforts will be made to eradicate new populations of weeds found in the park before they become established.
- * The Service will encourage catchment or regional landcare programs addressing weed control in the vicinity of the two parks and will participate in relevant cooperative control programs. Formation of volunteer weed control groups will be encouraged, subject to the availability of resources.

Action

- * The location of rare and threatened plants will be progressively mapped as part of state-wide biodiversity recording.
- * Treatment of blackberry and serrated tussock will be undertaken.
- * A weed survey and control program will be prepared and progressively implemented.
- * The air strips on the Tianjara Plateau will be rehabilitated except for retention of a helipad area on the southern airstrip for management purposes.

4.1.3 Native and Introduced Animals

Much of the information in this section comes from 'Fauna of Morton and Budawang National Parks' by K. Mills. Species lists are included in that document.

The varied topography, geology, altitude and climate of Morton and Budawang National Parks have resulted in a great diversity of habitats and animals. The habitats can be grouped into five broad types, each with a characteristic assemblage of species.

Rainforest and tall moist eucalypt forest support a high species diversity (Mills, 1989). Native animals characteristic of these areas include the swamp wallaby *Wallabia bicolor*, greater glider *Petauroides volans* (eucalypt forest only), long nosed potoroo *Potorous tridactylus*, bush rat *Rattus fuscipes*, grey goshawk *Accipiter novaehollandiae*, satin bowerbird *Ptilonorhynchus violaceus*, green catbird *Ailuraedus crassirustus*, superb lyrebird *Menura novaehollandiae*, white-headed

pigeon *Columba leucomela*, brown cuckoo-dove *Macropygia amboinensis*, brush cuckoo *Cuculus variolosus*, the leaf green tree frog *Litoria phyllochroa* and diamond python *Morelia spilota*. The grey-headed flying fox *Pteropus poliocephalus* and several species of insectivorous bats including Gould's long-eared bat *Nyctophilus gouldi*, King River eptesicus *Eptesicus regulus* and little forest eptesicus *Eptesicus vulturnus* are expected to occur.

The most common habitat type in the parks are open forest and woodland, mainly with heath understoreys. Animals include the eastern grey kangaroo *Macropus giganteus*, common wombat *Vombatus ursinus*, several species of possums and gliders, the scarlet robin *Petroica multicolor*, spotted pardalote *Pardalotus punctatus*, grey strike-thrush *Colluricincla harmonica*, white-throated tree creeper *Climacteris leucophaea*, little lorikeet *Glossopsitta pusilla*, brown-headed honeyeater *Meliphreptus brevirostris*, the bearded dragon *Amphibolurus barbatus* and common death adder *Acanthophs antarcticus*.

Animals typical of heath and sedgeland include the brown quail *Coturnix australis*, southern emu-wren *Stipiturus malachurus*, beautiful firetail *Emblema bella* and tawny-crowned honeyeater *Phylidonyris melanops*. Heath is an important food source for many nomadic birds and several species are either restricted to heath or rely heavily on it.

The rivers and, to a lesser extent, the dams in Morton National Park provide habitat for animals such as the water rat *Hydromys chrysogaster*, platypus *Ornithorhynchus anatinus*, a large number of waterbirds including cormorants, ducks, herons, the azure kingfisher *Ceyx azurea*, clamorous reed warbler *Acrocephalus stentoreus*, masked lapwing *Vanellus miles*, long-necked tortoise *Chelodina longicollis* and eastern water skink *Sphenomorphus quoyii*.

Sandstone cliffs and rock outcrops occur extensively in the parks. They provide shelter and breeding sites for animals such as the wallaroo *Macropus robustus*, bats, peregrine falcon *Falco peregrinus* and black rock skink *Egernia saxatilis*.

Threatened species which are of particular concern include:

- the brush-tailed rock wallaby *Petrogale penicillata*, recorded from the Shoalhaven River, Ettrema and western Budawang areas. It is rare in NSW and has recently disappeared from some areas of previous occurrence. Foxes prey on rock wallabies and goats, which are common in parts of Morton National Park, are reported to compete with the rock wallaby. Use of caves for camping in the 'Budawangs' may also affect populations of rock wallabies (see 4.3.3);
- the ground parrot *Pezoporus wallicus*. The Tianjara/Little Forest plateau is a significant area of its occurrence and it also occurs in other heathland areas in Morton National Park. This species has specific habitat requirements which can be severely affected by an inappropriate fire regime. Management for this species is further discussed in section 4.1.4;
- the eastern bristlebird *Dasyornis brachypterus* has been recorded in small numbers on the Tianjara/Little Forest plateau and elsewhere in shrubby woodland margins north and south of Sassafras. Recent survey failed to find any and the continued survival of the species in the park has been questioned (Baker, 1996). It appears to be severely affected by fire and recolonisation is slow. See 4.1.4;
- the broad headed snake *Hoplocephalus bungaroides* reaches its southern limit in the Budawangs. It is vulnerable to illegal bush rock collecting, inappropriate fire regimes and vehicle use on sandstone outcrops.

One of the most important factors in management of habitats and faunal populations is appropriate fire regime. Frequent fire in parts of Morton National Park may be seriously affecting some animal species. Other concerns include competition and predation by introduced animals, protection of water quality and natural river flows and habitat damage by recreational activities.

Relatively little is known about fish in the parks. Surveys have been carried out above and below Tallowa Dam (Bishop and Bell 1978, Ecology Lab 1996 and Marsden et al 1997). Bishop and Bell recorded 17 species below Tallowa Dam and concluded that the locality "is one of the most diverse freshwater fish habitats in New South Wales". More recent surveys have found fewer species. Two species of note are the Australian bass *Macquaria novemaculeata* and the potentially threatened Australian grayling *Prototroctes maraena*. Populations of both have greatly declined because of construction of dams, siltation and other changes to coastal streams. The Shoalhaven (below Tallowa Dam) and Clyde Rivers are important remaining habitats for these species. The grayling has also been recorded in Yalwal Creek and probably occurs in other tributaries of the Shoalhaven River. The vulnerable Macquarie perch *Macquaria australasica* occurs in the Kangaroo and Endrick Rivers. Management of fish in NSW is the responsibility of NSW Fisheries but where their habitats are located in national parks the Service aims to protect those habitats. The most important requirement for protection of fish habitat in the parks is prevention of siltation and turbidity by runoff from roads and tracks. Carp have been reported in the Shoalhaven River and carp and trout may occur in other park streams. Introduced fish may affect aquatic habitats and the Service would oppose their deliberate release into park streams.

Introduced mammals known to occur in the parks are rabbits, foxes, cats, pigs, goats, dogs, deer, sheep and cattle. Most occur in small numbers and are associated with clearings from former farming areas along the Griffins Fire Trail, the Clyde and Endrick Rivers, Yalwal Creek and heathland in the Budawang Range, or inholdings in the Tolwong and Sassafras areas. Isolated occurrences of deer have been reported, mainly in the northern section of Morton National Park. On-going fox and pig control programs are in place. Numbers of pigs are increasing in the Tolwong area, apparently as a result of unauthorised release by recreational pig shooters and subsequent breeding. Goats occur in the Shoalhaven Gorge in large numbers despite control measures and are having a major impact on native vegetation. They also occur at a number of other locations in the parks. Several grazing properties within and adjacent to Morton National Park are unfenced and sheep and cattle graze in the park, sometimes regularly and in large numbers.

All introduced animals may have local or widespread impacts on native plants and animals. Control is often difficult and expensive and can affect non target species and recreational use. Control programs must focus on reducing significant environmental damage, particularly to threatened native species, rather than simply trying to reduce numbers of introduced species.

Wild dogs occur in the two parks, mainly in the Budawang Range. Wild dogs can be divided into three groups - dingos, hybrids with domestic dogs, and feral dogs. The Service considers the dingo to be part of the native fauna of NSW which it has a responsibility to conserve. The national parks along the coastal escarpment forests are important for its conservation. The dingo is not a declared noxious species under the *Rural Lands Protection Act* 1989 as long as it remains on Service land. The Service recognises, however, that wild dogs from Service lands sometimes impact on livestock on adjacent areas and they are controlled when necessary. It is Service policy to remove feral dogs from its lands.

A large proportion of wild dogs have been found to carry hydatids. As the dogs use caves in the 'Budawang's', cave camping may pose a threat to public health. Cave camping is covered in section 4.3.3.

A number of commercial bee hives are located on sites within recent extensions to both Morton and Budawang National Parks. These will be managed in accordance with Service policy.

Policy

- * The parks will be managed to maintain the existing range of native animal habitats and conserve the native animal species and native animal populations occurring in them, with priority to threatened species.
- * Recovery plans for threatened animal species that occur in the two parks will be implemented.
- * Domestic animals (apart from horses ridden on approved routes) will not be permitted in the parks, including droving of stock between inholdings. Movement of stock through the parks will be required to be undertaken by vehicle. If found in national park, stock will be required to be removed as soon as possible, or if necessary will be impounded.
- * Fencing of currently unfenced boundaries between the parks and grazing properties will be encouraged with the Service assisting where possible.
- * Introduced animals will be controlled as far as is practicable where they significantly compete with or prey on native animals, threaten the regeneration of native plant species or communities or cause unacceptable levels of erosion.
- * The Service recognises that wild dogs may prey on livestock on neighbouring land and where necessary will undertake control in perimeter areas of the parks.
- * Control programs for pest species will be designed and implemented in such a manner as to minimise the impact on non-target animals and park values.
- * Pest control programs will be undertaken in cooperation with other authorities and park neighbours.
- * The impacts of beekeeping will be monitored, and sites may be relocated or access controlled if the activity is considered to pose a threat to the values of the parks.

Action

- * Survey will be undertaken in the Tianjara Plateau, Little Forest Plateau and Sassafras areas for eastern bristlebirds in order to determine their status in the park. Appropriate management programs will be developed.
- * The location of threatened and uncommon animal species will be progressively mapped as part of state-wide biodiversity recording.
- * A feral animal control program will be prepared and implemented dealing with pigs, goats, foxes, cats, rabbits, deer and wild dogs. The program will develop cost-effective strategies to reduce environmental damage caused by introduced species, based on clear objectives and, where possible, on quantitative information about damage and the effectiveness of control measures. The need to monitor and control other introduced species will be considered. Monitoring

of the impacts of introduced fish species on aquatic environments will be discussed with NSW Fisheries.

- * The Service will seek implementation of a cooperative goat control program for the Shoalhaven Gorge.
- * On-going wild dog control will be undertaken where necessary.

