

# **DOORAGAN NATIONAL PARK**

## **PLAN OF MANAGEMENT**

**NSW National Parks and Wildlife Service**

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

**July 2004**

**This plan of management was adopted by the Minister for the Environment on 7 July 2004.**

### **Acknowledgments**

This plan of management is based on a draft plan prepared by Eric Claussen and staff of the Mid North Coast Region of the NSW National Parks and Wildlife Service (NPWS) together with Heather Lloyd and the Northern Directorate Planning Group. The contributions of the Advisory Committee are greatly appreciated.

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## FOREWORD

Dooragan National Park is located immediately south of Laurieton and approximately 25 kilometres south of Port Macquarie on the mid-north coast of New South Wales. The park is 1,042 hectares in size and encompasses North Brother Mountain, the northern most of the Three Brother Mountains.

The primary purpose for dedication of the park was to preserve the old growth blackbutt forest growing on North Brother Mountain and the outstanding scenic values of the park. In addition, the park is reserved to protect cultural values, habitat for rare and threatened species and opportunities for appropriate recreation, tourism and education.

The park is a declared Aboriginal Place because it is of mythological significance to Aboriginal people. Dreaming stories associated with the area explain the creation of North Brother Mountain and two nearby mountains, collectively referred to as the "Three Brothers".

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.

A draft plan of management for Dooragan National Park was placed on public exhibition from 13 December 2002 until 28 March 2003. The exhibition of the plan of management attracted 4 submissions that raised 8 issues. All submissions received were carefully considered before adopting this plan of management.

The primary emphasis of this plan is to manage the park so as to protect vegetation communities, including "old growth" blackbutt forest and koala habitat, to maintain the outstanding scenic values of North Brother Mountain, and to protect the significance of North Brother Mountain to Aboriginal people. A range of day use visitor opportunities on the summit will be provided consistent with the protection of its natural and cultural values.

This plan of management establishes the scheme of operations for Dooragan National Park. In accordance with 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

## 1.1 LOCATION, GAZETTAL AND REGIONAL SETTING

Dooragan National Park, (here after referred to as 'the park'), is located immediately south of Laurieton and approximately 25 kilometres south of Port Macquarie on the mid-north coast of New South Wales (NSW). The park is 1,042 hectares and encompasses North Brother Mountain, the northern most of the Three Brother Mountains. Captain Cook Bicentennial Drive provides access to the park and summit of North Brother Mountain from just outside Laurieton (see Map 1).

The park, formerly Camden Haven State Forest, was transferred from State Forests of NSW to the NSW National Parks and Wildlife Service (NPWS) on January 1, 1997.

This plan applies to both the land currently reserved as Dooragan National Park and to any future additions to the park. Where management strategies or works are proposed for the park or any additions that are not consistent with this plan, an amendment to the plan will be required.

## 1.2 LANDSCAPE CONTEXT

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

The geology, landform, climate and plant and animal communities of the area, plus its location, have determined how it has been used by humans. Both Aboriginal and non-Aboriginal people place cultural values on natural areas, including aesthetic, social, spiritual, recreational and other values. Cultural values may be attached to the landscape as a whole or to individual components, for example to plant and animal species used by Aboriginal people. This plan of management aims to conserve both natural and cultural values. For reasons of clarity and document usefulness natural and cultural heritage, non-human threats and on-going use are dealt with individually, but their inter-relationships are recognised.

## 2 MANAGEMENT CONTEXT

### 2.1 LEGISLATIVE AND POLICY FRAMEWORK

The management of national parks in NSW is in the context of the legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act), the *Threatened Species Conservation Act 1995* and the policies of the National parks and Wildlife Service (NPWS). The policies arise from the legislative background, the corporate goals of the NPWS 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.

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.

### 2.2 ABORIGINAL PLACES

The entire park was declared an Aboriginal Place under Section 84 of the NPW Act on 21<sup>st</sup> December 2001. An Aboriginal Place is an area of special significance to Aboriginal culture and declaration provides recognition of the significance of the area and its heritage values which relate to traditions, observances, customs, beliefs or history of Aboriginal people.

Aboriginal Places are protected under Section 90 of the NPW Act and can not be damaged, defaced or destroyed without the consent of the Director-General of the NPWS. This declaration does not change the status of the land but may limit use as far as preventing activities that may destroy, damage or deface the Aboriginal Place.

### 2.3 MANAGEMENT PRINCIPLES FOR NATIONAL PARKS

Under the NPW Act, a national park is to be managed in accordance with the following principles:

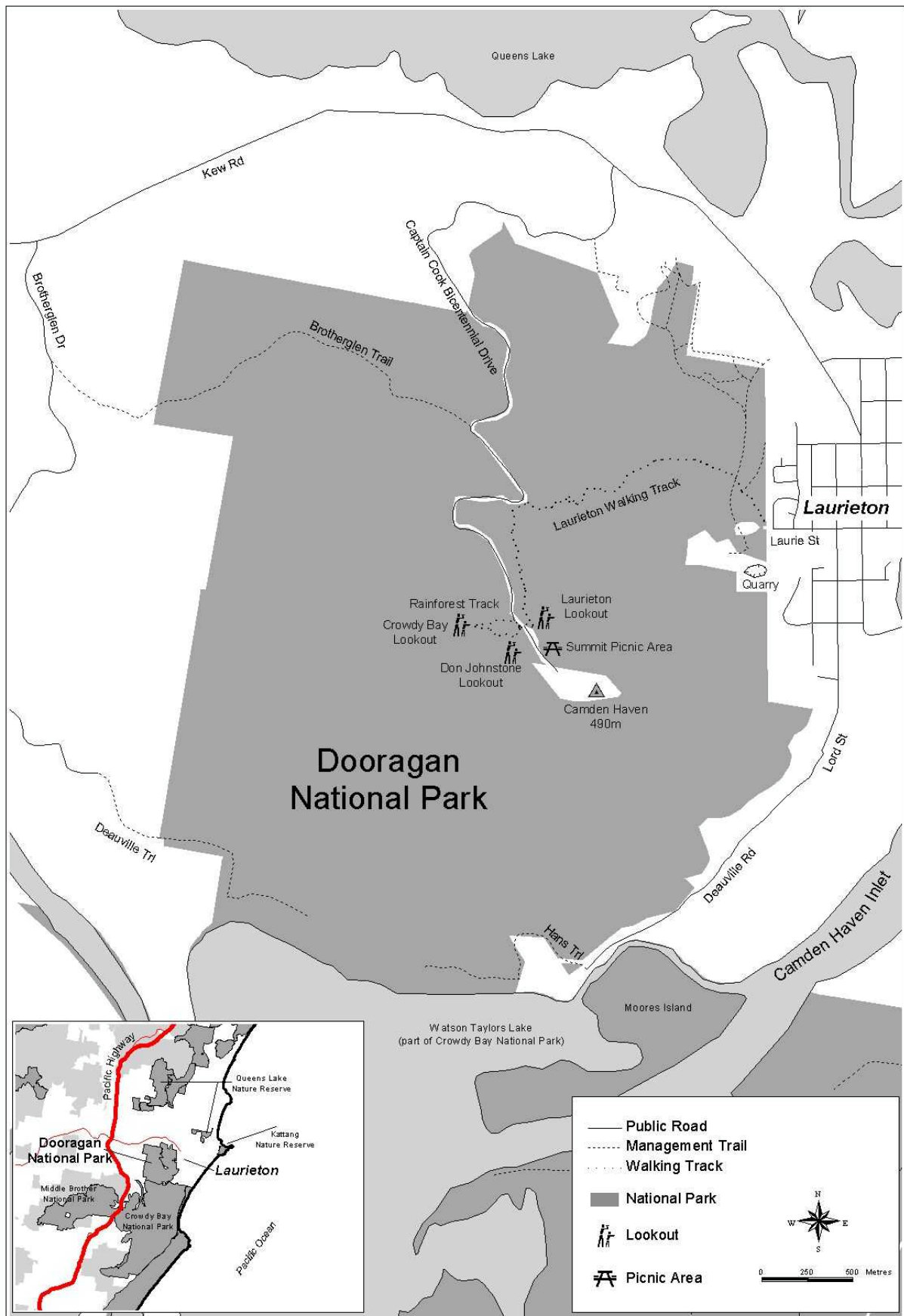
- the conservation of biodiversity, the maintenance of ecosystem function, the protection of geological and geomorphological features and natural phenomena and the maintenance of natural landscapes,
- the conservation of places, objects, features and landscapes of cultural value,
- the protection of the ecological integrity of one or more ecosystems for present and future generations,
- the promotion of public appreciation and understanding of the national park's natural and cultural values,
- provision for sustainable visitor use and enjoyment that is compatible with the conservation of the national park's natural and cultural values,
- provision for the sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to the conservation of the national park's natural and cultural values,
- provision for appropriate research and monitoring (section 30E).

