

**BAGO BLUFF NATIONAL PARK**  
**PLAN OF MANAGEMENT**

**NSW National Parks and Wildlife Service**

**Part of the Department of Environment and Climate Change NSW**

**September 2007**

**This plan of management was adopted by the Minister for Climate Change, Environment and Water on 5 September 2007.**

## **ACKNOWLEDGMENTS**

This plan of management is based on a draft plan prepared by staff of the Mid North Coast Region of NPWS. Valuable information and comments were provided by NPWS specialists, the Regional Advisory Committee and members of the public.

Cover photograph by Roman W Schatz.

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## FOREWORD

Bago Bluff National Park covers an area of 4023 hectares about 10 kilometres south-west of Wauchope on the Oxley Highway.

The diversity in soils, geology, topography and weather conditions across the park has led to a wide range of vegetation types, from grassy open forests to rainforest. Included within the park are four former State Forest Flora Reserves that protect representative examples of old growth coastal blackbutt and dry rainforest. The park forms part of a regional fauna corridor that connects the coast to the Great Dividing Range through a series of parks and reserves, State forests and private lands.

Bago Bluff National Park has local social significance for its historical associations with early timber getting in the region. A walking track was constructed through the former Lorne Flora Reserve by the then Forestry Commission to provide opportunities for local school children to learn about the native forests.

The park is a popular location for visitors and locals due to its close proximity to Wauchope and the Oxley Highway. Most people who visit the park do so for its impressive views and landscape features.

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

A draft plan of management for Bago Bluff National Park was placed on public exhibition from 12<sup>th</sup> November 2004 until 21<sup>st</sup> February 2005. The submissions received were carefully considered before adopting this plan.

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

**Phil Koperberg**  
**Minister for Climate Change, Environment and Water**

# 1 MANAGEMENT CONTEXT

## 1.1 LEGISLATIVE AND POLICY FRAMEWORK

The management of national parks in NSW is in the context of a legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act), the *Threatened Species Conservation Act 1995* (TSC Act) and the policies of the NSW National Parks and Wildlife Service (NPWS). Section 72AA of the NPW Act lists the matters to be considered in the preparation of a plan of management. The policies are compiled from the legislative background, the NPW Regulation and internationally accepted principles of park management. They relate to nature conservation, Aboriginal and historic heritage conservation, recreation, commercial use, research, and communication.

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

The planning area includes 'Ministerial roads,' which are vested in the Minister for the Environment on behalf of the Crown for the purposes of Part 11 of the NPW Act. They were created under section 13 of the *Forestry and National Parks Estate Act 1998* to ensure the continuation of access arrangements that existed immediately before the park's creation. This primarily relates to use of these roads for timber hauling and private property access. Whilst Ministerial roads do not form part of the gazetted park area, the management of these roads is subject to the provisions of this plan, the NPW Regulation 2001 and the requirements of the EPA Act.

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

## 1.2 MANAGEMENT PURPOSES AND PRINCIPLES

### 1.2.1 Management Principles for National Parks in NSW

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

Under the Act, national parks are to be managed to:

- conserve biodiversity, maintain ecosystem functions, protect geological and geomorphological features and natural phenomena and maintain natural landscapes;
- conserve places, objects, features and landscapes of cultural value;
- protect the ecological integrity of one or more ecosystems for present and future generations;
- promote public appreciation and understanding of the park's natural and cultural values;

- provide for sustainable visitor use and enjoyment that is compatible with conservation of natural and cultural values;
- provide for sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to conservation of natural and cultural values; and
- provide for appropriate research and monitoring.

### **1.2.2 Specific Directions for Bago Bluff National Park**

Future management of Bago Bluff National Park will specifically focus on:

- protection of plant species, with emphasis on the three vulnerable species, *Callistemon linearifolius*, *Melaleuca groveana* and *Hakea archaeoides*;
- protection of the populations and habitat of native animals, including thirteen threatened species record in the park;
- preservation of the scenic value, geological and cultural significance of Bago Bluff;
- maintenance of the park as a viable habitat corridor for native plants and animals between the coast and Great Dividing Range;
- location, identification and protection of Aboriginal values within the park and provision of opportunities for the Aboriginal community to assist in the management of these values;
- cooperative management of fire with the adjoining land managers including State Forests and the local community;
- provision of interpretative signage to educate visitors of park values and appropriate behaviour while in the park; and
- provision of recreation opportunities that are appropriate for a national park, with an emphasis on low impact recreation pursuits.

## **2 BAGO BLUFF NATIONAL PARK**

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

Bago Bluff National Park (referred to herein as 'the park') is located approximately 10km south-west of Wauchope on the Oxley Highway and extends south to 6km northwest of Kendall. The park occupies an area of 4,023ha.

As a result of the Lower North East Forest Agreement, which was triggered by the Forestry and National Parks Estate Act, the park was created on 1 January 1999. The park includes parts of what were previously Broken Bago and Lorne State Forests. These parts of State Forests also included Lorne, Black Creek, Six B's and Bago Bluff Flora reserves.

The park borders Broken Bago, Lorne and Bulls Ground State Forest to the east, Lorne State Forests to the south. Private property borders the north and west, and a small boundary in the south east. The Oxley Highway runs along a portion of the northern boundary of the park (see map).

The park forms part of a regional fauna corridor, which connects the coast to the Comboyne plateau and ultimately to the Great Dividing Range (Scotts, 2003) through a series of parks and reserves, state forests and private lands, which together form part of a regional mosaic of vegetation types.

The park lies within the Hastings Local Government Area and is within the Bunyah Local Aboriginal Land Council (LALC) and the Birpai tribal area.

### **2.2 NATURAL AND CULTURAL HERITAGE**

#### **2.2.1 Landform, Geology and Soils**

The park runs along the Broken Bago Range, which separates the catchments of the Hastings and Camden Haven Rivers. The park rises from 25m above sea level, close to the Oxley Highway, to 400m on the top of the range. The park is predominantly ridge top and mid slope country and contains several significant landmarks. Bago Bluff and the Rollover are the most prominent features of the park, and are clearly visible from Wauchope and Port Macquarie. The Bluff is part of the uplifted rim of the Lorne Triassic Basin and runs north south and then east west for approximately 3 kilometres. The park includes several major peaks including the Rollover, Ducks Nob, Cold Nob and Rock Nob. The changes in aspect across the park and the rain shadows created by the ridgelines directly influence the distribution of vegetation communities across the park.