4.1.4 Fire Management

Management of fire in the two parks is an important and complex issue. Management must aim to achieve long term conservation of natural communities balanced against the ongoing protection of life and property within and adjacent to the parks. A fire management plan that details strategies to achieve this balance is currently being prepared, however some important aspects of fire management are considered below.

Ecological requirements

Fire regimes are a major determinant of the distribution and abundance of plants and animals in the parks. They also affect nutrient cycles, erosion patterns and hydrological regimes. Fire regimes are the result of the dynamic interaction of human, physical, biological, spatial and temporal factors. These interactions are complex and as yet not fully understood. Current information suggests the following requirements but this will be modified by future research and during preparation and review of the fire management plan. It should be noted that these thresholds are indicated for ecological requirements and may be compromised where required for protection purposes adjacent to assets.

Ecological indications relevant to management of fire for biodiversity conservation are:

- a fire frequency of about a 15 year interval is considered to be the most appropriate for maintenance of most fire prone vegetation associations in the parks;
- moist forest should not be burnt more frequently than once every 30 years and rainforest should not be burnt at all where possible;
- heathland generally requires more frequent fire at approximately 12 year intervals to maintain its structure, but this varies with the type of heath, its location and extent. Heath on Currockbilly and Budawang Mountain for example appears to need exclusion of fire for at least 15 years to permit regeneration of all species;
- variability of fire intervals is important to conserve floristic diversity and provide diversity of habitat for animals; fire at regular intervals will lead to loss of species;
- most plant species and communities require infrequent fires of moderate to high intensity to achieve continued propagation and regeneration but fast moving high intensity fires over large areas are more devastating to animal communities.

The appropriate management of fire is particularly critical for species which have restricted habitat requirements such as the threatened eastern bristle bird, striated field wren, ground parrot and a number of threatened plants. There is insufficient information about the way most of these species respond to fire and further research is needed, although there is evidence that widespread or frequent fire is detrimental to the three bird species, particularly to the eastern bristlebird. Fire management must be based on monitoring of vegetation recovery since previous fires and on site specific research (Baker and Clarke 1991, Baker 1996)

Fire management in the heathlands must take into account the relative distribution and long-term maintenance of vegetation associations. Areas of shrub and mallee tend to be more species rich than low heath and many species favour the ecotone between heath and mallee. Frequent burns may cause gradual receding of woodland and changes in species composition which are difficult to observe without systematic monitoring. Factors other than fire may also cause these changes.

As well as affecting natural values, wildfire can damage Aboriginal and historic sites, recreation and management facilities and catchment values, cause soil erosion and threaten the safety of park visitors.

Fire patterns

It is highly likely that the occurrence of fire in the two parks has been altered since European settlement, with changes in both the vegetation structure and species diversity of plants and animals. Indications of more frequent burning in parts of the two parks since settlement include damage to formerly more widespread rainforest areas and reduction in woodland and tall heath communities in favour of low heath and sedge land.

The district periodically experiences extreme fire danger weather and in these conditions extensive areas of the parks can burn. The most damaging fires generally travel south eastwards under hot north westerly winds. The deeply dissected nature of the landscape can make fire suppression operations extremely difficult.

Rural land on the fringes and within the two parks is a frequent source of fires which burn into the parks. Lightning strikes, camp fires and arson are other sources of fire.

Strategies

Under the *Rural Fires Act 1997* the Service is a fire authority and is responsible for controlling fires in the parks, preventing their escape and ensuring that they do not cause damage to other land or property. An important part of the Service's fire management is participation in local cooperative fire management arrangements, including implementation of Bush Fire Risk Management Plans developed by District Bush Fire Management Committees. These committees aim to coordinate fire management and fire control on a district basis. Fire management in the two parks will also be tied closely with that in the contiguous Bungonia State Recreation Area.

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

A range of fire management strategies have been developed including fuel management, fire trails, detection and cooperative arrangements. Some, or at times all, of these are applied where appropriate to best protect life, property and natural and cultural assets within and adjacent to the parks. Fuel reduction programs and fire trail maintenance systems will be designed and implemented in cooperation with State Forests and other neighbours, especially in areas near the boundaries.

The presence of state forest and private property, particularly increasing amounts of rural subdivision, on the edges of the two parks, make it impossible to manage fire solely in an ecologically optimum manner. As a general approach, the Service has adopted a strategy of reducing fire hazard by prescribed burning on the western edges of the parks to reduce the risk of fire entering the parks from the west, combined with burning in strategic locations, particularly on the eastern side, to reduce the intensity

and spread of fire onto neighbouring lands. This approach will be reviewed through the fire management planning process. Prescribed burning of the heathlands and woodlands on the eastern side of Morton National Park must be implemented in conjunction with long term maintenance of ecological values and in particular suitable habitat for the ground parrot, striated fieldwren, eastern bristle bird and threatened plants.

For effective protection of private property adjacent to the two parks it is essential for park neighbours to act responsibly with regard to fire and to take steps to reduce fire risk and fire ignition within their properties. The park boundaries do not follow natural fire management boundaries and cooperative and logical fire management between the Service and its neighbours is imperative.

Most strategic fire trails in the parks are in a satisfactory condition but periodic maintenance is needed to maintain their standard. As well as the main fire trails there are a number of other vehicle tracks which have been used from time to time for fire suppression but are not needed for other management purposes. These have been designated as negotiable routes and will not be used or maintained except when essential for fire suppression operations.

Bushfire suppression operations may require the construction of temporary trails, helipads and firelines. These will be closed and rehabilitated as part of standard post fire operations.

Policy

- * Fire will be managed in Morton and Budawang National Parks to ensure:
 - the protection of human life and property within and adjacent to the parks;
 - protection or regeneration of threatened plant species, significant communities and fire sensitive species and communities;
 - protection of Aboriginal sites, historic places and landscape values;
 - maintenance of those plant communities and plant or animal species that require a particular fire frequency or intensity;
 - restoration or maintenance of diversity of habitats for native animals, particularly threatened fauna; and
 - protection of management and recreation facilities.

- * Fuel management may be carried out in areas of identified high risk to protect adjacent property, cultural resources, recreation facilities, fire sensitive vegetation and maintain species and habitat diversity. In particular it will aim to minimise the risk of fires entering the parks from the west or spreading to adjacent lands to the east.
- * Fuel management programs will be based upon assessment of fuel hazard and risks to life and property, and will be designed to minimise impacts on conservation and recreation values.
- * Prescribed burning programs on the Little Forest and Tianjara Plateaus will be designed to enhance and maintain habitat for the ground parrot, striated fieldwren and eastern bristle bird and maintain the long term diversity and viability of the plant communities.
- * Long term monitoring will be undertaken of the impact of prescribed burns on vegetation composition and structure.
- * Where appropriate the Service will seek to involve neighbours, including DLWC and State Forests, in cooperative hazard reduction works for mutual protection.
- * When determining the appropriate strategy and actions for fire suppression, consideration will be given to the potential for damage to natural and cultural resources by fire and by fire suppression activities.
- * Areas mechanically disturbed by fire suppression activities will be rehabilitated as soon as practical after the fire, and where possible as part of fire suppression operations.
- * The Service will seek to avoid the use of heavy machinery for fire suppression in heath and sedgeland, wilderness areas and in the vicinity of rare plants, Aboriginal sites and historic places. Heavy machinery may be used near such features if necessary for their protection.
- * Records, including maps, will be kept of all fire within the parks.
- * Strategic fire trails will be identified and maintained to a satisfactory standard of access, safety and environmental stability.
- * Negotiable vehicle routes will not be maintained and will be reopened only when essential for fire suppression operations.
- * Close contacts will be maintained with the NSW Rural Fire Service, volunteer bush fire brigades, Council fire control officers, State Forests and land use planning and development authorities. The Service will continue to actively participate in local District Bush Fire Management Committees.
- * The Service will actively advise against inappropriate development in high fire risk areas close to park boundaries as a contribution to local government planning and development approval processes.

Action

- * A draft fire management plan will be prepared and placed on public exhibition.
- * Fuel management and trail maintenance programs will be prepared in conjunction with the programs of the district bushfire committees.

- * A program will be established to monitor the response of ground parrots, striated fieldwrens and eastern bristlebirds to fire.

4.2 CULTURAL HERITAGE

Cultural resources are important components of the environment that may have aesthetic, historic, scientific and social significance to present and future generations. Cultural heritage includes both Aboriginal and non-Aboriginal history.

4.2.1 Aboriginal History

At the time of European exploration the area of the parks was occupied by Aboriginal groups speaking five different languages, although some may have been different dialects of the same language. The language groupings may correlate with tribes but the early records are unreliable. Aboriginal informants had already been subjected to severe disruption of their traditional culture by the time the information was collected.

Within a relatively short period of European settlement of the south coast and tablelands, only much reduced populations of Aboriginal people remained, camped in groups scattered about the tablelands, Kangaroo Valley and around the Shoalhaven. Others clustered on the outskirts of expanding European settlements. In 1882 the Aborigines Protection Board began to force the remainder into missions.

Research in Morton National Park has revealed a diverse and complex archaeological record. This record is far from complete, but it does provide the basis for some reconstruction of the movements and life of pre-European Aborigines through the coastal escarpment of south eastern New South Wales. There appears to have been seasonal movement through the area for exploitation of its resources. The area was also used as a route for interaction between coast and inland Aboriginal populations for trading and ceremonial occasions.

The nature of the terrain and vegetation had a strong influence on Aboriginal movements. Sites have been found to be mainly distributed through woodland areas where resources were plentiful and along major watercourses. The distribution of sites and their proximity to present use patterns in some areas such as the Budawangs has implications for visitor management if cultural values are to be protected (see section 4.3.3).

To date several hundred Aboriginal sites have been recorded in the parks and there are likely to be many more. Open campsites are the most common site type in the park. They are found where a veneer of sand covers the sandstone along creeks or in flat to sloping surfaces on other rock types, especially if these are adjacent to semi-permanent creeks.

Axe grinding grooves and rock shelters occur relatively infrequently. They are found in areas of sandstone outcrop on cliff-rimmed hills and plateau surfaces in the Nowra Sandstone and massive sandstones of the Snapper Point formation, especially along creek lines and in rock shelves above the cliffines. The art sites are paintings, drawings and some stencils.

Rare stone arrangements occur on the rocky summits of hills and on promontories above cliffines.

Quarries are rare, with only one ochre quarry recorded to date in Morton National Park, although silcrete quarries are known from the adjacent coastal and tablelands areas.

Sites of spiritual significance and localities of traditional ceremonies are commonly noteworthy features in the landscape and include such landforms as Pigeon House Mountain, Quilty's Mountain, Sturgiss Mountain and Fitzroy Falls. These have special cultural significance to Aboriginal people.