## 2.4 SPECIFIC OBJECTIVES FOR MANAGEMENT OF DOORAGAN NATIONAL PARK

In addition to the above principles, the following specific objectives will also apply to the management of the park:

- protection of the outstanding scenic values of North Brother Mountain;
- protection of vegetation communities including “old growth” blackbutt forest, red gum and brush box forest associations;
- protection of *Melaleuca groveana* and *Acacia courtii*, and 6 plant species at or near their limits of distributional range;
- promotion of the park as a place from which to view the local area and as part of a larger coastal habitat corridor on the NSW coast;
- protection of the park as a declared Aboriginal Place;
- protection and interpretation of the significance of North Brother Mountain to Aboriginal and European people, of the vegetation communities and habitat values of the mountain, and of the geological processes of the area;
- provision of a range of day use visitor opportunities on the summit consistent with the protection of its natural and cultural values and its role as a national park; and
- protection of significant areas of koala habitat listed under State Environment Planning Policy No. 44.

**Map 1: Dooragan National Park**







### 3 KEY VALUES

The park together with Crowdy Bay National Park and Kattang, Lake Innes and Limeburners Creek Nature Reserves protect a significant section of the NSW mid north coast.

The primary purpose for dedication of the park was to preserve the old growth blackbutt forest growing on North Brother Mountain and the outstanding scenic values of the park. In addition, the park is reserved to protect cultural values, habitat for rare and threatened species and opportunities for appropriate recreation, tourism and education.

The values of the park are summarised below:

#### **Nature conservation values:**

- a wide range of vegetation communities including some of the best examples of “old growth” blackbutt forest in NSW, pockets of sub-tropical rainforest, four associations of wet sclerophyll forest and three associations of dry sclerophyll forest;
- red gum and brush box forest associations, both of which are inadequately conserved in the region;
- two plant species listed under the *Threatened Species Conservation Act 1995* (*Melaleuca groveana* and *Acacia courtii*), the latter of which is conserved only within Dooragan and Middle Brother National Parks, and 6 plant species at or near their limits of distributional range;
- significant areas listed under State Environment Planning Policy No. 44 as koala habitat;
- habitat for a large number of native animals including at least 5 threatened species and the Australian Museum’s southern-most record for *Brazieresta larryi* (a rainforest snail); and
- an important part of the broader nature conservation system of the north coast of NSW and complements other parks and programs aimed at the conservation of biodiversity in the Mid North Coast Region.

#### **Cultural heritage values:**

- North Brother Mountain, a declared Aboriginal Place and of mythological significance to Aboriginal people. Dreaming stories associated with the area explain the creation of North Brother Mountain and two nearby mountains, collectively referred to as the “Three Brothers”.
- the Three Brother Mountains, a symbol of shared heritage as Captain James Cook gave them the same name without knowing that the Aboriginal people had already named them the Three Brothers;
- past forestry activities on North Brother Mountain which contributed to the establishment of Camden Haven; and

- North Brother Mountain, a prominent feature in the Camden Haven landscape and important to the local Laurieton community as a symbol of their town, and used for a variety of occasions such as Australia Day celebrations and Easter church services.

**Educational and scientific values:**

- opportunities for interpretation and appreciation of the natural and cultural heritage of the mid-north coast;
- a vantage point from which to interpret the geomorphological features surrounding the mountain, including the digitate delta in Watsons Taylors Lake, the barrier system of ancient dunes in Crowdy Bay National Park, Gogleys Lagoon and Queens Lake; and
- opportunities for scientific study of vegetation communities, native animals and geomorphic processes.

**Recreation and tourism values:**

- spectacular views from North Brother Mountain lookout of the NSW mid-north coast from Smoky Cape near South West Rocks to Cape Hawke near Foster;
- the only facilities for people with disabilities to access rainforest in the Camden Haven area;
- internationally recognised as a hang gliding launching place; and
- a popular destination for tourists passing by and staying in the area.

## 4 POLICIES AND FRAMEWORK FOR MANAGEMENT

This section contains the strategies for the management of the park. Under each section the values and existing situation are summarised and strategies and actions are proposed.

The strategies and actions established in this plan of management will provide the framework for management of the park. These are based on consideration of matters raised through the community consultation process, NPWS legislative responsibilities and policies, and anticipated availability of resources for management of the park.

Management strategies and actions in this plan have been developed to pursue the stated objectives for management of the park. Where not specified in this plan, management of the park will be in accordance with the provisions of the *National Parks and Wildlife NPW Act 1974* and general NPWS policies.

### 4.1 NATURAL HERITAGE

#### 4.1.1 Landscape, Geology, Hydrology and Soils

The Three Brother Mountains lie on the eastern rim of the Lorne Basin (Milledge 1979). The Lorne Basin is a sedimentary sequence, consisting of conglomerates, sandstones, mudstones and shales, probably laid down at around the same time as the Sydney Basin (Myson, 1998). The Lorne Basin stretches from approximately Bonny Hills in the north to Moorland (north of Taree) in the south and west to Mount Gibraltar (south of Comboyne).

Some time after deposition of the basin rocks massive igneous intrusions occurred. These Late Triassic igneous rocks are mostly a micro-granite, though occasionally rhyolite is found (Gilligan et al, 1987). Rocks are composed of quartz, mica, augite and feldspar (Myson, 1998). They were more resistant to erosion than the surrounding sedimentary rocks and formed the Three Brothers Mountains.

The igneous rocks of the North Brother Mountain were used for construction in the local area. Quartz rock from the Laurieton quarry, just outside the eastern boundary of the park, was used to build the Camden Haven breakwater in the late 1890s and to extend and repair the breakwater in 1968-73.

North Brother Mountain rises from just above sea level to a height of 487 metres and most of the park is steeply sloping. It is an important and prominent landmark in the local area, being visible from Smoky Cape at South West Rocks to Cape Hawke near Forster and out to sea. It has long been recognised for its aesthetic value and for the views from the summit. It is important that the scenic values of the mountain as a natural landmark be preserved. Planting has recently been undertaken to restore and maintain the natural tree line at the summit.

A number of small, intermittent streams drain the mountain. Many of these feed into drainage canals constructed by the local council along the base of the mountain behind the township of Laurieton. Some of these drains are within the boundaries of the park. There is a need to determine the importance of these drains and to ensure maintenance by Council under an agreement with NPWS. Other intermittent

streams around the mountain feed into the Camden Haven estuary via Watson Taylors Lake, Queens Lake or the Camden Haven River.

The existing trails and tracks are prone to extensive soil erosion on the steep flanks of the mountains. The fire trail and walking track networks require regular maintenance to avoid soil loss and degradation.