The park plays an important part in catchment management and protects the upper catchments of various creeks, which flow into the Hastings and Camden Haven Rivers. The park receives around 1300-1700 mm of rain a year. Rainfall in the northern section of the park flows through four main creeks into the Hastings River. On the southern side of the Broken Bago Range, rainfall feeds several perennial creeks that flow into the Camden Haven River.

Geologically, the park covers part of the Lorne Basin (Myson, 2001). This basin, which formed in the Triassic period some 200 million years ago (mya), contains a sedimentary sequence of basal conglomerate, coarse sandstone, siltstones and mudstones. Bago Bluff is part of this basin, formed from a quartz conglomerate that is very resistant to weathering. Older sediments dating from the Carboniferous period (about 300 mya) underlie the northwestern third of the park. The extreme north of the park is influenced by the underlying high-quartz volcanic rocks, mostly andesites and dacites, which date from the Devonian period (350+mya). Granite outcrops derived from Triassic igneous rocks characterise the southern section of the park (Myson, 2001).

The varied geology has resulted in a range of soils across the park, most of which are shallow due to the steep terrain.

### 2.2.2 Native Plants

The diversity in soils, geology, topography, and weather conditions across the park has led to a wide range of vegetation types, from grassy open forests to rainforest. The NPWS Forest Ecosystems mapping completed as part of the Comprehensive Regional Assessment process (CRA) identified 22 different forest ecosystems in the park. Table 1 lists the main forest ecosystems mapped in the park.

**Table 1. The main forest ecosystems in Bago Bluff National Park.**

Forest Ecosystem	Area (ha)	Representation (%)
Dry Grassy Tallowwood-Grey Gum	1632	43
South Coast Tallowwood-Blue Gum	643	17
Wet Foothills Blackbutt-Turpentine	558	15
Needlebark Stringybark-Large Fruited Blackbutt	261	7
Rainforest	225	6
Open Coastal Brushbox	128	3

Source: Flint (2003)

Despite the diverse number of ecosystems predicted to occur within the park, more than 90% of the park is dominated by just 6 forest ecosystem (as listed in Table 1). Dry Grassy Tallowwood-Grey Gum dominates the park with over 43% and generally includes a mixed canopy of tallowwood (*Eucalyptus microcorys*), grey gum (*E. propinqua*), grey ironbark (*E. siderophloia*), broad-leaved white mahogany (*E. carnea*) and turpentine (*Syncarpia glomulifera*). Some of the dry sclerophyll forest resembles woodland, with its widely spaced trees with grassy understorey. Rainforest is less than 6% of the park, mostly in south-facing gullies.

The park contains four former State Forest Flora Reserves, known as Lorne, Black Creek, Six B's and Bago Bluff Flora Reserves. Flora reserves were originally preserved to protect representative examples of vegetation communities.

- The Lorne Flora Reserve protects an outstanding example of old growth coastal blackbutt (Forestry Commission of NSW, 1983).
- The Black Creek Flora Reserve contains some excellent dry rainforest stands including large specimens of shatterwood (*Backhousia sciadophora*) (Forestry Commission of NSW, 1985).
- The Six B's Flora Reserve (which stands B for Broken Bago Big-fruited Blackbutt Biotype) contains the threatened species, *Hakea archaeoides* and *Melaleuca groveana* (State Forests of NSW, 2000).

- The Bago Bluff Flora Reserve was originally conserved for its floristically rich stand of dry rainforest (Forestry Commission of NSW, 1986). This flora reserve contains large areas of myrtle and is the southern known limit for the following species: small-leaved coffee (*Canthium vacciniifolium*), oblong-leaved tulip (*Harpullia hillii*), and climbing deeringia (*Deeringia arborescens*).

The park contains three threatened species and three ROTAP species (Rare or Threatened Australian Plants, Briggs and Leigh, 1996) which are recorded in Table 2. The record in the park for *Callistemon linearifolius* is the northernmost occurrence for this species. *Hakea archaeoides* is a newly described species and has a very restricted distribution in the coastal hinterland between Kempsey, Taree, Mt Boss, Broken Bago and Lansdowne.

**Table 2. Threatened and significant plant species recorded in the park.**

Scientific Name	Significance
<i>Callistemon linearifolius</i>	Vulnerable <sup>1</sup>
<i>Hakea archaeoides</i>	Vulnerable <sup>1</sup>
<i>Melaleuca groveana</i>	Vulnerable <sup>1</sup>
<i>Leionema elatius</i> spp <i>beckler</i>	ROTAP
<i>Marsdenia liisae</i>	ROTAP
<i>Callistemon acuminatus</i>	ROTAP

**Table 3. Threatened and significant species predicted to be in park.**

Scientific Name	Significance
<i>Acomis acoma</i>	ROTAP
<i>Boronia chartacea</i>	Significant
<i>Cynanchum elegans</i>	Endangered <sup>1</sup>
<i>Eucalyptus fergusonii</i> subsp. <i>fergusonii</i>	Significant
<i>Hibbertia hexandra</i>	Endangered <sup>1</sup>
<i>Parsonsia dorrigoensis</i>	Vulnerable <sup>1</sup>
<i>Senna acclinis</i>	Endangered <sup>1</sup>
<i>Parsonsia dorrigoensis</i>	Vulnerable <sup>1</sup>

**Notes:**

<sup>1</sup> listed on *Threatened Species Conservation Act 1995*

There is potential habitat in the park for several other threatened and significant species as recorded in Table 3. *Senna acclinis* is known from only 9 records in north-east NSW (Flint, 2003). *Senna acclinis* has been recorded approximately 400m south of the park and it is likely that suitable habitat for this species may be present in the park.

The majority of the area prior to becoming a park, was subjected to a long period of timber harvesting (State Forest of NSW, 2000). As a result, little old growth remains in the park and the age structure of the forest ecosystems across the park is mainly between regrowth and mature stages. Only 326ha or 8% of the park is mapped as old growth stands (Flint, 2003). The largest section of old growth is in the southern section of the park within the Lorne Flora Reserve. This is an important stand of old growth blackbutt forest and is one of the few examples of its kind in the region.

### 2.2.3 Native Animals

Eighty-five (85) fauna species have been recorded in the park and an additional thirty-nine (39) are predicted to occur. Thirteen (13) threatened fauna species have also been recorded in the park as listed in table 4.