During the early contact period between Aborigines and Europeans, explorers and surveyors tended to place on record Aboriginal names originally given to features and landmarks. While Surveyor General, Major Mitchell insisted on the use of local Aboriginal names to assist with communication and orientation of later travellers (Snedden, 1995). Examples of Aboriginal names within Morton and Budawang National Parks are Currockbilly Mt, Mt Budawang (Buddawong), Beulee (Endrick), Cooyoo (the Castle), Didthul (Pigeon House Mountain), Tallaterang, Wombollonay (Tianjara), Yarrock (Sassafras), Corang, Wog Wog (Track), Guerira (Quiera) and Yaranga (Fitzroy Falls). These names are an important aspect of the parks' Aboriginal cultural heritage.

There are several groups of sites which are of special significance and which require specific management measures.

Pigeon House Mountain (Dithol) is a significant feature in Aboriginal mythology. The plateau and surrounding country have diverse sites of high scientific and cultural significance related to a traditional religious purpose. These sites are undisturbed but are under some threat from the increasing number of visitors to the area. Deterioration of some sites appears to be related to exposure following fires (Officer, 1991).

The Tianjara Plateau was subject to an intensive archaeological survey in the early 1980's which revealed a complex of site types, some of which have been disturbed by use of the plateau by the Army for training (Hughes, 1982). Damage to these sites by visitors is unlikely because of limited use of the area owing to the threat of unexploded shells. A site on Tianjara Creek is being damaged by vehicle-based camping, however, and modification of use is provided for in section 4.3.2.

Sites in the Bulee Brook catchment are rich in occupation deposits and have had little disturbance. Their protection as relatively undisturbed sites and for future research is important.

It is important to preserve as much as possible of the remaining evidence of previous occupation, particularly in national parks where the complementary natural environments are also preserved and sites can be seen in situations close to their original settings. The main threats to the Aboriginal heritage values of the parks arise from the following groups of activities and processes:

- Service management activities and construction and maintenance activities by other authorities;
- interference by visitors and normal recreational activities; and
- natural weathering, erosion, deposition and plant growth.

The first can be dealt with by ensuring that adequate assessments are carried out before any disturbance occurs. The impacts of recreational use can be reduced by direction of people away from sites, erection of appropriate barriers and signs and by providing information and education about the values of Aboriginal heritage. Walking tracks can be very useful in managing visitors in sensitive areas as the great majority follow tracks and rarely move off them or enter areas where there is thick scrub and no tracks. Many of the Aboriginal sites are within wilderness areas and works in these areas must be appropriate for wilderness.

Damage by natural processes can rarely be stopped although it can in some cases be reduced by protective or rehabilitation works. Where the landscape cannot be stabilised, archaeological information can be retained by salvage excavation and detailed recording.

The strong attachment of Aboriginal people to the land is slowly being acknowledged. Archaeological sites are important to Aboriginal communities as they are a testament to their culture's great antiquity. Aboriginal people may also have traditional spiritual links with an area and hold knowledge which is important for nature conservation.

While the Service 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 therefore policy that Aboriginal communities be consulted about decisions regarding the management of Aboriginal sites and related issues and how the Aboriginal culture and history of an area controlled by the Service will be promoted and presented.

Policy

- * Aboriginal sites will be protected as far as possible from disturbance.
- * The Service will liaise with local Aboriginal Land Councils and other relevant Aboriginal community organisations regarding all aspects of Aboriginal site management and interpretation, and active involvement of Aboriginal people will be encouraged.
- * Aboriginal people will be permitted to carry out activities in the parks related to maintenance of traditional links to the land. Any such activities must comply with the objectives and policies of this plan of management and have minimal environmental impact.
- * All Aboriginal sites known or found in the parks will be recorded.
- * All development work proposed for the parks will be preceded by an inspection for Aboriginal sites and maintenance and development work will have regard for potential impacts on Aboriginal heritage values.
- * New recreation facilities including walking tracks will not be located close to Aboriginal sites unless protection measures have been undertaken.
- * Where Aboriginal sites are located close to existing recreation facilities or walking routes they will be protected if necessary by appropriate measures such as placement of barriers or re-direction of walkers.
- * Recreational use patterns that threaten sites will be discouraged or prohibited.
- * The location of Aboriginal sites will not be publicised except where:
 - the agreement of the relevant Local Aboriginal Land Council and other relevant Aboriginal community organisations has been obtained;
 - a conservation study has been prepared and any management works necessary to protect the site from damage have been implemented; and
 - the site will be interpreted to promote public knowledge and appreciation of Aboriginal culture.

- * Publication by other bodies or individuals of site locations, walking routes and other information that may lead to unauthorised visits to sites will be discouraged.
- * Where groupings of sites impart a special significance to an area a conservation plan will be prepared detailing necessary protection actions.
- * Sites threatened by natural causes will be protected if possible or identified as priority sites for detailed recording and research.

4.2.2 Non-Aboriginal History

European contact with the area of the parks dates from the naming of Pigeon House Mountain by Lieutenant Cook in 1770 when he was sailing north along the coast.

The district was explored in the 1790s and very early 1800s along the coast, associated with interest in development of Jervis Bay as a port, and inland along the southern tablelands to find grazing land. The first crossing of the rugged country inland from the coast was by Dr. Charles Throsby who in 1818 found a way, with the assistance of Aborigines, from the highlands to Jervis Bay via Meryla Pass. Surveyor Meehan traversed the Mt Scanzi, Mt Moolatoo, Mt Carrialoo areas west of Kangaroo Valley in 1819 and Surveyor Harper surveyed the upper Shoalhaven River and the Budawang Range in 1821. Hamilton Hume travelled through the northern Budawang Range in 1821 and was the first European to climb Pigeon House Mountain. Hume returned with Alexander Berry and Thomas Davidson in 1822. Surveyors such as Robert Hoddle and Francis Rusden spent months gathering information for a map of the area. Some of the explorers are commemorated in names of features in the parks such as Berry Head, Rusden Head and Mt Hoddle. Aboriginal people were often an integral part of any survey/exploration party and helped identify routes and sources of food and water and assisted with communication.

The tablelands were settled in the 1820s and timber cutters exploited the resources of the coast and escarpment from this time. The coast was not extensively settled until the 1890s because of the difficult access.

Remains of the timber industry in the area of the parks include a cable tramway used to haul logs up a cliff at Bundanoon Creek, described in 1901 as the steepest railway of its type in the world, and sawmill sites on the upper Clyde River and in Budawang National Park. Timber was also taken out of Kangaroo Valley by tramway at Purnoo Lookout and cedar was taken out of Yarrunga Valley up ladders near Fitzroy Falls.

There was early pressure to open routes between the tablelands and coast to shorten the journey for taking produce to the Sydney markets. Several major trails were developed - the Wool Road in 1841 via Nerriga, Bulee Gap, Sassafras Mountain, Tianjara Falls to South Huskisson; the Wog Wog track which was used to take cattle from Braidwood to the coast, including use by cattle duffers; and in 1890 the Moss Vale to Nowra Road via Meryla Pass to take timber and other goods to the railway at Moss Vale. The latter replaced an earlier road off the south-western end of Wombat Ridge constructed between 1825 and 1830 by convicts. The development of early trails and roads was probably influenced by knowledge of ancient Aboriginal routes.

Gold was discovered at Yalwal in 1852 and at Nerriga in the 1860s. While most mining remains at Yalwal are located outside the park, some features including Pinnacle Mine, the first on the field, are located on the edge of the Ettrema Wilderness area. Mining works and relics, including many miles of water races cut to mines from the Corang River and Endrick River, can be found throughout the western part of Morton National Park.

Copper was mined at Touga Creek and Bundundah Creek in Morton National Park, while silver and zinc were mined at Jones Creek in the Ettrema Gorge. A mine on adjacent crown land at Tolwong yielded copper, silver, gold, lead and zinc but production was sporadic as the ore proved difficult to refine. This land has been identified for inclusion in Morton National Park under the Southern Forest Process.

There are substantial remains of coal mining operations from between 1867 and 1912 in the gorges at Bundanoon including the Erith Coal Mine and the Ringwood Mine. Rixon's Coal Mine in the Clyde Gorge operated from 1883 but was abandoned in 1890 because of limited seams and difficult access.

In the late 1800s small farms were operated along some of the remote river valleys and other locations in the area including the upper Endrick River, Corang Creek, Sassafras, Clyde Gorge, Yarrunga Creek, the Shoalhaven River and Bundundah Creek. Many failed and during the depression of the 1890s there was a dramatic rise in subsistence farming and itinerant grazing.

Gales Flat in the Yarrunga Valley was formerly owned by Mr Yates and is reported to be where Yates seed business started in the 1880's.

The scenic beauty of the Morton National Park area was recognised early after European settlement and the first reserve was established in 1824 at Bundanoon. In the 1860s, trails were built to lookouts at Bundanoon, Fitzroy Falls and Manning Lookout. Resorts developed in the highlands adjacent to Morton National Park from the 1870s with the coming of the railway and there was a rapid rise in tourism in the 1880s when bicycling became popular. In 1883 lands to the east of Fitzroy Falls around the escarpment were reserved for "Public Recreation and Preservation of Timber" and by 1890 other areas, including Fitzroy Falls, Belmore Falls and land around Bundanoon, had been reserved for Public Recreation. The first guide book to the escarpment area was published in 1904.

As a result of lobbying by Myles Dunphy and the National Parks and Primitive Areas Council, the Tallowa Primitive Area (the first wilderness area in Australia) was gazetted over 7,700 acres between Fitzroy Falls and the Shoalhaven River in 1934. In 1938, largely through the work of Mark Morton M.L.A. who pushed the proposal through Parliament, a 60,000 acre "National Park for the Preservation of Native Flora and Fauna" was established which included the Tallowa Primitive Area, Fitzroy Falls and other lands in the vicinity.

The popularity of bushwalking rose significantly after World War II and the core areas of the parks were extensively visited. Publication of articles and a map on the 'Budawang's' in 1961 helped to make it one of the most popular wilderness walking areas in NSW.

In 1968 the reserves at Bundanoon and Belmore Falls were added to the park, and in 1970 the park was extended south to include the Budawang Range and Pigeon House Mountain. Budawang National Park was established in 1977.

Remains of army training activities since World War II such as target vehicles, observation posts, airstrips and unexploded ordnance (see section 4.3.2) can be found in the Tianjara area in Morton National Park.

Over 80 historic places have been identified in the two parks. Most, as described above, are works and relics associated with mining; tracks, buildings, fences, yards etc from former farming activities; and walking tracks, lookouts and other recreation facilities. Others are sawmill sites and associated works and equipment, works and

remains from military training. The large number and variety of historic places together form a valuable resource for understanding and interpreting local history.