The *Catchment Management Act 1989* provides the framework for total catchment management in NSW. Amongst its stated aims are cleaner water, less soil erosion, improved vegetation cover, the maintenance of ecological processes, and a balanced and healthy environment. Total catchment management also provides a focus to balance conservation needs and development pressures and aims to encourage a more aware and involved community. An important means of achieving these aims is the formation and support of catchment management authorities at a local level.

### **Strategies and actions**

- **Developments or activities which may compromise the landforms, hydrology, or scenic features of the park will not be permitted. This will preclude the construction of any structures (including towers) and clearing of the vegetation which results in breaks in the canopy, or impacts on the landscape values of the park.**
- **Soil erosion will be controlled along walking tracks and fire trails.**
- **NPWS will continue to support the Northern Rivers Catchment Management Authority in promoting total catchment management.**
- **No gravel extraction, quarrying or bush rock collection will be permitted in the park.**
- **NPWS will liaise with Hastings Council in regard to minimising the impact of development around the base of the mountain which may compromise the scenic values of this prominent landmark.**
- **NPWS will liaise with Hastings Council to determine an agreement about maintenance requirements for drainage canals in the park.**
- **Research into the geology and geomorphic processes of the Camden Haven will be encouraged.**

#### **4.1.2 Native Plants**

A flora survey of the park was undertaken by Kendall & Kendall (1997). Eight forest associations were identified within the park, which fall within the broad categories of dry sclerophyll forest, wet sclerophyll forest, rainforest and grassland. A description and distribution of the major plant communities, including the scientific names of the main species, in the park are provided in Appendix 1.

Two of the wet sclerophyll communities (the red gum forest and brush box forest) are inadequately conserved in the region. The white mahogany association is also considered to be inadequately conserved regionally (less than 5%). However, due to the complexity of this group of forests, conserved areas are unlikely to cover the full range of variations (Benson & Hager in Kendall & Kendall, 1997).

Comparatively little logging occurred in steep and difficult to access areas of the park. Consequently some of the best examples of “old growth” blackbutt in NSW and valuable rainforest pockets occur on North Brother Mountain.

The park also contains two plant species (*Acacia courtii* and *Melaleuca groveana*) listed as vulnerable under the *Threatened Species Conservation Act 1995*. *Acacia courtii* has only been recorded from North Brother, South Brother and Middle Brother Mountains and is conserved only within the Dooragan and Middle Brother National Parks. This species is considered to be at risk of extinction in the wild within 20 to 50 years under present or known potential adverse conditions (Briggs and Leigh 1988). Monitoring the population’s response to disturbances and fire will contribute to an optimum management regime. The species is restricted to the dry locations on the mid slopes of the mountain, and has been recorded in association with the stringybark forest and white mahogany / ironbark associations on skeletal soils on the western and northern side of the mountain.

*Melaleuca groveana* is a threatened species that occurs on exposed ridges and rocky outcrops, and it is affected by weed invasion, particularly bitou bush. It is also at risk by too-frequent fires. The park also contains one species (*Gonocarpus salsoloides*) listed by Environment Australia as a rare Australian plant species. This perennial herb grows in swampy areas and its response to fire is unknown.

The park conserves six plant species recorded at or near their limits of distributional range. These are: *Cynanchum carnosum*; *Pandorea jasminoides*; Macleay laurel *Anopterus macleayanus*; cuttsia *Cuttsia viburnea*; *Cooperhooia chisholmii*; and *Eucalyptus agglomerata* (near its northern limit on the coast) (Kendall & Kendall, 1997). It is likely that further surveys will discover other plant species at or near their limits of distributional range.

### Strategies and actions

- **Native plant communities will be protected by controlling introduced plants (refer 4.3.2 Introduced Plants and Animals) and maintenance of appropriate fire regimes (refer 4.3.1 Fire Management).**
- **Recovery plans for plants listed under the *Threatened Species Conservation Act 1995* will be implemented as prepared.**
- **Research will be encouraged into the ecology of native plant communities and species, in particular *Acacia courtii* and *Gonocarpus salsoloides*.**
- **The two populations of *Acacia courtii* in the park will be monitored to determine the ideal management regime for the communities.**

### 4.1.3 Native Animals

The park contains significant elements of old growth forest, which are crucial to the survival of many species of wildlife. Pockets of sub-tropical rainforest contain habitat that provides an important food supply for migratory fauna such as the rainbow bee-eater *Merops ornatus* and wonga pigeon *Leucosarcia melanoleuca*, locally nomadic fauna (such as the Queensland blossom bat) and sedentary fauna (i.e. rainforest snails). The park is the Australian Museum’s southernmost record for *Brazieresta larreyi*, a rainforest snail.

The park supports a diversity of native animals including species listed as vulnerable under the *Threatened Species Conservation Act 1995*. These include the glossy black cockatoo *Calyptorhynchus lathami*, wompoo fruit-dove *Ptilinopus magnificus*, yellow-bellied glider *Petaurus australis*, greater glider *Petauroides volans* and the little bent-wing bat *Miniopterus australis*.

Other threatened species likely to occur in the park include the powerful owl *Ninox strenua*, masked owl *Tyto novaehollandiae*, Queensland blossom bat *Syconycteris australis*, spotted-tailed quoll *Dasyurus maculatus*, brush-tailed phascogale *Phascogale tapoatafa* and the squirrel glider *Petaurus norfolcensis*.

The koala *Phascolarctos cinereus* and brush-tailed rock wallaby *Petrogale penicillata* were reportedly common on the mountain up until the 1930s but have not been recorded in recent years. However, significant areas of the park are listed under SEPP 44 as koala habitat.

An abundance of other mammals, frogs and reptiles are also present.

Key threats to native animals include fire, introduced species and inappropriate human activities. Protection of habitat and appropriate bush fire regimes are a major determinant of the distribution and abundance of animals in the park.

### **Strategies and actions**

- **Emphasis will be placed on protecting the habitats of animals listed under the *Threatened Species Conservation Act 1995* including the wompoo fruit-dove, glossy black cockatoo, yellow-bellied glider, greater glider, and little bent-wing bat.**
- **Native vegetation communities will be maintained to provide habitat for native fauna.**
- **Additional fauna surveys will be encouraged, particularly surveys to determine the occurrence of other threatened species in the park.**
- **Neighbours, Council, volunteer organisations and other government agencies will be encouraged to maintain wildlife corridors linking the park with adjoining areas.**
- **Native animals will be protected by controlling introduced animals and plants (refer 4.3.2 Introduced Plants and Animals) and maintenance of appropriate fire regimes (refer 4.3.1 Fire Management).**

## **4.2 CULTURAL HERITAGE**

### **4.2.1 Aboriginal Heritage**

Dooragan was the name given to North Brother Mountain by the local Aboriginal people. The park is an important area to local Aboriginal people, not only mythologically, but because the mountain is seen as a “protector” of the area (Bert Marr, Birpai elder, quoted in Van Kempen, 1997).

To the Aboriginal people, the Three Brother Mountains are the focus of a Dreamtime story of three brothers of the Birpai tribe who lived near the Camden Haven River. When the youngest of the three separated from his two brothers, they were killed by a witch-woman. The young man killed the witch-woman and buried the remains of

his two brothers at the site of North and Middle Brother Mountains. Then he went to South Brother Mountain and, because he was ashamed that he had not saved his two brothers, he killed himself. The spirits of Creation stirred that night and where each body lay a mountain arose to mark the tragedy. The mountains were known to the Aboriginal people as the “Three Birrooguns” (R. Kelly 1976, and Van Kempen 1997).

The declaration of the entire park as an Aboriginal Place recognises its significance as part of local Aboriginal stories and for ceremonial purposes.

The summit of North Brother Mountain is likely to have been used as a lookout and possibly for ceremonies. The mountain was probably also a food source as cycads *Macrozamia* spp. grow on the mountain, and the nuts of cycads were an important food for Aboriginal people in the Port Macquarie area.

Aboriginal communities associate natural resources with the use and enjoyment of valued 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.