**Table 4. Threatened animal species found in Bago Bluff National Park**

Scientific Name	Common Name	Status
<b>Birds</b>		
wompoo fruit-dove	<i>Ptilinopus magnificus</i>	Vulnerable
glossy black-cockatoo	<i>Calyptorhynchus lathami</i>	Vulnerable
sooty owl	<i>Tyto tenebricosa</i>	Vulnerable
masked owl	<i>Tyto novaehollandiae</i>	Vulnerable
powerful owl	<i>Ninox strenua</i>	Vulnerable
<b>Mammals</b>		
common bent-wing bat	<i>Miniopterus schreibersii</i>	Vulnerable
little bent-wing bat	<i>Miniopterus australis</i>	Vulnerable
greater broad-nosed bat	<i>Scoteanax rueppellii</i>	Vulnerable
koala	<i>Phascolarctos cinereus</i>	Vulnerable
large-footed myotis	<i>Myotis adversus</i>	Vulnerable
yellow-bellied glider	<i>Petaurus australis</i>	Vulnerable
spotted-tailed quoll	<i>Dasyurus maculatus</i>	Vulnerable
<b>Amphibians</b>		
stuttering frog	<i>Mixophyes balbus</i>	Endangered

**Source:** NPWS Wildlife Atlas, Flint (2003) and State Forests (2000).

Koala, spotted-tailed quoll and yellow-bellied gliders are predicted to occur in over 1400ha of habitat in the park. High quality habitat also exists in the park for the powerful owl and the masked owl. Regionally significant birds that have been recorded in the park include the pale-yellow robin (*Tregellasia capito*), noisy pitta (*Pitta versicolor*), regent bowerbird (*Sericulus chrysocephalus*) and forest kingfisher (*Todiramphis macleayi*). The regionally significant blue-speckled forest-skink (*Eulamprus murrayi*) has also been recorded for the park.

Many of the animal species in the park are nomadic or depend on large home ranges (eg. spotted-tailed quolls, powerful owls, and wompoo fruit-doves). Old growth hollow-bearing trees in the park are known to be important roosts for a number of species, including insectivorous bats (Law & Anderson 2000; Law & Chidel 2000).

Modelled habitat has predicted a further twenty threatened species likely to be present in the park as recorded in table 5. The squirrel glider (*Petaurus norfolcensis*) and the eastern pygmy possum (*Cercartetus nanus*) have been predicted for approximately 700ha of habitat in the park. There are also significant areas of predicted habitat for the regionally significant frog *Litoria revelata* and reptiles including the rough-scaled snake (*Tropidechis carinatus*) and the leaf-tailed gecko (*Salturarius swainii*).

**Table 5. Threatened animal species predicted to occur in Bago Bluff National Park.**

Scientific Name	Common Name	Status
<b>Birds</b>		
square-tailed kite	<i>Lophoictinia isura</i>	Vulnerable
rufous scrub bird	<i>Atichornis rufescens</i>	Vulnerable
bush stone-curlew	<i>Burhinus grallarius</i>	Endangered
black bittern	<i>Ixobrychus flavicollis</i>	Vulnerable
golden-tipped bat	<i>Kerivoula papuensis</i>	Vulnerable
swift parrot	<i>Lathamus discolor</i>	Vulnerable
rose-crowned fruit-dove	<i>Ptilinopus regina</i>	Vulnerable
<b>Amphibians</b>		
green-thighed frog	<i>Litoria brevipalmata</i>	Vulnerable
<b>Mammals</b>		
brush-tailed phascogale	<i>Phascogale tapoatafa</i>	Vulnerable
eastern little mastiff-bat	<i>Mormopterus norfolkensis</i>	Vulnerable
eastern pygmy-possum	<i>Cercartetus nanus</i>	Vulnerable
large pied bat	<i>Chalinolobus dwyeri</i>	Vulnerable
parma wallaby	<i>Macropus parma</i>	Vulnerable
squirrel glider	<i>Petaurus norfolcensis</i>	Vulnerable
common planigale	<i>Planigale maculata</i>	Vulnerable
long-nosed potoroo	<i>Potorous tridactylus</i>	Vulnerable
grey-headed flying fox	<i>Pteropus poliocephalus</i>	Vulnerable*
greater broad-nosed bat	<i>Scotoeanax rueppellii</i>	Vulnerable
red legged pademelon	<i>Thylogale stigmatica</i>	Vulnerable
<b>Reptiles</b>		
Stephen's banded snake	<i>Hoplocephalus stephensii</i>	Vulnerable

\* also listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

**Source:** NPWS Wildlife Atlas, Flint (2003) and State Forests (2000).

There have been a few fauna studies undertaken in the park, including a vertebrate study in 1979 (Millage, 1979), surveys undertaken as part of forestry operations and the CRA process and a recent fauna survey by NPWS in 2001 (Pitt, 2001). The fauna survey in 2001, recorded 100 species of vertebrate animals in the park including 56 birds, 22 mammals, 12 reptiles and 10 amphibians (Pitt, 2001).

## 2.2.4 Aboriginal Heritage

Aboriginal communities have an association and connection to the land. The land and water biodiversity values within a landscape are central to Aboriginal spirituality and contribute to Aboriginal peoples identity. Aboriginal communities associate natural resources with the use and enjoyment of foods and medicines, caring for the land, passing on cultural knowledge and strengthening social bonds. Aboriginal heritage and nature are inseparable from each other and need to be managed in an integrated manner across the landscape.

The tribal group in the area is the Birpai people. This group is represented through the Bunyah Local Aboriginal Land Council based in Wauchope.

No Aboriginal sites have been recorded in the park, though there is a 'possible' Aboriginal site on the bluff along Rollover Rd. Around the year 1915 a human skeleton and a spear were found in a shelter along the bluff (Archibald Crane told Stan Forster *pers comm* circa 1950s). An archaeological assessment of the area has since been undertaken, though no artefacts were found.

Archaeological evidence in the neighbouring state forests indicate that the area was utilised for several important activities, including sacred rituals, and for the gathering of food and resources such as rock for making stone tools (Packard, 1993). Scarred trees, stone arrangements and shelters have been found nearby. It is therefore likely that Aboriginal sites may exist in park and that the prominent landscape features in the area, such as Bago Bluff, may be significant to local Aboriginal people.

The park's proximity to current major settlements, its prominent landmarks, and its diverse natural environments, provides the local Birpai people with a close and accessible link with their heritage.