Most of the historic places have substantially deteriorated. All of the buildings are in ruins or have only the foundations or clearings remaining. Most of the relics from mining and other operations have been taken by visitors. The walking tracks and lookouts at Bundanoon and Fitzroy Falls are still in use but damaged sections such as ladders and fences have in many cases been replaced. A program of site recording, assessment of significance and development of management strategies for historic places is needed but will be a major undertaking because of the large number of features and their remote locations. In the meantime historic features may be given limited protection from accelerated deterioration and, where suitable, interpretation to promote public appreciation.

Policy

- * The historic places of Morton and Budawang National Parks will be managed in accordance with the Burra Charter of Australia ICOMOS.
- * Where deterioration of significant historic places is being accelerated by human disturbance or natural means such as erosion or vegetation growth, all practicable steps will be taken to protect sites and arrest further damage consistent with the significance of the site.
- * Former farm clearings will be allowed to revegetate unless significant structures exist.
- * All work involving ground disturbance within the parks will be preceded by a check for historic places.
- * Historic places close to recreation facilities and heavily visited areas will be interpreted so as to promote public understanding and appreciation of their history and cultural significance and to assist in site protection.

Action

- * The historic places in the parks will progressively be fully recorded, their significance assessed and appropriate management strategies developed.

4.3 USE OF THE AREA

Morton and Budawang National Parks will be managed to ensure that their use, whether by the general public, special interest groups, Service managers or other authorities is appropriate and conforms with the National Parks and Wildlife Act and the management objectives and policies of this plan and, in declared wilderness areas, with the Wilderness Act. The major categories of use that may be appropriate in areas managed by the Service are:

- education and promotion of the area, the Service and the conservation of natural and cultural heritage;
- certain types of minimal impact recreation and tourism;
- research; and
- management operations, by the Service itself and other authorities with statutory responsibilities in the area

The extent to which these categories of use will be provided for in Morton and Budawang National Parks is indicated below.

4.3.1 Promotion and Interpretation

Provision of information about the value of the parks' natural and cultural heritage, recreation opportunities and management policies is an important part of management. Its purpose is to enhance the enjoyment and safety of visitors, encourage appropriate visitor behaviour, foster environmental awareness in the community and gain the support and cooperation of neighbours.

Morton National Park is located close to major population centres and to the popular tourist destinations of the Southern Highlands and south coast. It is well placed to complement the recreation opportunities of these areas and attract large numbers of visitors. This provides opportunities for promoting Service areas and the conservation of natural and cultural heritage. Two areas of the park are most suitable for this purpose - the northern escarpment and, to a lesser extent, Little Forest Plateau.

The northern escarpment is within day trip distance of Sydney and is part of an established tourist circuit through the highlands, Kangaroo Valley and the Illawarra coastline. It comprises the scenically spectacular and well known tourist destinations of Bundanoon, Fitzroy Falls, Manning Lookout and Belmore Falls and is close to attractions in other Service areas such as Throsby Park, Carrington Falls and the Minnamurra Rainforest Centre. The most heavily visited site is Fitzroy Falls. A visitor centre is located near the Falls and is the main base for promotion and interpretation of Morton National Park and other Service areas in the region.

Little Forest Plateau is located in the southeastern corner of the park close to Ulladulla and nearby tourist attractions on the South Coast. It is less well known than the northern escarpment but has the potential to play a similar, though lower key, tourism and promotional role. It is easily accessible, provides magnificent views of the coast and the 'Budawangs' and has several walking tracks through a variety of significant and interesting habitats. Destination and interpretive information is provided adjacent to roads and track heads. Tourist use of the area will be promoted.

Bungonia State Recreation Area provides views of Morton National Park and access into the park along the Shoalhaven Gorge. Information about the park should be provided in the State Recreation Area and interpretation of the two areas should be integrated because of the close relationship of their natural systems and history.

Visitor surveys have shown that more than half of the visitors to most parts of Morton National Park come from Sydney, approximately 20% from Canberra and most of the remainder from the Wollongong, Shoalhaven and Southern Highlands areas. Because of the dispersed origin of visitors, provision of information on-site is essential. Visitor surveys have consistently shown strong support for provision of more on-site information about the environment and recreation activities. This was especially highlighted at Bundanoon where results of a survey indicated confusion about roads, walking track destinations and times, and a demand for interpretation. Preparation of an interpretation program for Bundanoon, possibly involving local volunteers, is needed.

There is an on-going program of preparation of booklets, brochures, education kits, media releases and field days for the two parks and nearby areas, frequently in conjunction with community groups and tourist organisations.

The central and southern areas of Morton and most of Budawang National Park are managed as wilderness or remote natural areas. Promotion of use of these areas is generally not appropriate in order to protect wilderness values. Entry points into these areas are, however, important for encouragement of appreciation of their values and education about minimal impact use.

An important role of national parks is as an educational resource for study of wildlife, natural environments and cultural features. The easily accessible northern escarpment areas of Morton National Park are suitable for educational excursions, and talks and audio-visual presentations are given to school and interest groups at the Fitzroy Falls visitor centre. Educational groups also visit other parts of the parks, particularly Little Forest Plateau and the southern edge of the Sydney Basin.

Detailed information about the resources and bushwalking opportunities of the two parks is provided in various private publications. These have a major impact on the levels, locations and types of recreation use. While they are generally valuable, indiscriminate provision of information in these publications can lead to inappropriate or excessive use, poor track location and damage to sensitive areas. Because of serious deterioration of many of the popular destinations and walking routes, much of the information in these publications should be reviewed. In order to achieve sustainable use the Service will seek to develop closer communication and cooperation with authors.

Policy

- * Morton and Budawang National Parks will be promoted as a large rugged area featuring magnificent scenery and very high conservation values, with opportunities for a range of appropriate recreational activities.
- * Understanding and appreciation of the natural and cultural values of the two parks by visitors and the local community will be promoted.
- * Close liaison will be maintained with park neighbours concerning matters of mutual interest.
- * The Fitzroy Falls visitor centre will be the major location for provision of interpretive and promotional information about Morton National Park and other Service areas.
- * Other facility areas along the northern escarpment of Morton National Park will be promoted for tourist use and interpretive information will be provided to encourage appreciation of the natural and cultural environment and support for conservation.

- * Little Forest Plateau will be promoted as a low key visitor destination providing opportunities to learn about the special environments of the southern end of Morton National Park.
- * The following themes will be emphasised in promoting and interpreting the parks:
 - the varied and significant geology and landscape evolution, especially the edges of the Sydney Basin and Hawkesbury Sandstone escarpment;
 - the great habitat variety and importance for protection of populations of threatened plants and animals;
 - Aboriginal use of the area, including the high Aboriginal cultural significance, rich site diversity and research importance; and
 - local history of European exploration, settlement and recreation use.
- * Promotional material and interpretive programs will be designed to assist management to protect the natural and cultural resources of the parks. In particular, emphasis will be placed on:
 - encouragement of responsible recreational use; and
 - increasing awareness of the complexities of fire management and the need for a responsible attitude towards fire in the community.
- * The Aboriginal community will be consulted and involved in preparation of any material which interprets Aboriginal culture.
- * Provision of information and interpretive material will be targeted to the variety of park users, including disabled and ethnic groups.
- * Promotion and interpretation of Morton National Park and Bungonia State Recreation Area will be linked.
- * Commercial tour operators using the two parks will be required to provide accurate and adequate interpretive information.
- * The Service will encourage authors of guide books to the two parks to provide information which encourages sustainable use patterns. Only books, articles, maps etc which show appreciation of the need for protection of sensitive natural and cultural features and which encourage minimal impact use will be endorsed or distributed by the Service.

Action

- * An interpretation program will be prepared and implemented for Bundanoon.
- * Promotion and interpretation programs for the two parks will continue to be undertaken where consistent with management objectives, including preparation of brochures, signs and media releases.

4.3.2 Recreation Opportunities

Overview

The pattern of recreation use of the two parks is generally one of large numbers of visitors at facilities along the northern escarpment, lower numbers but regular use of several other locations on the boundaries and relatively dispersed walking and camping throughout the majority of the area, particularly the Yarrunga Creek valley, northern Budawang Range (the 'Budawang') and Shoalhaven Gorge. Canoeing is popular on the major watercourses and cycling and horseriding occur along some roads and vehicle tracks. Guided tours and adventure activities occur in several locations, particularly Bundanoon and the Yarrunga Creek area.

Recreation facilities are concentrated at the northern end of Morton National Park close to tourist routes in the Southern Highlands. These comprise small car camping areas at Bundanoon and Fitzroy Falls and picnicking facilities, lookouts and walking tracks at Bundanoon, Fitzroy Falls, Belmore Falls and Manning Lookout. These facilities are heavily used. Fitzroy Falls has been redeveloped in the past few years and includes a major visitor centre and cafe. Many of the facilities at other locations were constructed during the 1960s or much earlier and some have deteriorated or are unsatisfactory by today's standards.

Facilities in the rest of Morton National Park and in Budawang National Park are less developed. Basic camping areas are provided near Wog Wog Creek, at Long Gully on the Yalwal River and at Sassafras (walk-in camping), all major entry points into the 'Budawang'. Vehicle camping is also permitted at Gales Flat and currently at Beehive Point.

Picnic areas, lookouts and/or walking tracks are located at Little Forest Plateau, Long Point, Tianjara Falls, George Boyd Lookout and the base of Pigeon House Mountain. These are generally of a satisfactory standard except where indicated below. A four wheel drive access road is used to visit Granite Falls in a recently-added section of the park. Formalisation and upgrading are required to address environmental and safety issues. The fire trail to the top of Mount Budawang is used by walkers.

Visitor facilities are summarised in the table below.