North Brother Mountain is within the Purfleet-Taree Local Aboriginal Land Council area and the Birpai tribal area. NPWS undertakes liaison with both the Land Council and the Birpai elders in regard to management and interpretation of the Aboriginal heritage of the park.

### **Strategies and actions**

- **NPWS will continue to liaise with the Taree-Purfleet Local Aboriginal Land Council and the Birpai elders in regard to management and interpretation of the Aboriginal heritage of the park.**
- **Any cultural heritage sites found in the park will be recorded, conserved and protected in consultation with the local Aboriginal community and the Local Aboriginal Land Council.**
- **The local Aboriginal community will be consulted in the preparation of cultural heritage educational information brochures and signs in the park.**
- **Further research into the cultural and heritage significance of the park will be encouraged, subject to appropriate consultation with the relevant Aboriginal community groups.**

#### **4.2.2 Non-indigenous Heritage**

When Captain James Cook travelled north along the NSW coast in May 1770, he recorded “3 hills lying near to the shore and contiguous to each other” and named the hills “the 3 brothers”. Records from some of the crew members also refer to the Three Brother Mountains (Van Kempen 1997).

In 1818, when John Oxley was nearing the completion of a journey which had taken him from Sydney through the Macquarie Marshes, the Warrumbungle Mountains, and the Liverpool Plains, he named the Hastings River after the Governor of India and noted on 3 October 1818 that “the spacious valley, through which the river flowed, extends along the coast from Smoaky (sic) Cape to the Three Brothers” (Van Kempen 1997).



By 1856, cedar was being exported on ships from the Camden Haven and by December 1890, the Camden Haven was described as “one of the strongholds of the northern timber trade” but there are no records of timber being taken from North Brother Mountain at this time. In January 1892 an area on the northern side of North Brother Mountain was notified as a Timber Reserve “set aside from sale for preservation and growth of timber”. In 1900, the Longworth family established a sawmill on the south bank of the Camden Haven inlet. Robert Longworth subsequently applied for, and was granted, a Special Lease over a narrow strip of Crown Land running south-west from the summit of North Brother Mountain towards the Camden Haven River before it enters Watson Taylors Lake. The Parish Map of 1905 shows a “Timber Shoot”, which was used to slide logs down the mountain, on the site of Longworths’ Special Lease.

In 1904, E.L. Stace and Henry Pacey secured a “Special Lease for Road Construction” on the northern side of the mountain. The road was 0.4 kilometres. Stace and Pacey held timber getters licences to allow them to harvest timber from the Forest Reserve. Bullock teams were used to snig logs to the top of Longworth’s shoot and each log was canted over the edge by a man using a hook. When in position the log was uncoupled from the snig chain to start its decent. There are stories of a whole team of bullocks plunging to their death still attached to a runaway log (Van Kempen 1997).

In 1916, George Septimus Gulliver acquired 342 acres of Crown Lease on the south-east side of the mountain stretching from the top of the ridge to the shores of Watson Taylors Lake. Gulliver also acquired an adjoining block of 284 acres which included the summit of North Brother Mountain. The lower slopes of the mountain were used to grow crops such as corn and sorghum and selective logging of the forest was undertaken. A banana plantation was located on the higher slopes (Van Kempen 1997).

In November 1918 approximately 1,320 acres on the mountain was gazetted as Camden Haven State Forest under the *Forestry Act 1916*. Forestry Commission records show that the amount of timber taken from the mountain varied from no trees, to one tree in 1938, to approximately 400 trees in 1985/86.

Grazing permits over the reserve were issued up until 1938. In 1932 a trigonometry station was established on the summit of North Brother Mountain.

As early as 1960 there were attempts to open North Brother Mountain as a tourist area and negotiations between Hastings Shire Council and the Forestry Commission to construct a road to the summit were initiated. In 1970 Hastings Shire Council received a grant of \$5,000 from the Captain Cook Bicentenary Fund towards the construction which, together with \$15,000 from the Forestry Commission, provided for construction of an unsealed road to the summit of the mountain along the old logging tracks. The road was sealed in 1972 and a picnic shelter and toilets developed.

In 1975 the Camden Haven Conservation Society prepared a proposal for a Three Brothers National Park which incorporated the Three Brother Mountains and Queens Lake and Watson Taylors Lake. Although the entire proposal did not eventuate, on 1st January 1997 North Brother Mountain was reserved as Dooragan National Park.

## Strategies and actions

- **Any historic sites found on the park will be recorded on the NPWS Historic Sites Register, the site assessed for significance, and decisions on appropriate management developed in accordance with the Burra Charter.**
- **Further research into the history of the area will be encouraged.**
- **The history of the park will be interpreted to park visitors through interpretative signs at the summit, brochures on the park and interpretative talks.**

## 4.3 PARK PROTECTION

### 4.3.1 Fire Management

Fire is an important natural phenomenon recognised as one of a number of factors determining the composition of vegetation and animal communities in Australia. Many species of Australian plants and animals have developed mechanisms or behaviour to survive fire, and some require fire for reproduction or stimulation of new growth. Rainforest communities and swamp forest communities, however, are particularly sensitive to fire.

Since 1970 wildfire has burnt major sections of the park including: 475 hectares in 1974/75; 525 hectares in 1980/81; 500 hectares in 1991/92; and 300 hectares in 1996/97. Even though there have been a number of wildfires, no damage to buildings occurred. A large proportion of the park was also burnt by prescribed fires. Most fires have been on the summit around the visitor facilities and on the eastern side of the mountain between the township of Laurieton and the summit road.

While it is not possible to accurately predict wildfire patterns, it is expected that over the life of this plan the frequency and, to some extent, the pattern of wildfire will continue in a manner similar to that experienced since 1968. The location of residential areas at the base of the of the mountain and the moist forest adjoining these areas, means that the likelihood of fires threatening houses in Laurieton is relatively low.

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 Dooragan National Park:

**Table 1: 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: NPWS, 1998 based on Bradstock et al, 1995; Keith, 1996.

A comparison of fire frequency with vegetation communities shows that fire frequency in recent years has exceeded the threshold guidelines in over 33% of dry forest communities and 90% of wet forest communities within the park. In some places the thresholds have been exceeded a number of times over recent decades, and such areas may require significantly longer periods free from fire to recover species diversity.

NPWS is a member of the committee established under section 52(1) of the *Rural Fires Act 1997* which is responsible for the preparation of fire operational plans and bush fire risk plans for each council area. In addition a Fire Management Plan for the park has been prepared.

### **Strategies and actions**

- **Fire management in the park will be in accordance with the Section 52(1) Plan, the District Fire Action Plan, Dooragan National Park Fire Management Plan and this plan of management.**
- **Where practical, wildfires within the park will be suppressed in order to avoid an unacceptable fire regime.**
- **Prescribed burning will be undertaken to reduce fuel levels in small sections of the park along the eastern boundary where insufficient land exists for asset protection outside the park boundaries. This will be restricted to the areas downhill of the current boundary fire trails.**
- **Prescribed burning will be undertaken on private property adjoining the southern boundary of the park in co-operation with the property owner.**
- **Prescribed burning may be undertaken in other sections of the park to maintain ecological values consistent with Table 1 above and the requirements for the protection of threatened species.**
- **The western fire trail and existing boundary fire trails within the park (see map 1) will be maintained to a standard suitable for fire management access.**
- **Other trails within the park will be allowed to revegetate. They may be re-opened if necessary for emergency operations but will be closed and rehabilitated as soon as possible following the emergency.**

- **Liaison will be maintained with local bush fire brigades, local government agencies and neighbours to ensure a co-ordinated approach to fire management within the national park and on adjoining lands.**
- **Liaison will be undertaken with Hastings Council to ensure that fire advantage lines are incorporated into all future neighbouring developments.**
- **Community Fire Guard training will be encouraged within the local community to assist them in protecting their assets from wildfire.**
- **An education program will be implemented to raise community awareness of the importance of establishing an ecologically acceptable fire regime for the park.**
- **Research into fire behaviour, fire hazard and the impact of fire on the park's plant and animal communities will be encouraged.**

#### **4.3.2 Introduced Plants and Animals**

A weed survey of the park identified 32 weed species in or immediately adjacent to the park, with 21 species being in the summit area of North Brother Mountain. Lantana (*Lantana camara*) is the most prevalent weed within the park but bitou bush (*Chrysanthemoides monilifera*) is also a major weed. Lantana and bitou bush are listed as noxious weeds by Hastings Shire Council under the *Noxious Weeds Act 1993*. Other noxious weeds in the park include crofton weed (*Ageratina adenophora*) and mistflower (*Ageratina riparia*). Camphor laurel (*Cinnamomum campona*) and cassia (*Cassia floribunda*), which are listed as weeds of environmental concern by Hastings Council, are present in the park and ochra (*Ochna atropurpurea*) was also identified by Kendall and Kendall (1997).