### **2.2.5 History Since European Occupation**

The park area has been used for its timber resources since early European settlement of the region. The old saw mills in the area were the main employers for local settlements such as Wauchope, Herons Creek, the Camden Haven and Upsalls Creek. Areas such as the Rollover and surroundings were known for the quality of timber (Fenning, 1997). Evidence of this past land use still remains in the park today including log dumps, tree stumps and a network of trails.

A small area around the Rollover was a site used in the depression era for gold mining. The ancient riverbed and quartz of the Bluff provided some limited sites for exploration (Stan Foster *pers comm*).

There are two historic places recorded in the park on the NPWS historic register. Bago Bluff and the Rollover have been recorded due to their local social significance as a landmark for members of the Wauchope community, their natural features with important flora values, and their historical associations with early timber getting. It has been stated that the Rollover was a place where logs were rolled over the cliff for collection at the base. The other recorded historical place is the Lorne Flora Reserve, which has a history of use as an environmental education site and protects a stand of old growth blackbutt.

In 2003 the strong connection of the local community to the Bago Bluff, resulted in a project called the 'Bago Stories'. NPWS together with Hastings Council and members of the local community celebrated the stories and images of the Broken Bago Range through a range of activities including poets breakfast, community dinner and performance, and a mural painting in Wauchope of the Broken Bago Range. During this project, members from the local community recorded their historical memories and stories in relation to the Broken Bago Range. It is proposed that these memoirs and stories will be compiled into an historical publication. Future similar projects for the Broken Bago Range are proposed.

## 2.2.6 Research

There were a number of research projects undertaken in the area prior to it becoming a national park. An environmental impact assessment was undertaken in the Kempsey/Wauchope Forestry Management areas in 1993 (Truyard Pty Ltd, 1993) in response to the requirements of the EP&A Act. This assessment included research on fauna, flora, cultural heritage, soils and visitor surveys. A fauna survey was undertaken in the park in the year 2001 (Pitt, 2001).

Research projects have also been undertaken specifically in the old Lorne Flora Reserve including studies on the roost sites of the little forest bat (*Vespadelus vulturinus*) (Law and Chidel, 2000) and vertebrate fauna (Milledge, 1979).

## 2.3 VISITOR USE

The park is a popular location for visitors and locals due to its close proximity to Wauchope and the Oxley Highway. The majority of people visit the park for its impressive views and landscape features which is dominated by the Broken Bago Range. The mountain range features, known as Bago Bluff and the Rollover, create a backdrop to Wauchope and are important aesthetically for many locals.

The Bago Bluff, along Rollover Rd, has a number of steep cliff faces, and poses a potential or possible risk to visitor safety. It is proposed that a small viewing platform will be constructed on Bago Bluff along Rollover Rd to provide a safe lookout site over the Hastings Valley.

There is a 1.5km walking track through the Lorne Flora Reserve. This walk was developed by the Forestry Commission (now Forests NSW), to provide opportunities for local school children to learn about the native forests (Forestry Commission of NSW, 1982). It has five teaching bays with bush seats where a class may be conducted. Teacher resource material was developed by Forestry Commission to accompany the walk (Forestry Commission of NSW, 1982). Currently, the walking track is overgrown in sections and is in need of minor upgrading. Some of the teaching bays are also deteriorating and need maintenance work. The teacher resource material needs to be updated to reflect the current management of the area.

There is also an old teaching area under the Bago Bluff, approximately 600m to the west of the Bago Bluff Flora Reserve and south of Lemon Tree and Quarry Rd. This site is infrequently used and is only accessible by foot from Lemon Tree Rd. There is an old walking track at the site, which is fairly overgrown. Teacher's notes were also prepared for this area.

The park is a popular destination for a range of other activities such as car touring, bike riding and horse riding. Horse riding is permitted in the park on all management trails, 4WD roads and unsealed roads as shown on the map except Rollover Rd and the northern section of Herons Creek Road that links with the Rollover Rd. Rollover Rd is one of the main tourist roads in the park and is steep and narrow. There is limited line of sight and horseriding on this road may cause conflict with vehicles.

Self reliant remote camping and bush walking is permitted in the park, though no camping facilities are provided. A range of recreation facilities are also found in surrounding areas including the State Forests, which provide walking tracks, camping and day use areas.

Commercial tour groups occasionally use the park for four wheel drive tours. These groups are restricted to the park roads and generally groups visit the north of the park.

For many years, car rallies have occurred in the neighbouring State Forests and in the reserve prior to dedication. This activity is not consistent with the conservation values or visitor safety, and there is no rallying occurring within the park. Park roads are occasionally used as a transport stage for vehicles. Consent must be obtained prior to the event to use the park for the transportation of vehicles.

Bago Bluff is occasionally used for rock climbing and abseiling. Most of the climbing and abseiling on the bluff occurs outside the park boundary, though a small amount does occur in the park.

## **2.4 THREATS AND ISSUES FOR MANAGEMENT OF THE PARK**

### **2.4.1 Pest Species**

Pest species have the potential to have detrimental effects on the park's ecological values, through competition with native species and/or modification of their habitat. Pest plant species generally occur due to disturbance associated with previous land uses, such as timber harvesting, fire and the construction and establishment of roads and trails. There are limited areas of pest plant species in the park. Three noxious weeds are recorded in the park, red-flowering lantana (*Lantana camara*), giant Parramatta grass (*Sporobolus fertilus*) and crofton weed (*Ageratina adenophora*) (SFNSW, 2000).

Pest animal species are also occasionally recorded in the park and include wild dogs (*Canis familiaris*), foxes (*Vulpes vulpes*) and feral cats (*Felis catus*). Predation by the feral cat and the fox are both listed as key threatening processes to native animals under the TSC Act and the *Commonwealth Environment Protection and Biodiversity Act 1999* (EPB Act).

### **2.4.2 Fire Management**

The NPWS regards fire as a natural phenomenon and one of the continuing physical factors influencing the Australian environment. Inappropriate fire regimes have been identified as a key threatening process effecting the biological biodiversity of NSW. Vegetation communities in the park such as rainforests and wet sclerophyll are sensitive to fire.

Fire is a major issue in the park and many areas especially in the north of the park. In 2000, there was a large wildfire in the park in the area between Quarry and Scrub Rd in the north, Butchers Yard Rd in the west and Herons Creek Rd in the south. This area was also burnt in the early 1990s. The area has been slow to recover and natural regeneration is thought to have been retarded due to the frequent fires in this area. A major wildfire also occurred in the park area in 1968 (State Forests, 2000).