Day use areas	Description
Fitzroy Falls	Developed area with visitor centre, café, picnic shelters, lookouts, medium walking tracks
Bundanoon	Multi-site area with picnic facilities, amenities block, lookouts, walking tracks
Belmore Falls	Basic picnic facilities, lookouts, short walks
Manning Lookout	Lookout, picnic table, short walking track
Yalwal Creek	Barbecues, wilderness walks
Tianjara Falls	Lookout
George Boyd Lookout	Lookout, picnic area, short walking tracks
Granite Falls	Short walking track to falls
Pointer Gap	Lookout, picnic area
Porters Creek Dam	Basic picnic area
Little Forest Plateau	Pointer Gap - picnic area, lookout Porters Creek Dam - basic picnic area Little Forest Trig -short and medium walks Mt Bushwalker – medium walk
Pigeon House Mountain	Picnic area, medium walk track
Long Point	Lookout, picnic facilities, informal walk track to gorge
Badgerys Lookout	Lookouts and picnic facilities, partly on Council land
Purnoo Lookout	No facilities, high point with extensive views
Camping areas	
Bundanoon	Small vehicle-based camping area, toilets, showers

Gales Flat	Clearing, no facilities
Long Gully	Camp sites, toilets
Wog Wog	Camp sites, toilet, barbecues
Beehive Point	Clearing, no facilities (to become walk-in)
Yalwal (temporary)	Clearing, barbecues
Sassafras	Walk-in camping area, toilet, picnic shelter, water
Tianjara link track	Walk-in camping areas, no facilities

Vehicle access to recreation facilities is provided along public roads and park roads. Roads are 2WD standard apart from those to Purnoo Lookout and Beehive Point. In addition public vehicle use is permitted on the Tianjara, Twelve Mile and Matadoro Ridge fire trails, part of the Ruins fire trail and that part of Bugong fire trail within the park (see centre map), which are generally 4WD standard. Opportunities for public vehicle access are limited because of wilderness declaration over much of the area. The wilderness assessment process involves public consultation and is determined separately from the plan of management process.

Bungonia State Recreation Area, adjacent to the northwestern boundary of Morton National Park, provides camping, picnicking, lookout and walking facilities while other nearby areas such as Budderoo National Park provide similar facilities.

Planning for provision of tourism and recreation facilities in the two parks has been undertaken in a regional context. Bungonia State Recreation Area, which is contiguous with the northwestern section of Morton National Park, is an important provider of opportunities for day use, camping, walking and adventure activities. Several picnic, lookout and camping facilities are also provided adjacent or close to the two parks by other authorities and private entrepreneurs. These are an important part of the range of recreation facilities in the region and reduce the need to provide facilities in Morton and Budawang National Parks.

Fitzroy Falls

As discussed in section 4.3.1, Fitzroy Falls is the major visitor focus at the northern end of Morton National Park and an important tourist destination. A variety of walking opportunities is needed to maintain the area's tourist and educational attraction. Provision of additional walking tracks to the base of Fitzroy Falls, to Manandoo Falls and along Yarunga Creek to Fitzroy Falls Reservoir are possibilities.

Some track sections along the west rim at Fitzroy Falls are located within adjacent state forest and are managed cooperatively with State Forests.

The Fitzroy Falls camping area is a small area adjacent to the main road. The only facility is a pit toilet. The standard of the area is unsatisfactory, particularly given its location next to a sophisticated visitor centre and lookout complex. The area receives only low levels of use, about 50 campers year. It is intended to close the camping area and to direct visitors to the Bundanoon camping area instead. The Bundanoon area will be expanded slightly to compensate for loss of the Fitzroy Falls area.

Bundanoon

Bundanoon is a popular local recreation area and tourist destination and is important for many businesses in Bundanoon Village. It needs major reorganisation and upgrading to improve its recreation appeal, bring facilities up to a satisfactory standard and reduce maintenance costs. A redevelopment proposal is being prepared in consultation with the local community.

Heavy use of walking tracks in the Bundanoon area has resulted in erosion in many places. A program of maintenance and some upgrading is needed.

Manning Lookout

Manning Lookout is a quiet area providing 3 lookouts into Kangaroo Valley and a long walking track along the escarpment through attractive forest. The two northerly lookouts and the associated walking track are not signposted and receive only low levels of use. The area is of historical interest as its use for recreation dates from the 19th century. Old picnic facilities near the first lookout have been refurbished in recognition of their cultural value. There are safety concerns with use of the area and investigation will be undertaken into the stability of the first lookout, and the feasibility of removing the two northern lookouts but retaining the track for experienced walkers. Upgrading is needed of the first lookout and track section.

Belmore Falls

As well as lookout and picnic facilities on the eastern side of Belmore Falls, there is an old lookout immediately adjacent to the falls and Belmore Falls Road. There are considerable public safety concerns with use of this area, particularly parking along the road, swimming close to the falls and people walking to the top of the falls. Warning signs have not proved sufficient to encourage safe use of the area and solutions will be explored with Wingecarribee Council.

Beehive Point

Beehive Point is used for informal vehicle camping and canoe launching. Vegetation destruction and erosion are occurring as vehicles and camps are pushed further into the bush. The site is rocky with poor soils and is not suitable for vehicle camping. In addition, the site is adjacent to Lake Yarrunga (Tallowa Dam) and Sydney Catchment Authority has expressed concern about pollution. Construction of a barrier is needed to prevent vehicles from being driven to the end of the ridge. Walk-in camping will be permitted.

Little Forest Plateau

Little Forest Plateau has two picnic areas, a lookout at the Pointer Gap picnic area, an information shelter, a short interpreted track across heathland and three longer tracks to Florance Head, Rusden Head and Mount Bushwalker. The latter two tracks enter the Budawang Wilderness area but their use is well established and the tracks will continue to be signposted at the track heads. It is intended to promote tourist use of the main facilities on the plateau.

Tianjara Falls

Tianjara Falls at present has a basic car park and lookout. The facility is experiencing increasing recreational pressure and redevelopment is needed to improve amenity and control impacts.

Tianjara Plateau

Tracks on the Tianjara Plateau are part of a popular 4WD route from Yalwal. Recreational use of the Tianjara Fire Trail has resulted in severe erosion where the track crosses poorly drained sedgeland. As the track is strategically important for fire management it is essential that it be maintained in good condition. A permit system has been introduced to prohibit use during wet periods. Unrestricted access is permitted on the parallel Twelve Mile Road.

As stated in section 4.1.2 considerable track formation and vegetation damage are being caused by unauthorised recreational vehicle use and associated camping in an area at the northern end of the Tianjara Plateau. This area will be closed to vehicle use and rehabilitated. An area used occasionally for camping on Tianjara Creek adjacent to the link road between the Tianjara Fire Trail and Twelve Mile Road is considered more suitable for use and could cater for both 4WD users and walkers. Camping will be allowed to continue but campers will be required to walk a short distance from their vehicles to avoid impacts associated with vehicle-based camping.

Unexploded ordnance in the Tianjara and Clyde Gorge area from former military use may be a danger to bushwalkers, and to park staff during fire suppression and other park management operations. Warning signs have been erected to encourage walkers to stay on identified tracks in the area.

Long Point and Badgerys Lookout

Both these areas are subject to considerable vandalism and resulting deterioration of facilities. Re-design is needed to control damaging use and improve the appearance of the two areas. As the facilities at Badgerys Lookout are primarily on Council-managed land, redesign of this area must be in conjunction with Mulwarree Shire Council.

Yalwal

The Yalwal area of Morton National Park provides access to the Ettrema Wilderness area and opportunities for day and overnight use in a rugged natural area. A basic day use facility will be provided adjacent to Yalwal Creek and Yalwal Road, with formalised parking and toilets. This is a popular location because of easy access to the creek and it acts as a base for walking northwards along the creek in the wilderness area.

Large adjacent areas of naturally vegetated land at Yalwal are managed by Shoalhaven City Council, the Department of Land and Water Conservation and State Forests of NSW. Management of recreation use in the four small areas of national park along Yarramunmun Creek is tied to management of the large area of surrounding Crown land. This is heavily used for recreational vehicle driving and camping. Use is uncontrolled, resulting in environmental damage and expensive track maintenance requirements. Addition of part of the area to the Ettrema Wilderness has been proposed but is yet to be determined.

A plan of management is being prepared by Shoalhaven City Council for the Yalwal area to coordinate management between the Council, the Service, the Department of Land and Water Conservation and State Forests. This will consider provision of facilities such as a formal camping area and investigation is being undertaken to determine the most appropriate locations amongst the different land tenures. A small amount of short term camping (maximum two nights) will continue to be permitted on Service land at Yalwal until cooperative arrangements have been finalised.

Long Gully

Two locations in former state forest on the southern boundary of the 'Budawang's' (known as Long Gully 1 and Long Gully 2) are used for vehicle based camping. Some works in these areas is needed to reduce the impacts of uncontrolled use and improve their amenity.

George Boyd Lookout

The George Boyd lookout area consists of a lookout providing extensive views to the coast, former State Forest picnic areas and associated car park and two short walking tracks. Minor upgrading of the lookout area, day use facilities and walking track is needed to improve their appearance and function.

Granite Falls

Currently a four-wheel drive track provides access to Granite Falls above the creek with no formal lookout facility. The current arrangement presents environmental and safety concerns. Upgrading of the car park and access road is required to bring them to 2-wheel drive standard, combined with construction of a lookout and new walking track from the car park and closure of the existing access track to the creek.

Sassafras

A car park and walk-in camping area were recently provided at Sassafras as part of works and road closure associated with declaration of the Budawang Wilderness Area. The status of public access into the area is uncertain and it may be necessary to secure legal access.

Walking tracks and walk-in camping

There are a large number of formal and informal walking tracks and routes in the two parks ranging from very short tracks to some requiring several days walk in a wilderness setting. Management of wilderness walking is discussed in detail in section 4.3.3.

Limited staff and financial resources make it difficult to maintain the existing tracks. Heavy use of walking tracks has resulted in erosion in popular areas, particularly at Bundanoon and the 'Budawang's'. Erosion control is being carried out on some tracks as part of the Service's maintenance program with the assistance of volunteers and community groups.

Locations such as McCullums Flat in the Shoalhaven Gorge and Griffins Farm in the Yarrunga Creek Valley are popular for medium distance walk-in camping. No facilities are considered necessary at present.

A walking track from the Shoalhaven River to the Clyde River (the Two Rivers Walk) has been progressively constructed through crown land and national park by the Shoalhaven Office of Labour Market Adjustment. Within Morton National Park the track passes through Yalwal, the Tianjara Plateau, Little Forest Plateau and along Wombat Ridge to the Pigeon House Mountain car park, mainly following fire trails. South of Little Forest Plateau, the track enters the Budawang Wilderness and has been designed to a standard appropriate for wilderness areas. Conditions will apply to use of this section to ensure that impacts are acceptable for a wilderness area (see section 4.3.3).

Canoeing, horseriding and bicycling

The Shoalhaven River, Kangaroo River and Yarrunga Creek are popular canoeing locations, both on white water areas and Lake Yarrunga. Camping associated with

canoeing sometimes results in rubbish deposition, escaped fire and other impacts. Minimal impact recreation use will be promoted to reduce these impacts and certain areas may be designated for fuel-stove-only use.

Horse riding occurs in some areas of Morton National Park. Many of the areas riders seek to use are very sensitive. Horse riding may cause significant vegetation damage, track widening, erosion, weed introduction and conflicts with other park users. Horse riding can also create significant track maintenance costs. These impacts are particularly severe on steeper slopes or moist soils and on narrow tracks which have not been hardened.