The rainforest area is almost free of weeds except for lantana near roads and tracks. The survey found that the trig area contained 13 weed species, mainly grasses and herbaceous weeds but also some young camphor laurels and patches of crofton weed. Lantana and other weeds are also present in the disturbed area behind the toilet block and along tracks on the summit. Warrel grass (*Paspalum wettsteinii*) was found in this area and is of concern as it favours shady conditions and may dominate the ground cover. The highest number of weed species (22) were recorded at the base of the mountain along the park/urban boundary. The majority of these species were garden escapees and plants growing from garden refuse.

Fauna surveys in the park have identified three introduced animal species: dogs (*Canis familiaris*); foxes (*Vulpes vulpes*); and black rats (*Rattus rattus*). Also believed present in the park are cats (*Felis catus*), mice (*Mus musculus*), rabbits (*Oryctolagus cuniculus*) and brown hares (*Lepus capensis*). The animal species of most environmental concern are foxes, cats and dogs. These animals predate on small native animals and their scent disturbs the feeding and breeding of native animals. It is important that garbage bins within the park are managed to prevent foxes and cats scavenging and maintaining populations of these animals. It is also important that neighbours do not allow domestic cats and dogs to roam within the park.

## Strategies and actions

- Introduced plants and animals in the park will be controlled, and where practicable eliminated.
- The distribution of weeds within the park will be monitored and controlled.
- Priority will be given to weed control along the urban interface, in the summit area and along road sides.
- Priority will be given to the control of the following weeds:
  - bitou bush (through direct control programs, spraying and release of biological control agents);
  - lantana (through direct application of herbicides and possibly biological controls);
  - other noxious and environmental weeds; and
  - any new weed invasions, particularly in the vicinity of *Acacia courtii*.
- Priority in feral animal control will be given to:
  - foxes (through baiting and control of garbage on the summit); and
  - cats (through trapping, biological controls and control of garbage).
- The importance and purpose of management programs relating to the control of weeds and feral animals will be promoted within the local community.
- Educational information will be prepared for neighbours on the need to control cats and dogs and the problems of inappropriate plants and disposal of garden refuse.

## 4.4 USE OF THE PARK

The outstanding scenic beauty and natural values of the park lends itself to recreation. Other uses of the park include promotion of the conservation of natural and cultural heritage, research and management operations by NPWS.

This plan seeks to ensure that activities in the park are consistent with *the National Parks and Wildlife Act 1974*, NPWS policies and the primary objectives of this plan.

### 4.4.1 Promotion, Education and Interpretation

Promoting public awareness of NPWS' conservation responsibilities, the values of the area and the recreational opportunities available is a major aspect of management of national parks. It assists in the protection of natural and cultural heritage and increases the understanding, enjoyment and satisfaction of visitors.

The park is located just off the Pacific Highway on a major scenic drive. A visitor survey undertaken over the 1997-98 Christmas holiday period (Tonks, 1998) found that most people had planned their visit to the park, with the majority making the visit primarily to enjoy the scenery or for a picnic or barbecue. Most visitors came from either Sydney or from the Port Macquarie/Camden Haven area.

Because of its proximity to Port Macquarie and surrounding villages, the park also has the potential to be used, in association with other parks in the area, by schools in

the local district as resource for environmental education, particularly by geography and ecology classes.

### **Strategies and actions**

- **Understanding and appreciation of the natural and cultural values of the park and surrounding area will be promoted. This will include promotion of the park for: the protection of vegetation communities; as a habitat for native animals; its cultural significance to the local Aboriginal community; its geography, geomorphology and ecology; and its outstanding scenic values.**
- **Information on park values and appropriate behaviour will be provided on signs at the summit of the mountain and along the rainforest walk. Information will also be provided through guided walks and educational programs run by NPWS, local educational institutions and community groups.**
- **An information display will be installed at the picnic area near the summit of the mountain to provide information on the natural and cultural values of the park and the surrounding area. This will include:**
  - **the Three Brothers myth (refer also 4.2.1);**
  - **the birds-foot delta and coastal processes;**
  - **previous use of the park as a State Forest;**
  - **recreation opportunities; and**
  - **the parks place as part of a bigger reserve system in the region.**
- **NPWS will encourage use of the park for environmental education by schools and other educational institutions. Approval from NPWS will be required prior to the use of the park for this purpose.**
- **The information brochure for the park will be upgraded.**
- **NPWS will liaise with local tourist associations to promote the park.**

#### **4.4.2 Recreation Opportunities**

Prior to the construction of Captain Cook Bicentennial Drive in 1970, recreational use of North Brother Mountain was limited to a small number of bush walkers, who generally followed timber snigging tracks.

Visitors to the park increased following the construction of the road and development of a lookout and picnic area near the summit. Local community groups such as Rotary and Lions assisted in the development of a shelter shed, water tanks, toilet block and barbecues in the picnic area in 1970.

Following the declaration of the area as a national park in 1997, the NPWS redeveloped the summit lookout area. Redevelopment works included provision of composting toilets, sealed paths, formal parking spaces, new picnic shelters and furniture and three lookout platforms. The viewing platforms at the summit offer extensive views to the coast, Crowdy Bay National Park and Watson Taylors Lake, giving a unique opportunity to appreciate the diverse nature of the coastal landscape.

### **(a) General**

An objective of this plan is to manage the park for the provision of appropriate recreational opportunities. In particular, the plan seeks to provide a range of day use opportunities for recreation, tourism and community use consistent with the protection of its natural and cultural values and its role as a national park.

#### **Strategies and actions**

- **Preference will be given to recreational activities and other uses which promote understanding and appreciation of the park and do not have a detrimental impact on the natural or cultural values of the park or its use by the general public.**
- **Recreation use of the park will be focused on and around the picnic area and lookout near the summit of North Brother Mountain.**
- **Regular surveys of park visitors will be undertaken to provide an on-going understanding of the activities and perceptions of park visitors.**
- **The impact of visitor use will be monitored and if necessary areas within the park will be permanently or temporarily closed or use otherwise restricted if unacceptable damage is found to be occurring to natural or cultural values.**

### **(b) The summit day use/picnic area**

The summit lookout and picnic area is the main focus for visitors to the park. Facilities at the summit include sheltered picnic tables, walking tracks, wood barbecues, four viewing platforms, car parking and toilets. All facilities have barrier free access and are suitable for wheelchairs. Utility conduits have recently been installed at the summit which will facilitate the provision of gas barbecues in the picnic area.

Approximately 500 vehicles visit the summit each week as well as numerous buses, which equates to around 100 000 visitors per year. A 1997-98 visitor survey found that most visitors (95%) were happy with the park “the way it is”, however 34% of visitor’s thought the signs in the park could be improved with suggestions for a bigger turn-off sign, interpretation signs and maps.