Ecological research in fire-prone ecosystems has established some general principles about fire regimes and the conservation of biodiversity. That is, groups of plants and animals respond similarly to fire according to characteristics of their life history. Therefore it is not necessary to individually specify fire regimes for the conservation of every species.

Requirements for most plant species can be summarised on the basis of vegetation communities and there is a threshold in fire regime variability, which marks a critical change from high species diversity to low species diversity. The following fire regime guidelines have been identified for the park.

**Table 6. Fire Regime Guidelines.**

<b>Vegetation community</b>	<b>A decline in biodiversity is predicted if there is:</b>		
Dry sclerophyll forests	Three or more consecutive fires, with each of the fires less than 5 years apart	no fire for more than 30 years	Successive fires that totally scorch or consume the tree canopy
Wet sclerophyll forests	More than one fire every 30 years	no fires for 200 years (upper threshold under review)	
Rainforests	any fire occurrence		
Grasslands	not applicable		

Source: Bradstock *et al* (2003).

A review of fire management throughout the NPWS has resulted in a modified approach to fire planning based on the level of complexity involved. In regard to Bago Bluff National Park, the NPWS considers that the park requires separate map based fire management strategies. The fire management strategies for the park are currently being drafted. Annual hazard reduction programs are also submitted to the District Bush Fire Management Committees.

The roads and management trails in the park are of strategic importance in fire suppression activities.

### **2.4.3 Inappropriate Recreation**

Unregistered motorbike riders are occasionally seen in the park. Unregistered vehicles are not permitted in the park and they pose a risk to visitor safety. Motorbike riders are often seen on management trails. Management trails are for authorised use only and public vehicle access is restricted on these trails.

### **2.4.4 Stray Cattle**

Stray cattle from neighbouring properties are occasionally sighted in the park. Cattle impact on native vegetation, through selective browsing pressure and the introduction of weeds. Cattle also pose a risk to visitor safety.

## **2.5 MANAGEMENT OPERATIONS**

### **2.5.1 Quarries**

There are two quarry sites in the park situated on Quarry and Butchers Yard Roads. These quarries are necessary for the maintenance of roads in the park. NPWS will manage these areas to ensure minimal impact to the surrounding environment.

### **2.5.2 Road Access**

This plan of management affects 'Ministerial Roads' which are those roads that do not form part of the gazetted park area and are vested in the Minister for the Environment. Ministerial roads were created to ensure the continuation of access arrangements that existed immediately before the park's creation. Sections of Blackbutt Rd, Causeway Rd, Cold Nob Rd, Dividing Ridge Rd, Ford Creek Rd, Rock Knob Rd, The Ridge Way, The Scrub Rd and Wallaby Creek Rd are ministerial roads due to the access arrangements between NPWS and Forests NSW. Trails 96.1, 94.1, 90.5, 90.3 and 88.2 are also classified as ministerial roads in the park. The maintenance of some of these ministerial roads is undertaken jointly between Forests NSW and NPWS.

In addition to the roads available for public vehicle access, there is a network of management trails in the park (see map). The primary purpose of the management road systems is for fire management. Management trails also provide access for operations such as pest control, research and access for neighbouring landholders. All roads within the park are available to the public with the exception of management trails as shown on the Map (page 13).