It is acknowledged, however, that horse riders seek to enjoy the natural environment and prefer to do so on tracks that are not used by vehicles. A limited amount of horse riding will therefore be permitted in Morton and Budawang National Parks on public access roads and vehicle tracks, and on those few management tracks outside wilderness areas, apart from the Alum Creek Fire Trail and the steep Mt Budawang track. The impacts of horse riding use will be monitored and access may be restricted if impacts are found to be unacceptable.

Some management tracks, particularly Griffins Fire Trail, are used for bicycle touring. Cycling is an appropriate means for viewing national parks but can cause erosion and track widening and is inappropriate on narrow tracks due to potential conflict with walkers. Bicycle riding will be permitted in the two parks only on public vehicle tracks and management tracks. It will also be limited in wilderness areas. It will be permitted on suitable management tracks on the edge of wilderness areas but not on the Endrick River Trail or trails which go through private property. The Endrick River Trail goes through the heart of the heavily used Budawang Wilderness and is a major walking route.

Rock sports and hang gliding

Rock climbing, abseiling, hang gliding and similar adventure activities are undertaken at a number of locations in both parks. They are appropriate uses if undertaken in a safe manner with minimal impact practices. Rock sports will not be permitted in high visitor use areas such as lookouts because of the potential risk for other visitors. Dangerous activities such as BASE jumping will not be permitted.

Large group activities

Several companies hold licences to conduct commercial adventure and sightseeing tours within the parks. These include driving, walking, vehicle and pack camping, abseiling, canoeing and other adventure activities. Similar programs are also undertaken by school groups and organisations such as scouting groups and bushwalking clubs. Activities are mainly carried out in the Shoalhaven Gorge, Yarrunga Creek area, Bundanoon, Caoura Ridge, Yalwal and the Budawangs. Use of the Budawangs is dealt with in section 4.3.3.

Organised group adventure activities are appropriate in principle in the two parks and tours which increase environmental understanding and support for conservation are highly desirable. Repeated use of popular routes by large groups is, however, resulting in vegetation destruction and track and campsite creation. It may also reduce the enjoyment of other park visitors. Commercial operations are subject to controls through licencing but conditions on use by community groups may also become necessary to avoid unacceptable damage to park values.

Monitoring of visitor numbers and impacts

Monitoring of visitor use is undertaken in the two parks by a variety of means such as traffic counters, visitor survey and staff observation. In heavily used locations in the Budawangs a program of water quality recording is in place. This will be used to inform future management decisions in the area. Impact monitoring is also needed in other popular locations such as the Shoalhaven Gorge.

Policy

- * Provision of public vehicle access and recreation facilities will be confined mainly to the periphery of the two parks.
- * Existing recreation facilities, apart from the Fitzroy Falls camping area, will be retained although some areas will be redesigned as outlined below.
- * Relatively developed day use facilities will be provided at Fitzroy Falls and Bundanoon. The natural setting of both areas will be retained to provide facilities which are different to those available outside the park and to encourage focus on the natural environment.
- * Little Forest Plateau, Long Point, Belmore Falls, Manning Lookout, Pigeon House Mountain, George Boyd Lookout, Granite Falls, Tianjara Falls, Purnoo Lookout and Yalwal Creek will be managed for low key day use with basic facilities. Minor expansion of day use facilities and provision of additional toilets may be undertaken at Little Forest Plateau if warranted by increased use.
- * Vehicle-based camping will be permitted at designated camping areas at Bundanoon, Wog Wog, Long Gully and Gales Flat. It will also be permitted at one or more locations in the Yalwal area if this is determined to be appropriate (see below). Facilities such as toilets will be provided if found to be necessary for public safety or environmental protection. Vehicle-based camping will not be permitted at other locations in the two parks.
- * Small basic walk-in camping areas will be maintained at Sassafras, Beehive Point and on the Tianjara Link Track. Facilities such as toilets will be provided if necessary for public safety or environmental protection.
- * Walk-in camping will generally be permitted throughout the parks except where closer than 500m to public access roads and vehicle based camping and day use areas. It will be prohibited at certain locations in the 'Budawangs' which are suffering environmental damage (see section 4.3.3) and may be regulated or prohibited in other areas if unacceptable impacts occur.
- * Public vehicle use will be permitted only on public access roads as shown on the Summary Maps.
- * 2WD vehicle access will be maintained to facilities along the northern escarpment, Little Forest Plateau, Wog Wog camping area, Tianjara Falls, base of Pigeon House Mountain, Long Gully and Long Point. Other public vehicle tracks within the park will be maintained to 4WD standard only. The Service will liaise with Wingecaribbee Council to seek maintenance of the public road to Gales Flat to 2WD standard.
- * Public access tracks may be temporarily closed to public use during periods of wet weather, during fire or periods of extreme fire danger or where their condition has significantly deteriorated.

- * The impacts of vehicle use of the Tianjara and 12 Mile Fire Trails will be monitored. If an unacceptable level of impacts occurs, closure of these trails to vehicles may be considered.
- * Walking tracks along the northern escarpment and at day use facility areas will be maintained to a satisfactory standard. Other tracks will be maintained only where essential to prevent erosion.
- * Visitors to remote areas will be encouraged to use minimal impact walking and camping practices.
- * Wood fires will not be permitted in the Shoalhaven Gorge between Great Horseshoe Bend and McCullums Flat and in other locations in the two parks where impacts become unacceptable. Wood fires will also not be permitted in certain wilderness locations as stated in section 4.3.3. Use of fuel stoves will be permitted in these areas.
- * Commercial tours and organised group activities by schools, government and community organisations are considered appropriate if nature based and conducted in an ecologically sustainable manner. As far as possible use should be confined to existing appropriate tracks and designated camping areas. Walking routes and camp sites in other areas should be varied to prevent vegetation loss and minimise other impacts. The Service may place limits on group sizes and frequency of use if necessary to minimise environmental impacts and conflicts with other park users.
- * Bicycle riding will be permitted on public vehicle tracks and management trails outside wilderness areas. Within existing wilderness, cycling will be permitted only on the Jindelara, Boundary and Dingo trails. It will continue to be permitted on other management trails in the event that new areas are declared wilderness. Use of particular roads or trails will be prohibited, however, if found to cause erosion.
- * Horse riding will be permitted only on public access roads and public vehicle tracks and on management trails outside wilderness areas with the exception of the Alum Creek and Mt Budawang tracks. Horse camping will not be permitted. Group events will require prior consent.
- * Minimal impact riding practices will be encouraged. The impacts of horse riding use will be monitored and measures such as trail closure or introduction of permits may be introduced if impacts are found to be unacceptable. Such measures will be discussed with relevant horse riding organisations.
- * Activities such as abseiling, rock climbing and hang gliding will not be permitted where environmental damage is occurring or in high visitor use areas such as lookouts where conflicts could arise with other visitors. BASE jumping (parachuting) and other dangerous or inappropriate activities will not be permitted.
- * Visitor monitoring programs will be undertaken as needed at popular locations to determine visitor numbers, activities and impacts.

Action

- * Alternatives for provision of additional walking tracks at Fitzroy Falls will be considered and will be implemented if found to be feasible and environmentally acceptable.
- * The Fitzroy Falls camping area will be closed and rehabilitated.
- * A plan will be prepared for rationalisation and upgrading where needed of facilities at Bundanoon. Redevelopment proposals will be placed on public exhibition.
- * A vehicle barrier will be constructed near the end of the Beehive Point Road, and a parking area provided for visitors to walk to the area used for camping at the Point.
- * Minor improvements will be undertaken in the Long Gully 1 and Long Gully 2 camping areas including erection of barriers to control vehicle movement, provision of toilets and other work as necessary. Camping will not be permitted on the creek bank and regeneration will be encouraged.
- * Minor upgrading will be undertaken at the George Boyd lookout and picnic area to improve its appearance and function, including replacement of the lookout fence, refurbishment of the picnic area and upgrading of the car park and walking tracks.
- * A lookout and walking track will be constructed at Granite Falls and the existing track closed and rehabilitated. The car park and access road will be upgraded and formalised.
- * The Tianjara Falls area will be redesigned to provide improved day use facilities including additional car and bus parking, relocation of the entry road, an upgraded lookout and interpretation. Rehabilitation of the existing road and other areas will be undertaken as needed.
- * The area of unauthorised vehicle tracks at the northern end of the Tianjara Plateau will be closed and rehabilitated and signs will be erected prohibiting vehicle use and camping.
- * Signs explaining minimal impact bushwalking will be erected at the entrances to Long Point track, Badgerys track, Matadoro Ridge, trackheads for the Two Rivers Walk and other appropriate locations.
- * Eroded walking tracks will progressively be stabilised and restored to an appropriate condition for their level and type of use. Priority will be given to heavily used tracks at Bundanoon and in the northern Budawang Range in accordance with the track rationalisation strategy to be prepared (section 4.3.3).
- * The following work will be undertaken at Manning Lookout:
 - investigation into the stability of the first lookout and the feasibility of removing the other two;
 - upgrading of the first lookout if found feasible by the stability investigation;
 - upgrading of one of the walking tracks from the car park to the first lookout and closure and rehabilitation of the parallel track; and

- (subject to investigation) removal of the other two lookouts and if necessary diversion of the first part of the walking track away from the escarpment.
- * A day use area will be provided beside Yalwal Creek adjacent to Yalwal Road. Parking will be formalised and toilets constructed.
- * The Long Point area will be re-designed to reduce vandalism and improve the appearance of the area.
- * Possibilities for re-design of the Badgerys Lookout area will be explored with Mulwarree Shire Council.
- * The status of vehicle access to the Sassafras car park will be investigated. If needed, the Service will attempt to secure legal public access.
- * The Service will continue to work with Shoalhaven City Council, Department of Land and Water Conservation and State Forests to develop cooperative management arrangements for the Yalwal area. These may cover resource protection, access and facility provision.
- * Options for dealing with public safety issues at Belmore Falls will be investigated with Wingecarribee Shire Council. Works will be undertaken as needed to implement safety improvements.
- * A visitor monitoring program will be developed for the two parks to record visitor numbers and impacts in popular areas and those sensitive to damage.

4.3.3 Wilderness

Large sections of both parks have been gazetted as wilderness areas under the National Parks and Wildlife Act and the Wilderness Act (see Summary Maps). 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. Declaration as wilderness provides for minimising human impact so that the area can evolve in response to natural processes.