#### **Strategies and actions**

- **The developed area near the summit, including the car parking area, picnic area and the existing barbecues, will not be increased beyond its current size.**
- **Limited trimming of trees in front of the lookouts on the summit will be undertaken to maintain views from the lookouts.**
- **The directional and interpretative signs at the car park, lookouts and on the rainforest walk will be upgraded.**
- **Wood fires will be allowed in the barbecues provided until gas barbecues are installed. Once gas barbecues are installed, wood fires will no longer be permitted.**
- **Visitors will be encouraged to take their rubbish out of the park.**

### **(c) Walking tracks**

Walking is a popular activity in the park. There are two formal walking tracks in the park. The "Rainforest Loop" provides an easy grade 30 minute walk through lush sub-tropical rainforest and is the most popular walk in the park. The Laurieton Track is a 2 hour, each way, walk through tall eucalyptus forest and is graded as a very demanding walk with sections of the track being quite steep. The top section is known as the "Top Track", it is a moderately difficult walk through tall eucalyptus forest and rocky outcrops, ending at the junction of Captain Cook Bicentennial Drive.

A sensory trail may be installed on the rainforest walking track which complements the existing barrier free access to the Crowdy Bay lookout.

There is an old forestry track at the summit near the Rainforest Loop that heads in a south westerly direction to the base of the mountain near Watson Taylors Lake. Further investigation is required to determine if this is a suitable walking track.

#### **Strategies and actions**

- **The existing walking track system will be maintained.**
- **Sections of the Laurieton Track will be re-routed where necessary to prevent erosion and provide an improved walk.**
- **Subject to funding a sensory track may be developed which provides a boardwalk through the rainforest suitable for disabled access.**
- **The directional and interpretative signs on the rainforest walk will be upgraded.**
- **Investigate the possibility of the old forestry track being used for walking from the summit of the mountain to Watson Taylors Lake.**

### **(d) Vehicle access**

Public vehicle access to the summit is via Captain Cook Bicentennial Drive, which is maintained by Hastings Council. During peak holiday times the car parking area near the summit can become full and there may be difficulties finding a parking space. It is expected that with increasing promotion this situation has the potential to occur more often. The topography of the summit area means that the car parking area cannot be increased significantly. Consequently if visitors stay for long periods at the summit, parking can become difficult.

#### **Strategies and actions**

- **The car parking area will not be increased beyond its current size.**
- **During special events such as Australia Day Celebrations, fun runs and hang gliding events, organisers will be encouraged to use shuttle buses to transport patrons to the summit.**
- **Negotiations will be undertaken with Hastings Council to permit the installation of a gate near the base of the mountain on Captain Cook Bicentennial Drive which may be closed during special events, when no parking is available on the summit, in emergencies such as fires, or for park protection and /or public safety (refer (g) camping).**



### ***(e) Hang gliding and other adventure activities***

The park is internationally recognised as a hang gliding launching place. Hang gliders, and more recently paragliders, use the top of the mountain as a launching place and land on private property at the base of the mountain. It provides a large north-east facing site which has been widely promoted. During the Christmas visitor survey period, 7% of visitors came to the park to undertake and/or to watch hang gliding. Hang gliding on North Brother Mountain is acknowledged as an important recreational activity and an attraction to visitors to the summit.

An agreement has existed for many years with the local hang gliding club to maintain a grassed area near the summit as a hang glider take-off area. This ramp was significantly upgraded in 1997 in consultation with the Hang Gliding Federation. It was incorporated into the overall visitor facilities and now provides a safe take off point. The tree line below the take off ramp will need to be kept trimmed to ensure that the hang gliders have clean air when launching. The extent of the trimming has been agreed to by NPWS and the Hang Gliding Federation.

#### **Strategies and actions**

- **NPWS will encourage hang gliders to minimise the number of cars parked on the summit during peak use times and to use the car park at the eastern end of the summit picnic area (refer also (d) vehicle access).**
- **The grassed ramp between the two northern viewing platforms on the summit, will be maintained for use as a take-off area by hang gliders and paragliders.**
- **The tree line below the ramp will be maintained at the expense of the hang gliding federation and under the authority of NPWS.**
- **All hang gliders and paragliders launching from the summit must have prior consent from the Hang Gliding Federation.**
- **Adventure activities, including hang gliding and paragliding, will require consent from NPWS.**

### ***(f) Cycling***

Cycling is allowed on the Captain Cook Bicentennial Drive and on the perimeter fire trail but is not a popular activity in the park because of the steep slopes.

#### **Strategies and actions**

- **Cycling will only be permitted on Captain Cook Bicentennial Drive and the perimeter fire trail.**
- **Cycling will not be permitted on walking tracks or other management trails in the park because of the potential for erosion and conflict between bicycles and walkers on steep slopes.**

### ***(g) Camping***

Camping is not permitted in the park because its small size and the steep slopes. Camping opportunities are available at the caravan park at Laurieton and in the adjoining Crowdy Bay National Park. Although camping is prohibited in the park, unauthorised camping has occurred as well as vandalism of park facilities.

## Strategies and actions

- **Camping will not be permitted in the park.**
- **If unauthorised camping or vandalism continues to occurs, consideration will be given to providing a locked gate on the road to the summit to prevent access at night.**

### ***(h) Group activities – commercial tours, organised events and education***

Commercial tours and other groups use the park as a short stop-over to enjoy the views and to use the visitor facilities such as the toilets and picnic tables. A small number also undertake educational activities. A survey of visitor use found that over one quarter of visitors came in groups of 6 or more people. These groups generally require parking for buses and larger picnic tables than the general public.

North Brother Mountain is a major landmark in the area which has also become important to the Laurieton and Camden Haven communities as a local attraction and venue for occasions such as Australia Day celebrations, Easter church services, fun runs and wedding ceremonies. These activities can involve large numbers of visitors, sometimes in excess of 500 people.

## Strategies and actions

- **All commercial activities will require a permit from NPWS.**
- **Commercial tour groups, community groups and other groups using the park for organised activities such as ceremonies, events and fun runs, will be required to have a licence or consent from NPWS. No exclusive use of part of the park or parking area, and no wedding receptions or parties, will be permitted.**
- **Commercial and non-commercial group activities will be encouraged to use a shuttle bus to transfer patrons to the summit where there is likely to be difficulties with car parking (refer (d) vehicle access).**
- **Small non-commercial groups (less than 10) using the summit lookout facilities or walking tracks in the park will not require consent.**
- **Education activities will require a permit from NPWS.**

### **4.4.3 Research**

Research can improve understanding of the areas natural and cultural heritage values and the processes which affect them. The outcomes of research can also establish the requirements for the management of particular species, communities or sites.

Previous research within the park has included a flora survey (Kendall and Kendall 1997), a fauna survey (Port Macquarie District 1997), and a history of North Brother Mountain and Dooragan National Park (Van Kempen 1997).

Additional information can help to improve understanding of the management requirements for vegetation communities and rare and threatened plants. Additional fauna surveys, and surveys of park visitors, would also assist park management.

## Strategies and actions

- **Research proposals will be assessed for their likely impact on the environment. All research will be subject to NPWS policy and procedures relating to the granting of permits, the conduct of research, and the provision and dissemination of results.**
- **Research permits will only be granted if it has the potential to facilitate the better management of the reserve and does not conflict with the objectives and policies in this plan of management.**
- **Priorities for research in the park include; *Acacia courtii*, the rainforest snail (*Brazieresta larreyi*), powerful owl and microbats.**

### 4.4.4 In holdings and Adjoining Lands

#### ***(a) Trig station and road reserve***

The trig station reserve on the summit is excluded from the park and is managed by Hastings Council. It is desirable for the trig reserve to be added to the national park in future and, in the interim, for its management to be consistent with the objectives and strategies for the park.

The trig station does not offer any vantage points to enjoy the views and its location is potentially hazardous in the event of a wildfire, consequently visitors will not be encouraged to the area.