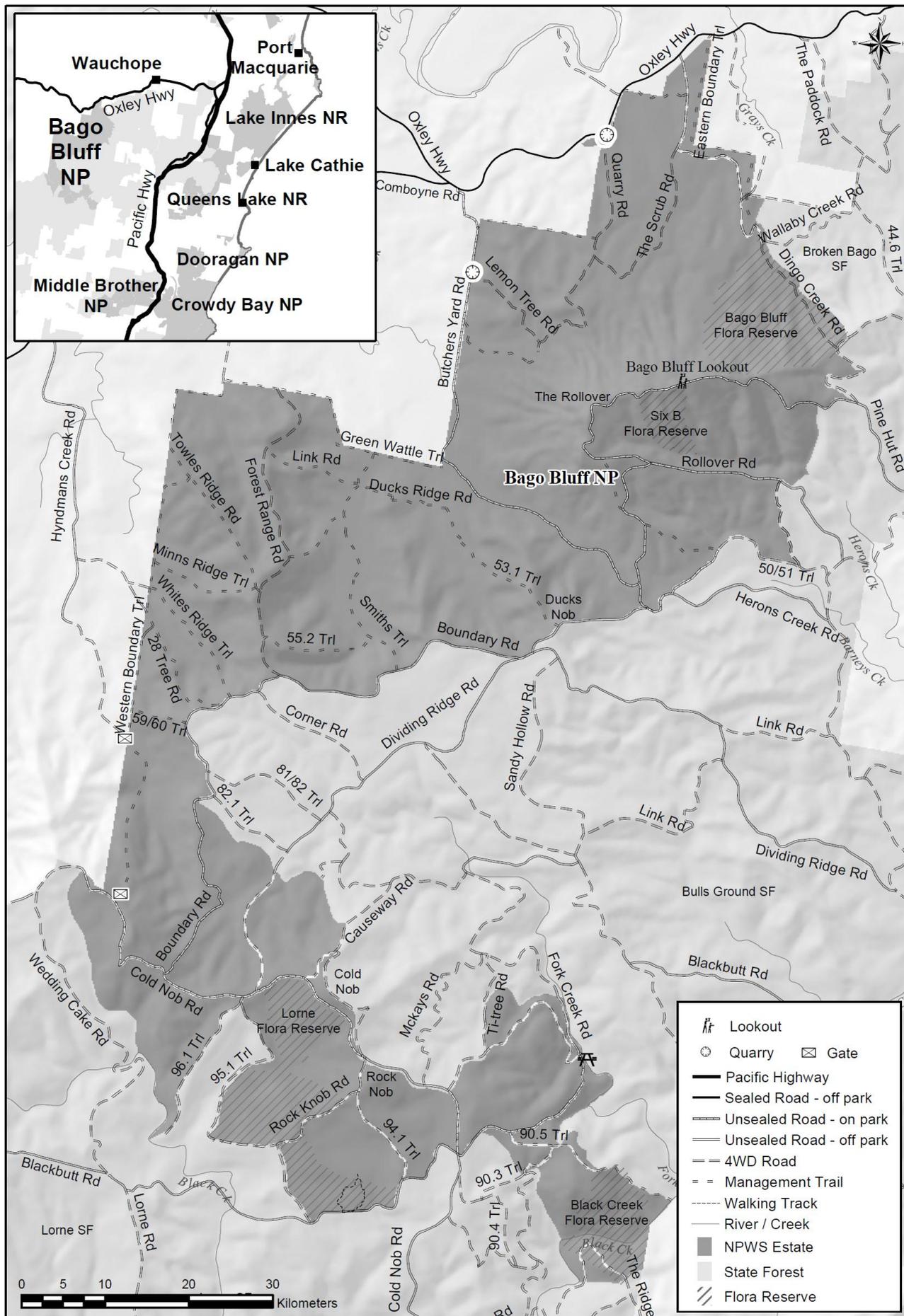
### **2.5.3 Forestry Plantations**

Before dedication as a national park, the area was under the management of State Forests and approximately 146ha of forest plantations were established in the park. An assessment of plantations in the Northern Branch is currently being undertaken to determine appropriate removal and rehabilitation programs for plantations in parks and reserves. This program will include timeframes and methods for rehabilitation.

### **2.5.4 Apiary Sites**

There are nine registered apiary sites within the park, which existed prior to gazettal of the park. The NPWS policy on bee keeping allows existing sites to continue but does not allow any new or additional sites.

### 3 PARK MAP



#### 4 MANAGEMENT ISSUES AND STRATEGIES

Current Situation	Desired Outcomes	Strategies	Priorities
<p><b>4.1 Soils and hydrology</b></p> <p>Bago Bluff National Park forms an important part of the catchments of the Hastings and Camden Haven Rivers. The park is within the Northern Rivers Catchment Management Authority (CMA) area.</p> <p>The steep terrain and vehicle access network makes soils susceptible to erosion particularly after high rainfall and fire events.</p>	<ul style="list-style-type: none"> <li>Water quality is maintained and soil erosion is minimised.</li> </ul>	<ul style="list-style-type: none"> <li>Design and undertake all works in a manner that minimises soil erosion.</li> <li>Maintain roads and management trails to a suitable standard to minimise soil erosion.</li> <li>Continue to participate in and support the Northern Rivers CMA.</li> </ul>	<p>High</p> <p>Medium</p> <p>Medium</p>
<p><b>4.2 Native Plants</b></p> <p>The park protects 22 forest ecosystems including 3 threatened species and 3 ROTAP plant species. Modelled data has predicted a further 5 threatened plant species likely to be found in the park.</p> <p>The park contains four former Flora Reserves, which protect old growth blackbutt, dry rainforest stands and a number of plant species at their limit of distribution.</p> <p>8% of the park is mapped as old growth forest, with the largest areas being in the Lorne Flora Reserve.</p>	<ul style="list-style-type: none"> <li>Improve understanding of threatened and significant plants, ecology and habitat requirements</li> <li>Native plants species and communities are conserved.</li> <li>Natural processes, such as succession of regenerating forests continues.</li> <li>Areas of previous disturbance are revegetated.</li> </ul>	<ul style="list-style-type: none"> <li>Encourage surveys to confirm status and distribution of predicted threatened and significant plant species such as <i>Senna acclinis</i>.</li> <li>Provide interpretation material on the Flora Reserves.</li> <li>Liaise with neighbours to encourage the retention and appropriate management of key habitats and corridors adjacent to the park through Voluntary Conservation Agreements or other appropriate strategies.</li> <li>Allow natural regeneration of disturbed areas.</li> </ul>	<p>High</p> <p>Medium</p> <p>Medium</p> <p>Medium</p>

Current Situation	Desired Outcomes	Strategies	Priorities
<p><b>4.3 Native Animals</b></p> <p>The park has a diverse fauna population. There are 13 threatened species recorded in the park and 20 threatened species are predicted.</p>	<ul style="list-style-type: none"> <li>• The habitat for native fauna populations is conserved.</li> <li>• Threatened fauna populations do not decline.</li> <li>• Increase understanding of threatened and significant animals, ecology and habitat requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Implement recovery plans for threatened species when they are prepared.</li> <li>• Encourage surveys for threatened animal species predicted for the park.</li> </ul>	<p>Medium</p> <p>Medium</p>
<p><b>4.4 Cultural Heritage</b></p> <p>The Birpai people have a strong connection to the area and the local Aboriginal people are represented through the Bunyah Local Aboriginal Land Council.</p> <p>Aboriginal sites have been found in neighbouring areas, though there are no recorded sites currently in the park.</p> <p>It is believed that Aboriginal artefacts, including a human skeleton and a spear, were found in a shelter along the Bluff in the early 1900s though no material remains there today.</p>	<ul style="list-style-type: none"> <li>• Improve understanding of the cultural heritage of the park.</li> <li>• Increased involvement of the local Aboriginal community in cultural heritage management of the park.</li> </ul>	<ul style="list-style-type: none"> <li>• Involve the local Aboriginal community including the Bunyah Local Aboriginal Land Council, the Birpai people and other relevant persons in the management of cultural heritage in the park.</li> <li>• Encourage research and study into the Aboriginal heritage values of the park in close consultation with the Bunyah Local Aboriginal Council and the Birpai people.</li> <li>• Investigate the option of recording the possible Aboriginal site in the park.</li> </ul>	<p>High</p> <p>Medium</p> <p>Medium</p>

Current Situation	Desired Outcomes	Strategies	Priorities
<p>There are two historic places recorded on the NPWS register, the Rollover and Bago Bluff, and the old Lorne Flora Reserve.</p> <p>In 2003, a project called the Bago Stories resulted in stories being recorded from the community on the Broken Bago Range. As yet this information has not been formally documented.</p>	<ul style="list-style-type: none"> <li>The cultural heritage of the area is recorded, interpreted and protected.</li> </ul>	<ul style="list-style-type: none"> <li>Promote the cultural heritage of the park through interpretation signs.</li> <li>Encourage the documentation of historical stories and memoirs from the local community on their connection to the Broken Bago Range.</li> <li>Encourage projects similar to the Bago Stories Project.</li> </ul>	<p>Medium</p> <p>Medium</p> <p>Medium</p>
<p><b>4.5 Visitor Use</b></p> <p>The park is used for a wide range of low key recreational activities including bush walking, nature appreciation, horse riding and car touring.</p> <p>There are limited opportunities for visitors to safely view the valley from Rollover Rd. Rollover Rd is steep and narrow with a number of sharp drop-offs.</p> <p>The walking track in the Lorne Flora Reserve is in need of minor upgrade and repair. Some track identifying markers are missing and a few of the teaching bays are degraded.</p>	<ul style="list-style-type: none"> <li>Visitor use is compatible with the park values and complements other surrounding recreational opportunities.</li> <li>There is minimal risk to public safety.</li> </ul>	<ul style="list-style-type: none"> <li>Install a viewing platform, associated boardwalk and day use facilities at the Bago Bluff Lookout along Rollover Rd. Day use facilities will not exceed infrastructure for a carpark for a maximum of 4 vehicles, picnic table and interpretation signs.</li> <li>Upgrade the walking track and teaching bays at the Lorne Flora Reserve. Install route markers and interpretation signs. Ensure that the track remains low key and has a natural surface.</li> <li>Signpost the informal carpark site at the Lorne Flora Reserve.</li> </ul>	<p>High</p> <p>High</p> <p>Medium</p>