The Ettrema Wilderness Area comprises the Danjera, Colley, Ettrema, Tullyangela and Yalwal Plateaus, along with the associated gorges of Ettrema, Bundundah, Boolijah and Yalwal Creeks and part of the Shoalhaven River Gorge.

The Budawang Wilderness Area covers most of Budawang National Park and most of Morton National Park south of the Nowra-Braidwood Road. It is comprised of the northern and southern Budawang Ranges including the Clyde River gorge and the well known features of Pigeon House Mountain, the Castle and Monolith Valley.

Access control and rehabilitation works were undertaken upon gazettal of the wilderness areas in accordance with legislative requirements, in particular closure of the roads to Newhaven Gap and along Yalwal Creek, Jindellara Creek Road and tracks off the Western Distributor Road. Management of natural and cultural heritage and of introduced species and fire is carried out in the wilderness areas in the same manner as other parts of the park, in accordance with the policies set out in earlier sections of this plan.

Additional areas in the northern and western parts of Morton National Park have been assessed for wilderness value. While they are under consideration, no actions will be taken that would reduce their value as wilderness or pre-empt the government's decision as to whether or not to declare them as wilderness.

Recreational use of the wilderness areas

The wilderness areas of the two parks receive very different levels of use. The Southern Budawang Range (Budawang National Park) is steep, rugged and heavily vegetated. It attracts only low numbers of fit walkers, except for use of the fire trail to Mount Budawang by day walkers. Walking use at present has no appreciable impact and no management action is needed. Recent inclusion of the lower eastern slope of the range in the park and wilderness may attract more walkers to this area but is not expected to result in significant impact in the foreseeable future.

The Ettrema wilderness area is cut by a series of deep gorges and much of it receives little use because of the difficulty of walking. The spectacular Ettrema gorge is an important attraction, however, and because of the limited number of entry points and the concentration of use in the gorge, it is probable in future that some locations will show signs of wear. The Shoalhaven Gorge, which forms the northern boundary of the Ettrema wilderness, is important for canoeing. There are numerous small clearings with fire rings along the banks but the impact is localised.

The eastern part of the Ettrema Wilderness (the Yalwal area), is much more accessible and well known and provides relatively easy walking. Parts of the area are recovering from the impacts of previous vehicle use but the area is reasonably robust and can cope with increased numbers of walkers. Yalwal is likely to attract day and overnight walkers as well as people making longer trips.

The Northern Budawang Range (the 'Budawangs') is one of the most popular walking areas in Australia. It is estimated that about 16,000 people per year visit the central sections and a further 20,000 walk to Pigeon House Mountain. The latter is a day walk and day walkers also visit other locations such as Corang Peak, the Castle, Rusden Head and Mount Bushwalker.

The geology and vegetation of the 'Budawangs' are different from both the Southern Budawang Range and Ettrema and the environment is more fragile. The scenery is spectacular and walking and access are relatively easy. In addition the area has been promoted through publication of a walkers map, books and posters. Heavy use has resulted in the following environmental impacts:

- formation of numerous tracks, a number of which are suffering erosion on steep slopes and braiding in poorly drained areas;
- formation of camping clearings in popular locations, some of which, such as the Castle Saddle and Hidden Valley, are suffering significant impacts;
- significant disturbance of Aboriginal occupation deposits in caves and rock overhangs by 're-modelling' the soil to form comfortable sleeping locations. As nearly all the caves have deposits, it is not feasible to identify only particular caves where continued use is unacceptable;
- damage to Aboriginal art by fires in overhangs;
- a major reduction in the rare and endemic plant *Budawangia gnidioides* by use for bedding and lighting fires in overhangs (see section 4.1.2);

- vegetation and habitat disturbance and progressive reduction in tree cover, including numbers of the threatened *Eucalyptus triflora* and *Eucalyptus gregsoniana*, caused by wood gathering and cutting of green timber for storage for the next visit; and
- dug-over soil, water pollution, visual pollution and risk to health resulting from disposal of human waste.

Management of wilderness use

Wilderness is managed in accordance with the Wilderness Act and the Service's Field Management Policies to:

- restore and protect the relatively unmodified state of the area and its plant and animal communities, while managing cultural heritage in a manner appropriate to its significance;
- preserve the capacity of the area to evolve in the absence of significant human interference; and
- permit opportunities for solitude and appropriate self-reliant recreation.

Inherent in these objectives is the principle that protection of natural values has priority over providing for recreational use of wilderness areas.

Ideally, wilderness should be trackless areas with no visible impacts from human use, no apparent management presence and where visitors meet few other people. This is largely possible in the Southern Budawang Range and much of the Ettrema Wilderness. These areas will be managed as wilderness at the more remote and unmodified end of the spectrum i.e. locations where human interference is minimal and there are opportunities for solitude and self-reliant recreation. Minimal impact bushwalking practices will be promoted and the impacts of use will be monitored but little direct management of use will be undertaken unless use increases to a point where unacceptable impacts begin to occur.

With regard to the 'Budawangs' it is necessary to recognise that the area has a long history of high use levels which have resulted in modification of the environment. For the area to be restored to a predominantly unmodified state it would be necessary to reduce numbers of visitors to very low levels through a permit system. There are a number of issues associated with a permit system and introduction will be considered only if other management strategies are found not adequate to manage impacts. These issues are:

- the area is very popular and provides excellent remote area walking opportunities for a range of abilities;
- severe controls on numbers would displace walkers to other areas which at present have low levels of impact;
- other options are available to achieve environmental protection and should be explored first;
- a permit system would be extremely difficult to enforce because of the numerous entry points and insufficient staff numbers for patrol;
- it would be inconvenient and inflexible for users;

- it would be administratively costly unless a self-administered computerised system becomes feasible such as through widespread Internet access.

A strategy of reducing impacts through controlling the nature of use and levels of information provision will be introduced, combined with some on-the-ground works. Controls on camping, wood use and information provision are set out in the policies below. They are aimed at combating vegetation destruction, protecting Aboriginal sites and rare species, promoting minimal impact use and stabilising numbers of visitors. These measures will not sufficiently reduce environmental impact on their own, however, and it will be necessary to carry out works in certain areas such as track rationalisation, erosion control, limited signposting and provision of toilets.

Some minor track hardening to prevent erosion, and signposting in the Monolith Valley area, have previously been undertaken. A chain is located at Nibelung Pass to assist walkers. Pigeon House Mountain and part of Little Forest Plateau, which have only recently been incorporated in the wilderness area, have marked tracks, raised walkways, some climbing aids and lookout barriers. These facilities are necessary for environmental protection and public safety reasons as are the additional measures outlined below. Track works and provision of toilets if required will be of very basic standard and kept to the minimum necessary for environmental protection.

Consideration was given to strategies such as provision of additional access points and trackhead facilities for the 'Budawangs' to spread the impacts of use, and promotion of day walking rather than overnight use. Wilderness edge facilities would themselves have environmental impacts, however, and attract general use. Most wilderness visitors want to camp within the wilderness and day walkers also have impacts. Provision of edge facilities may be considered in the future if there are environmental advantages but will not be provided for walkers' convenience.

Special conditions will be imposed along the section of the Two Rivers Walk within the Budawang Wilderness because of the anticipated relatively high levels of use, threatened species habitat and the fragile environment. In this area camping will not be permitted and minimal impact walking practices will be required, including use of fuel stoves. A monitoring program will be put in place to ensure that levels of use and impact are appropriate for a wilderness area.

Information provision

The large number of visitors to the 'Budawangs' is to a large extent the result of promotion and the availability of information on attractions, routes and camp sites. Promotion of visitation to wilderness areas is not appropriate and will not generally be undertaken by the Service. Features such as Pigeon House Mountain and Little Forest Plateau on the edge of the 'Budawangs', however, are popular destinations and enable people to view the wilderness area with negligible impact on it. Promotion of these sites will continue.

The Service has no control over publication by individuals and community organisations but will try to influence the content of such publications to ensure that they do not promote inappropriate activities.

Provision of information about minimal impact use and controls on use is essential, and information provision can be used to direct visitors along the most suitable routes. Policies regarding information provision are set out in section 4.3.1 and below.

Policy

- * The Ettrema Wilderness area and the Southern Budawang Range will be managed as largely unmodified areas with minimal human impact which provide opportunities for solitude and self-reliant recreation.
- * If use of these areas results in unacceptable environmental impact or loss of wilderness experience, controls on use and/or numbers will be introduced and minor environmental protection works will be undertaken where essential.
- * The 'Budawangs' area will be managed to protect its environmental values and provide opportunities for extended walking in a natural setting. Use will be managed through controls and works for environmental protection and public safety reasons. Works will be kept to the minimum necessary and will be in keeping with protection of wilderness values.
- * The following limits on use will apply in that part of the Budawang Wilderness Area known as the 'Budawangs', ie north of Wog Wog Mountain and Yadboro River:
 - camping will not be permitted in caves and rock overhangs, except for those which do not have significant natural or cultural values and have been designated for camping;
 - camping will not be permitted in Monolith Valley, the Castle Saddle, Hidden Valley, the Vines rainforest or along the Two Rivers Track. Camping may be prohibited in other locations on either a temporary or permanent basis where vegetation destruction and other impacts are occurring;
 - wood fires will not be permitted in Monolith Valley, the Castle Saddle, Hidden Valley, the Vines or along the Two Rivers Track. Wood fires may be banned in other locations if significant impacts from wood use occur;
 - placement of cairns and other track markers by the public will not be permitted;
 - other measures such as group size limits or a permit system to limit total numbers will be introduced if other measures in this plan of management do not satisfactorily control environmental impact.
- * Pigeon House Mountain, Mount Bushwalker and Rusden Head will be promoted as day use destinations. Other parts of the wilderness areas will not be promoted except as necessary for environmental protection reasons, such as directing visitors to suitable camp sites.
- * Information about minimal impact use and controls on use will be provided on the boundaries of wilderness areas. Signposting will be located within wilderness areas only where essential to ensure compliance with controls on use for environmental protect reasons or for visitor safety and will be kept to the minimum necessary. Changes to conditions of use or directions designed to protect the environment will be publicised to appropriate user groups or displayed at appropriate locations.