Many of the summit facilities are located within the road reserve which leads to the trig reserve. It would be beneficial if these facilities were within the dedicated national park.

## Strategies and actions

- **NPWS will liaise with Hastings Council to ensure management of the trig station is consistent with management of the park and that no new facilities or infrastructure is developed.**
- **No recreational facilities will be provided at the trig station.**
- **NPWS will seek the dedication of the trig reserve and the road reserve where it contains facilities at the summit into the park.**

#### ***(b) Laurieton Quarry***

The Laurieton Quarry lies on the eastern flank of the mountain, surrounded on three sides by the park

The quarry includes two levels from which rock was removed to construct the breakwalls at mouth of the Camden Haven River. The quarry reserve was extended to include an undisturbed area above the existing quarry. This natural area would be a valuable addition to the park and would improve management of the reserve by rationalising the boundary. The Department of Public Works and Services who control the area have indicated that this area is surplus to their requirements.

There is a proposal to develop the quarry as an outdoor concert venue as it provides a natural amphitheatre. This proposal is unlikely to have an impact on the management of the park as it will not compromise the nature conservation values of the area.

### **Strategies and actions**

- **NPWS will liaise with the Department of Public Works and Services to investigate the feasibility of adding the undisturbed, top portion of the quarry reserve to the national park.**
- **Negotiations with Hastings Council will continue to ensure that any development of the quarry is consistent with the management of the park.**

#### **4.4.5 Management Operations**

There are a number of trails on the park including fire trails, the remains of old snigging tracks, trails remaining from other activities on the park boundary such as quarrying, and unauthorised tracks and trails pushed through the bush. Some of these trails are required for fire and other management purposes. These trails are shown on Map 1.

Major problems with illegal access into the park occurs near the old quarry and it requires fencing along the boundary of the park to prevent vehicular access from Laurie Street.

There is also an unsealed trail along the southern boundary of the park which provides access to property adjoining this boundary. This trail, which pre-dates establishment of the national park, wanders in and out of the park. It provides access to the private property and for park management.

### **Strategies and actions**

- **The management trails shown on Map 1 will be maintained to NPWS standards for fire and other management purposes. They will be gated to prevent unauthorised use.**
- **Tracks and trails not needed for management purposes will be closed and rehabilitated.**
- **Fencing will be undertaken along the boundary of the park to prevent vehicle access into the park from Laurie Street.**

## 5 PLAN IMPLEMENTATION

This plan of management is part of a framework of management developed by the National Parks and Wildlife Service (NPWS). The framework includes the *National Parks and Wildlife NPW Act 1974* (NPW Act), the NPWS Corporate Plan, field management policies, established conservation and recreation philosophies, and strategic planning at corporate, regional and district levels.

The orderly implementation of this plan of management will be undertaken within the annual programs of the NPWS Port Macquarie District. Priorities, determined in the context of district and regional strategic planning, will be subject to the availability of necessary staff and funds, and to any specific requirements of the Director-General or Minister.

District programs are subject to on-going review, within which works and other activities carried out in the park will be evaluated in relation to 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 NPW Act requires that this plan be carried out and given effect to, and that no operations shall be undertaken in relation to the national park unless they are in accordance with the plan. However, if after adequate investigation, operations not included in the plan are found to be justified, this plan may be amended in accordance with Section 76(6) of the Act.

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

**Table 2: Implementation**

<b>Section</b>	<b>Activity</b>	<b>Priority</b>
<b>4.1.1 Landscape, Geology &amp; Geomorphology</b>	• Control soil erosion along walking tracks and fire trails	<i>High</i>
	• Protect scenic values of the mountain	<i>Medium</i>
	• Promote total catchment management	<i>Low</i>
	• Encourage research into the geomorphic processes	<i>Low</i>
<b>4.1.2 Native Plants</b>	• Maximise species diversity	<i>Ongoing</i>
	• Control introduced plants	<i>High</i>
	• Maintain appropriate fire regimes	<i>High</i>
	• Implement recovery plans for threatened species	<i>Medium</i>
	• Manage for conservation of <i>Acacia courtii</i>	<i>High</i>
	• Research <i>Gonocarpus salsolodius</i>	<i>Low</i>

<b>4.1.3 Native Animals</b>	<ul style="list-style-type: none"> <li>• Protect habitat of wompoo pigeon; glossy black cockatoo; yellow-bellied glider; greater glider; and little bent-wing bat</li> <li>• Encourage additional fauna surveys</li> <li>• Maintain wildlife corridors</li> <li>• Control introduced animals</li> </ul>	<i>High</i>  <i>Low</i> <i>Medium</i> <i>Medium</i>
<b>4.2.1 Aboriginal heritage</b>	<ul style="list-style-type: none"> <li>• Liase with the Land Councils and the Aboriginal elders about cultural heritage management.</li> <li>• Archaeological site surveys and recording</li> <li>• Consult with the local Aboriginal community in the preparation of educational information in the park</li> <li>• Research cultural and scientific significance of Aboriginal sites</li> </ul>	<i>Ongoing</i>  <i>High</i>  <i>Ongoing</i>  <i>High</i>
<b>4.2.2 Non-Indigenous Heritage</b>	<ul style="list-style-type: none"> <li>• Record historic sites</li> <li>• Encourage historic research</li> <li>• Interpret the history of the park to visitors through interpretative signs at the summit, brochures on the park and interpretative talks</li> </ul>	<i>Medium</i>  <i>Low</i> <i>Medium</i>
<b>4.3.1 Fire Management</b>	<ul style="list-style-type: none"> <li>• Manage fire in accordance with the Section 52(1) Plan, the District Fire Action Plan, Dooragan National Park Fire Management Plan</li> <li>• Suppress wildfires to avoid an unacceptable fire regime</li> <li>• Undertake prescribed burning along urban interface</li> <li>• Carry out prescribed burning to maintain ecological values</li> <li>• Maintain fire trails</li> <li>• Re-vegetate obsolete fire trails</li> <li>• Ensure a co-ordinated approach to fire management within the national park and on adjoining lands</li> <li>• Ensure that fire advantage lines are incorporated into all future neighbouring developments</li> <li>• Establish Community Fire Guard training</li> </ul>	<i>High</i>  <i>High</i>  <i>High</i>  <i>High</i>  <i>Medium</i> <i>Medium</i> <i>Medium</i>  <i>Low</i>  <i>High</i>

	<ul style="list-style-type: none"> <li>• Raise community awareness of the importance of establishing an ecologically acceptable fire regime for the park.</li> <li>• Research into fire behaviour</li> </ul>	<p><i>High</i></p> <p><i>Low</i></p>
<b>4.3.2. Introduced Plants &amp; Animals</b>	<ul style="list-style-type: none"> <li>• Control introduced plants and animals</li> <li>• Monitor the distribution of weeds</li> <li>• Control weeds along the urban interface, in the summit area and along road sides</li> <li>• Priority for weed control is bitou bush and lantana</li> <li>• Control feral animals, in particular foxes and cats</li> <li>• Promote control programs</li> <li>• Educate neighbours on control of cats and dogs and disposal of garden refuse.</li> </ul>	<p><i>High</i></p> <p><i>High</i></p> <p><i>High</i></p> <p><i>High</i></p> <p><i>Medium</i></p> <p><i>Medium</i></p> <p><i>Medium</i></p>
<b>4.4.1 Promotion, Education &amp; Interpretation</b>	<ul style="list-style-type: none"> <li>• Promote the park and its features</li> <li>• Provide information signs</li> <li>• Information displays on the summit</li> <li>• Encourage environmental education</li> </ul>	<p><i>Low</i></p> <p><i>Medium</i></p> <p><i>Medium</i></p> <p><i>Medium</i></p>
<b>4.4.2 Recreational Opportunities</b> <b>The Summit Picnic Area</b>	<ul style="list-style-type: none"> <li>• Recreation will be focused on the summit of North Brother Mountain</li> <li>• Undertake regular surveys of park visitors</li> <li>• Monitor visitor use impact</li> <li>• Maintain summit picnic area within existing area</li> <li>• Limited trimming of trees on the summit to maintain views from the lookouts</li> <li>• Upgrade directional and interpretative signs</li> <li>• Allow wood fires in the barbecues in the interim period until gas barbecues are installed</li> <li>• Install gas barbecues in the picnic area on the summit</li> </ul>	<p><i>High</i></p> <p><i>Medium</i></p> <p><i>Medium</i></p> <p><i>Medium</i></p> <p><i>High</i></p> <p><i>Low</i></p> <p><i>Medium</i></p>
<b>Walking Tracks</b>	<ul style="list-style-type: none"> <li>• Encourage visitor to take their rubbish</li> <li>• Maintain existing walking track system</li> <li>• Re route Laurieton-Summit Track where</li> </ul>	<p><i>Low</i></p> <p><i>High</i></p> <p><i>Medium</i></p>