Current Situation	Desired Outcomes	Strategies	Priorities
<p>Education material was prepared previously by the Forests NSW and is available to be used as a teaching resource on the walk. There is need of minor upgrading of this resource information to reflect current management.</p> <p>There is another old teaching site and walking track in the north of the park west of the Bago Bluff Flora Reserve. The site is infrequently used.</p> <p>Visitors to the park are encouraged to be self reliant. There are no garbage bins, camping or toilet facilities in the park.</p> <p>NPWS Discovery tours are undertaken in the park for special events such as Heritage Week and other festivals if the demand exists.</p> <p>Horse riding occurs in the park and is permitted on all the park roads and management trails as shown on the park map except Rollover Rd and the northern section of Herons Creek Rd.</p>	<ul style="list-style-type: none"> <li>The park is used as an environmental education site.</li> </ul>	<ul style="list-style-type: none"> <li>Remote self reliant camping is permitted in the park, such camping must be at least 200m from the nearest road or trail. Vehicle based camping is not permitted in the park.</li> <li>Update the educational material for the Lorne Flora Reserve and provide to schools and groups as requested.</li> <li>Upgrade interpretation signs and brochure for the park.</li> <li>The old teaching site to the west of Bago Bluff Flora Reserve will be allowed to revegetate.</li> <li>Wood fires are not permitted in the park and visitors are encouraged to use fuel stoves only.</li> <li>No garbage bins will be provided and visitors will be encouraged to take rubbish with them.</li> <li>Continue to promote NPWS Discovery Programs in the park.</li> <li>Horse riding is permitted on all roads and management trails in the park except Rollover Rd and the northern section of Herons Creek Rd.</li> <li>Organised horse riding by groups larger than 10 or competitive horse riding will not be permitted.</li> </ul>	<p>High</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>High</p> <p>High</p> <p>Medium</p> <p>High</p> <p>High</p>

Current Situation	Desired Outcomes	Strategies	Priorities
<p>Car rallies occur in the neighbouring State Forest. Sections of the park are occasionally used as a transport stage for rally vehicles.</p> <p>There is some limited use of the park for rock climbing and abseiling.</p> <p>Unauthorised motorbike riders are occasionally seen in the park.</p>	<ul style="list-style-type: none"> <li>• Visitor use is nature based and ecologically sustainable.</li> </ul>	<ul style="list-style-type: none"> <li>• No competitive car rallying or marshalling will be permitted in the park, and consent must be obtained for use of the park as a transport stage for rally vehicles.</li> <li>• Monitor the use of the park for rock climbing and abseiling. If adverse impacts occur such as environmental damage, close the park to this activity.</li> <li>• Monitor the use of the park for horse riding. If adverse impacts occur on any road or trail that road or trail may be closed temporarily, or in consultation with horse riding groups closed permanently.</li> <li>• Commercial adventure activities such as rock climbing and abseiling, will not be permitted in the park.</li> <li>• Increase law enforcement when necessary to target unregistered motorbike riders (see Management operations).</li> </ul>	<p>High</p> <p>High</p> <p>Low</p> <p>High</p> <p>Medium</p>
<p><b>4.6 Pest Species</b></p> <p>A Regional Pest Management Strategy has been prepared that prioritises pest species control programs.</p> <p>Pest plant species are generally confined to areas of previous disturbance and along roadsides.</p>	<ul style="list-style-type: none"> <li>• Pest plant and animal species are controlled and where possible eliminated.</li> <li>• Pest control programs are managed in consultation with surrounding landowners.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare a pest management strategy for the park which prioritises control programs for management of weeds and feral animals.</li> <li>• Undertake pest species control in the park in accordance with the Regional Pest Management Strategy and the relevant Threat Abatement Plans.</li> </ul>	<p>High</p> <p>High</p>

Current Situation	Desired Outcomes	Strategies	Priorities
<p>Noxious weeds recorded in the park include red lantana, giant Parramatta grass and crofton weed. Pest animals recorded in the park include wild dogs, foxes and feral cat.</p>	<ul style="list-style-type: none"> <li>• Improve knowledge of pest species and their impact on the park.</li> </ul>	<ul style="list-style-type: none"> <li>• Undertake integrated pest control programs with the Kempsey Rural Land Protection Board, Forests NSW, and park neighbours.</li> </ul>	<p>High</p>
<p><b>4.7 Fire Management</b></p> <p>Fire is a major issue in the park and many areas have received fire in excess of thresholds necessary to maintain biodiversity.</p> <p>Large areas in the north of the park were burnt in the year 2000 and in the early 1990s.</p> <p>Fire management strategies are currently being drafted for the park.</p>	<ul style="list-style-type: none"> <li>• Fire frequencies are appropriate for conservation of biodiversity.</li> <li>• Fire is excluded from rainforest, old growth and wet sclerophyll forest.</li> <li>• Fire in the park is managed to protect biodiversity, human life, property and cultural features.</li> <li>• A co-operative approach is developed for fire management with neighbours and other fire authorities.</li> </ul>	<ul style="list-style-type: none"> <li>• Finalise the draft fire management strategies for the park.</li> <li>• Continue to participate in the District Bushfire Management Committee.</li> <li>• Maintain cooperative arrangements with the Rural Fire Service Brigades, Forests NSW, Hastings Council and park neighbours with regard to fuel management and fire suppression.</li> </ul>	<p>High</p> <p>High</p> <p>High</p>