Actions

- * A camping and walking track rationalisation strategy will be prepared for the 'Budawang's' in consultation with user groups and placed on exhibition for public comment. The strategy will determine locations which are suitable for tent and cave camping, and the major routes between camp spots and features of interest. It will provide for closure of poorly located, duplicate and little-used tracks, minor track relocation, water diversion or hardening where necessary to prevent erosion and track braiding and basic signposting where necessary to direct walkers along suitable tracks or to camp sites. Group sizes limits will be considered, along with implementation and provision of information to user groups.
- * Toilets of minimal construction will be provided where necessary to protect water quality at popular camping spots in the 'Budawang's', possibly including Cooyoyo Creek, Bibbenluke, Burrumbeet Brook and Styles Plain, depending upon the results of the above camping and walking track rationalisation strategy and environmental impact assessment. Compliance with use of the toilets and their success in reducing environmental impact will be monitored.
- * Signposting will be erected at entry points into the 'Budawang's' advising visitors about minimal impact bushwalking and use of fuel stoves, limitations on cave camping, sites where camping and wood fires are prohibited and that erection of cairns and other unauthorised track markers is not permitted.
- * Signposting will be erected at entrances to other wilderness areas to encourage minimal impact camping including use of fuel stoves.
- * Unauthorised track markers will be removed, unless they have historic value.
- * An education program will be undertaken to advise walkers of the reasons for introducing use controls, and of the need for minimal impact bushwalking practices. The cooperation of user groups will be sought to circulate this information.
- * The feasibility and mechanisms for introduction of a permit system will be investigated for implementation if required.
- * Necessary management works such as rehabilitation and access control will be undertaken for any further areas declared as wilderness.

4.3.4 Research

Research into the parks' resources, their maintenance requirements and the impacts of park users is essential to the development of appropriate management practices. Important research topics have been included in other relevant sections of this plan.

The parks provide valuable opportunities for research in a wide range of scientific disciplines. Morton and Budawang National Parks have particularly high research value because of their great physical and biological diversity and their location at the meeting of the coast and tablelands and of several major geological regions. It is very important for the results of research to be provided to the park managers to assist improvement of management programs.

Research in wilderness areas is generally not appropriate unless it is carried out in accordance with wilderness management policies.

Policy

- * Morton National Park and Budawang National Park will be available for appropriate research.
- * Researchers will be encouraged to design programs to provide information directly useful for management purposes.
- * Only research which causes minimal disturbance to the values of the parks will be permitted unless alternative opportunities are not available outside the parks and the results of the research can be demonstrated to offer significant benefits for improvement of management programs or knowledge of natural and cultural heritage.
- * Liaison will be maintained with researchers and observers to obtain as much mutual information and assistance as possible. The results of research will be required to be provided to park managers.

Action

- * A prospectus will be prepared as a guide to preferred research projects in the two parks. Preferred topics will be those of direct relevance to management and will include:
 - survey for threatened plant and animal species;
 - research into the habitat requirements, status and distribution of native animals in the parks, particularly of threatened species;
 - the long term impact of prescribed burning programs on vegetation composition and structure;
 - the response of rare and threatened plants to fire;
 - past Aboriginal use of the area and the characteristics and distribution of Aboriginal sites;
 - past non-Aboriginal use of the area, survey and assessment of historic features; and
 - patterns of recreation use, including visitor attitudes and application of minimal impact practices.

4.3.5 Management Operations

Service management

The two parks are currently managed from offices and workshops at Nowra, Fitzroy Falls, Bungonia State Recreation Area and Ulladulla. These facilities are also bases for management of other Service areas in the region. Facilities at Fitzroy Falls are within Morton National Park and include a house used for temporary accommodation of staff and volunteers.

A system of management tracks is maintained through the two parks and there are permanent helicopter landing sites at Tianjara and Matadoro Ridge. Management tracks are shown on the Summary Map. As stated in section 4.1.4, consideration will be given to the need for retention of trails within wilderness areas during preparation of the fire management plan.

Discussions are underway about the future management of land currently owned by the Sydney Catchment Authority adjacent to Morton National Park along the Shoalhaven and Kangaroo Rivers (Shoalhaven Special Area). Addition of some land to the park is being considered and a joint management agreement is being negotiated. This will result in sharing of management responsibilities between NPWS and the Sydney Catchment Authority in accordance with the Strategic Plan of Management for the Special Area.

As mentioned in section 2.2.1, additional land to be added to Morton National Park as a result of the Southern Comprehensive Regional Assessment (CRA) process will be managed in accordance with the policies and principles specified in this plan. It is likely that actions in land added through the CRA process will relate mostly to rationalisation of existing forest management roads and rehabilitation of degraded areas. Any proposed road closures would only be implemented after adequate consultation with the district bush fire committees and other affected stakeholder groups.

Alien uses

Sydney Catchment Authority, Shoalhaven Council, State Forests, Transgrid, Telstra, National Transmission Agency, Integral Energy, Duke Energy and the Department of Land and Water Conservation maintain facilities in the parks. These include river and rain gauging stations, Porters Creek Dam and treatment works, pipelines, powerlines, cables, a fire tower, radio aerials, a television translator station, trigonometrical stations and access roads. There are also a number of access roads to inholdings and to apiary sites. These facilities have varying degrees of impact on the values of the parks. Development of formal arrangements regarding use and maintenance is needed to ensure minimal environmental impact.

Policy

- * The need for the office, workshop and staff house at Fitzroy Falls will be kept under review. They may be modified or removed if appropriate for management purposes but there will be no significant expansion or new development of office, workshop or staff accommodation facilities in the park.
- * Management tracks will not be used during wet periods except in emergencies.
- * Facilities maintained by other authorities will be required to be subject to licences detailing measures to minimise the environmental impact of the facilities and works associated with them.
- * New works, facilities or operations proposed by any organisation or individual will not be permitted unless they are consistent with the purposes of reservation of the two parks and this plan of management. Such facilities will be kept under review and where possible the facility or occupancy will be relocated, closed or terminated and the site rehabilitated.
- * Permanent helicopter landing sites will be maintained at Tianjara and Matodoro Ridge. Temporary helipads may be constructed during emergencies. They will be rehabilitated after use.
- * A cooperative approach will be taken to management where national park lies adjacent to land managed by other authorities such as Sydney Catchment Authority and State Forests.

Action

- * Licences will be arranged for facilities maintained by other authorities where no existing formal agreement exists.
- * Tracks to the power line on Trunk Road 92 will be gated.

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, directorate and regional levels.

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

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

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 affect to, and that no operations shall be undertaken in relation to the national parks unless they are in accordance with the plan. However, if after adequate investigation, operations not included in the plan are found to be justified, this plan may be amended in accordance with section 75(7) of the Act.

As a guide to the orderly implementation of this plan, relative priorities for identified activities are summarised below:

High priority	Plan ref
* Record location of threatened species	4.1.2
* Control blackberry and serrated tussock	4.1.2
* Prepare and implement weed survey and control program	4.1.2
* Survey for eastern bristlebirds and monitor fire response	4.1.3,4.1.4
* Prepare and implement introduced animal control plan	4.1.3
* Seek cooperative goat control program for the Shoalhaven Gorge	4.1.3
* Control wild dogs	4.1.3
* Prepare fire management plan	4.1.4
* Prepare prescribed burning and trail maintenance programs	4.1.4
* Erect signs about cave camping, fuel stove use and minimal impact bushwalking and undertake education program	4.3.2,4.3.3
* Redevelop Tianjara Falls	4.3.2
* Explore options for public safety issues at Belmore Falls	4.3.2
* Erect vehicle barrier at Beehive Point	4.3.2

- * Construct lookout and walking tracks at Granite Falls, upgrade road and car park 4.3.2

Medium priority

- * Work with other organisations to protect water quality 4.1.1
- * Record the location of threatened plant and animal species 4.1.2, 4.1.3
- * Fully record and assess historic places 4.2.2
- * Continue general promotion and interpretation programs 4.3.1
- * Close Fitzroy Falls camping area 4.3.2
- * Redevelop Manning Lookout area 4.3.2
- * Rehabilitate eroded walking tracks 4.3.2
- * Prepare plan for rationalisation of Bundanoon roads and tracks, redevelopment of Gambells Rest area and improved interpretation. Implement if found feasible 4.3.1,4.3.2
- * Provide day use area adjacent Yalwal Creek 4.3.2
- * Re-design Long Point lookout area 4.3.2
- * Consult with Council about re-design of Badgerys Lookout area 4.3.2
- * Improve Long Gully 1 and 2 camping areas 4.3.2
- * Upgrade George Boyd Lookout 4.3.2
- * Negotiate cooperative management of Yalwal 4.3.2
- * Prepare and implement Budawangs camping and walking track strategy and associated education program 4.3.3
- * Construct toilets at Budawang camping spots 4.3.3
- * Gate tracks to power line on Trunk Road 92 4.3.5

Low priority

- * Rehabilitate former gravel extraction sites 4.1.1
- * Consider nomination of wild and scenic rivers 4.1.1
- * Rehabilitate airstrips on Tianjara Plateau 4.1.2
- * Close and rehabilitate areas affected by illegal vehicle use at northern end of Tianjara Plateau 4.3.2
- * Consider new walking tracks at Fitzroy Falls 4.3.2
- * Ensure legal vehicle access to Sassafras car park 4.3.2
- * Develop visitor monitoring program 4.3.2

- * Remove unauthorised track markers 4.3.3
- * Investigate feasibility of introduction of permit system 4.3.3
- * Undertake rehabilitation and access control works for any further wilderness areas 4.3.3
- * Prepare research prospectus 4.3.4
- * Arrange licences for alien facilities 4.3.5

GLOSSARY

Basement rock - the ancient rocks, usually igneous or metamorphic, that are overlain unconformably by younger sedimentary strata.

Conodont - a minute toothlike microfossil.

Endemic - having a natural distribution confined to a particular geographic region.

Fire trail – a management track that has high value for fire management and is therefore maintained at a high standard.

Management track – unsealed road, generally 4WD, which is used by NPWS for management purposes and is closed to public use.

Mesa - an isolated flat-topped hill bounded by steep slopes or cliffs.

Noxious plants – identified under the *Noxious Weeds Act* 1993, obliging public authorities to control them to prevent them spreading to adjoining lands.

Palaeozoic - the geological era containing the oldest forms of highly organised life (seed bearing plants, reptiles etc). The Permian is the youngest period of the era.

Peneplain - a region changed almost to a plain by erosion.

Promotion – as used in this plan promotion means encouraging visitor and community appreciation of the area's values and providing information about visitor opportunities.

Public vehicle track – used in this plan to mean unsealed, usually 4WD, road open to public use.

Road – generally used in this plan to mean sealed and unsealed 2WD roads open to public vehicle use.

Scarp - extensive steep slope or cliff produced by erosion or faulting.

Synclinalorium - a composite trough structure having younger rock in its core.

Tectonic movement - movement of the earth's crust causing structural changes to the surface.

Track – generally used in this plan to mean walking track unless specified as a vehicle track.

Trail – generally used in this plan to mean fire trail, unless another meaning is evident from the context eg historic stockmans trail.

Unconformity - strata not conforming in position, dip or strike to the older underlying rocks.

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