Current Situation	Desired Outcomes	Strategies	Priorities
<p><b>4.8 Research and Monitoring</b></p> <p>Research is needed to improve the understanding of the park's natural and cultural heritage.</p> <p>Currently limited studies have been undertaken in association with logging operations.</p>	<ul style="list-style-type: none"> <li>• Research enhances the knowledge and management of the park.</li> <li>• Research has minimal environmental impact.</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage research into the following topics: <ul style="list-style-type: none"> <li>i. Knowledge and distribution on threatened and significant species</li> <li>ii. Surveys on predicted threatened species for the park</li> <li>iii. Information on the cultural heritage values.</li> </ul> </li> </ul>	<p>Medium</p>
<p><b>4.9 Management Operations</b></p> <p>There are numerous log dumps and old trails that are degrading due to erosion, weed invasion and unregulated vehicle use.</p> <p>There are two quarry sites in the park situated on Quarry and Butchers Yard Roads, which are used for road maintenance in the park.</p> <p>Approximately 146ha of forestry plantations remain in the park.</p> <p>Straying cattle from neighbouring properties are occasionally sighted in the park.</p>	<ul style="list-style-type: none"> <li>• Neighbours are informed of park management programs.</li> <li>• Management trails are gated or signposted where necessary.</li> <li>• Management operations have minimal impact and facilitate the conservation of the park's values.</li> <li>• Boundary fencing is maintained.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain network of roads and management trails as shown on the park map. Close and rehabilitate all other trails and log dumps.</li> <li>• Management trails will be signposted or gated as necessary to restrict unauthorised access.</li> <li>• Only authorised vehicles will be permitted on management trails.</li> <li>• Target former log dumps and trails for weed management and rehabilitation.</li> <li>• Install signs to indicate park boundaries along roads to assist park users and law enforcement.</li> </ul>	<p>High</p> <p>High</p> <p>High</p> <p>Medium</p> <p>Medium</p>

Current Situation	Desired Outcomes	Strategies	Priorities
<p>Nine registered apiary sites exist within the park.</p>	<ul style="list-style-type: none"> <li>• Apiary sites are managed with minimum impact on park values.</li> </ul>	<ul style="list-style-type: none"> <li>• Manage the plantations in the park according to the Northern Branch Strategy on the management of plantations, which is currently in preparation.</li> <li>• In conjunction with neighbours, ensure fencing of priority sections of accessible boundaries to prevent stock access to the park.</li> <li>• Manage registered apiary sites in accordance with NPWS policy and apiary holders licensing conditions. In particular, sites will be limited in size and only maintained by mowing or slashing. Sites may be relocated in consultation with NPWS, to other areas in the park to minimise impacts on visitors and native species.</li> </ul>	<p>High</p> <p>Medium</p> <p>Medium</p>

### Legend for priorities

**High** priority activities are those imperative to achievement of the objectives and desired outcomes. They must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources.

**Medium** priority activities are those that are necessary to achieve the objectives and desired outcomes but are not urgent.

**Low** priority activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.

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## 6 GLOSSARY

### List of Acronyms

AHC	Australian (National) Heritage Charter
CMA	Catchment Management Authority
CRA	Comprehensive Regional Assessment process
EPA Act	NSW Environmental Planning and Assessment Act 1979
LALC	Local Aboriginal Land Council
NPW Act	National Parks and Wildlife Act 1974
NPWS	National Parks and Wildlife Service
NSCABD	The National Strategy for the Conservation of Australia's Biological Diversity, Commonwealth Department of the Environment, Sport and Territories, Canberra
ROTAP	Rare or Threatened Australian Plants (Briggs and Leigh, 1996)
SFNSW	State Forests NSW now Forests NSW
TSC Act	Threatened Species Conservation Act 1995

### Selected Definitions

Biodiversity	Biological diversity, namely the variety of life forms: the different plants, animals and microorganisms, the genes they contain, and the ecosystems they form. It is usually considered at three levels: genetic diversity, species diversity and ecosystem. (TSC Act)
Conservation	All the processes and actions of looking after a place (such as protection, maintenance, management, sustainable use and restoration) so as to retain its natural and cultural significance. Conservation is based on respect for biodiversity and ecological processes, and requires an increased understanding of an area's values. Conservation is an obligation under the World Heritage Convention. (AHC, NSCABD)
Cultural heritage	Encompasses past and present cultural associations of all people in Australia, including tradition, knowledge and customs. It can be tangible (ie. have physical manifestations in the form of art, buildings etc.) or intangible (ie. spiritual or social associations, songs, stories and cultural practices). Cultural significance includes values that are social, spiritual, aesthetic, historic and scientific. When natural resources acquire meaning for a particular group, they become cultural resources as well. (AHC 1996, NPWS)
Fauna	Any mammal, bird, reptile or amphibian. NPWS has responsibility for the conservation of fauna. Note this definition excludes fish or invertebrates. (NPW Act)
Pest species	A domesticated species that has become wild. (NSCABD)

Fire authorities	Organisations (including land management authorities such as NPWS) vested by the <i>Rural Fires Act</i> with the responsibility to suppress fires. Under the <i>Rural Fires Act</i> , Fire management activities on NPWS reserves are the responsibility of NPWS. (NPWS, 2001)
Fire Management	Includes all activity associated with the use and control of fire in bushland designed to achieve stated objectives for the protection of life and property, and the maintenance of wildlife communities. (NPWS, 1989)
Historic places	Landscapes, sites buildings or other works together with pertinent contents and surroundings and include structures, ruins, archaeological sites and areas. (NPWS, 1989)
Historic sites	Lands reserved as a historic site under the NPW Act.
Pest species	A species occurring in an area outside its historically known natural range as a result of intentional or accidental dispersal by human activities. Also known as exotic or alien species. (NSCABD)
Management trail	An access track, suitable for use by four-wheel drive vehicles, constructed and/ or maintained expressly for fire or other management purposes. Public vehicle access is not permitted to these trails.
Old-growth forest	A forest with a high proportion of old trees (in the mature and overmature growth stages), with a high degree of structural complexity, which provides a large number of habitats for plants and animals. In particular, hollows in the limbs and trunks of live trees and standing dead trees are an important habitat resource for fauna. (Milledge, 1993)
Park roads	Access roads, which form part of the gazetted area of a park/ reserve, maintained by the NPWS for public use primarily to access visitor facilities and points of interest.
Recovery plan	A document, prepared under the TSC Act, that identifies the actions to be taken to promote the recovery of a threatened species, or endangered population or ecological community. (NPWS, 2001)