	necessary	
	<ul style="list-style-type: none"> <li>Consider a sensory walking track</li> </ul>	<i>Low</i>
	<ul style="list-style-type: none"> <li>Upgrade directional and interpretative signs on the rainforest walk</li> </ul>	<i>Medium</i>
	<ul style="list-style-type: none"> <li>Investigate using the old forestry track as a walking track</li> </ul>	<i>Low</i>
<b>Vehicle Access</b>	<ul style="list-style-type: none"> <li>Maintain car park at its current size</li> </ul>	<i>High</i>
	<ul style="list-style-type: none"> <li>Shuttle buses to transport patrons to the summit for organised events</li> </ul>	<i>Medium</i>
<b>Hang Gliding</b>	<ul style="list-style-type: none"> <li>Hang gliders will use the car park at the eastern end of the summit picnic area</li> </ul>	<i>Medium</i>
	<ul style="list-style-type: none"> <li>Maintain the hang gliding ramp</li> </ul>	<i>High</i>
	<ul style="list-style-type: none"> <li>The tree line below the ramp will be maintained at the expense of the hang gliding federation</li> </ul>	<i>High</i>
	<ul style="list-style-type: none"> <li>Require NPWS consent for Adventure activities, including hang gliding and rock climbing</li> </ul>	<i>High</i>
<b>Camping</b>	<ul style="list-style-type: none"> <li>Camping will not be permitted in the park</li> </ul>	<i>High</i>
	<ul style="list-style-type: none"> <li>Gate the road to the summit if required</li> </ul>	<i>Low</i>
<b>Cycling</b>	<ul style="list-style-type: none"> <li>Cycling will only be permitted on Captain Cook Bicentennial Drive and the perimeter fire trail</li> </ul>	<i>High</i>
	<ul style="list-style-type: none"> <li>Cycling will not be permitted on walking tracks</li> </ul>	<i>Low</i>
<b>Group Activities</b>	<ul style="list-style-type: none"> <li>All commercial activities will require a permit from NPWS</li> </ul>	<i>High</i>
	<ul style="list-style-type: none"> <li>Commercial tour groups will be required to have a licence</li> </ul>	<i>High</i>
	<ul style="list-style-type: none"> <li>No exclusive use of part of the park will be permitted</li> </ul>	<i>High</i>
	<ul style="list-style-type: none"> <li>Small non-commercial groups of less than 10 will not require consent</li> </ul>	<i>Medium</i>
	<ul style="list-style-type: none"> <li>Education activities will require a permit from NPWS</li> </ul>	<i>Medium</i>
<b>4.4.4 In holdings and adjoining lands</b>		
<b>Trig</b>	<ul style="list-style-type: none"> <li>Manage the trig station consistent with the park</li> </ul>	<i>High</i>
	<ul style="list-style-type: none"> <li>No recreational facilities will be provided at the trig station</li> </ul>	<i>High</i>
	<ul style="list-style-type: none"> <li>Pursue adding the trig reserve and summit section of the road reserve into</li> </ul>	<i>Medium</i>



<b>Laurieton Quarry</b>	<p>the park</p> <ul style="list-style-type: none"> <li>• Investigate adding the undisturbed, top portion of the quarry reserve into the park</li> <li>• Ensure use of quarry is consistent with the management of the park</li> </ul>	<p><i>Medium</i></p> <p><i>Medium</i></p>
<b>4.4.5 Management Operations</b>	<ul style="list-style-type: none"> <li>• Trails will be gated</li> <li>• Tracks and trails not needed for management purposes will be closed</li> <li>• Fence along Laurie Street</li> </ul>	<p><i>Medium</i></p> <p><i>Low</i></p> <p><i>Low</i></p>

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## Appendix 1: Native Plant Communities in the Park

Plant community	Occurrence
<p><b>Dry Sclerophyll Forest</b></p> <p>Dry Blackbutt Forest is dominated by blackbutt <i>Eucalyptus pilularis</i>. In most places, tallowwood <i>E. microcorys</i>, pink bloodwood <i>Corymbia intermedia</i>, white mahogany <i>E. acmenoides</i>, and ironbark <i>E. siderophloia</i> are also common canopy species.</p> <p>White Mahogany/Tallowwood Forest canopy is dominated by white mahogany <i>E. acmenoides</i> and tallowwood <i>E. microcorys</i>. Other canopy species include pink bloodwood <i>Corymbia intermedia</i>, red bloodwood <i>C. gummifera</i>, red mahogany <i>E. resinifera</i>, grey ironbark <i>E. placita</i>, ironbark <i>E. siderophloia</i> and forest red gum <i>E. tereticornis</i>.</p> <p>Blue-leaved Stringybark/White Stringybark Forest is dominated by stringybarks, <i>Eucalyptus agglomerata</i> and <i>E. globoidea</i>, with blackbutt, small-fruited grey gum <i>E. propinqua</i>, tallowwood, pink bloodwood and red bloodwood also present.</p>	<p>Widespread in the park. Occurs on moderately steep slopes.</p> <p>Found in patches in the northern part of the park. This association is located on exposed north and north-east facing slopes where soils are shallow.</p> <p>Confined to drier west to north facing hill slopes.</p>
<p><b>Wet Sclerophyll Forest</b></p> <p>Blackbutt Wet Sclerophyll Forest is dominated by blackbutt, with turpentine <i>Syncarpia glomulifera</i>, pink bloodwood and tallowwood common associates.</p> <p>Red Gum Forest canopy is dominated by forest red gum <i>E. tereticornis</i>, with tallowwood and swamp oak <i>Casuarina glauca</i> also common.</p> <p>Brush Box Forest canopy is dominated by brush box <i>Lophostemon confertus</i>, <i>Calchuvia paniculosa</i>, and Crabapple <i>Schizomeria ovata</i></p> <p>Flooded Gum <i>E. grandis</i> Forest.</p>	<p>Moister south and east facing slopes of the reserve</p> <p>Restricted to two narrow foreshore locations in the south-eastern section of the park.</p> <p>Confined to protected gullies.</p> <p>Confined to the protected lower altitude gullies in the southern part of the park.</p>
<p><b>Rainforest</b></p> <p>The emergent canopy is dominated by brush box and strangler fig <i>Ficus watkinsiana</i>. The upper strata is diverse, and commonly contains black booyong <i>Heritiera actinophylla</i>, brown beech <i>Pennantia cunninghamiana</i>, crabapple <i>Schizomeria ovata</i>, <i>Daphandra micranthes</i>, Olivers sassafras <i>Cinnamomum oliveri</i> and bangalow palm <i>Archontophoenix cunninghamiana</i>. The mid strata predominantly contains bangalow palm, black booyong, maidens blush <i>Sloanea australis</i>, prickly treefern <i>Cyathea leichardtiana</i> and <i>Cuttsia virburnea</i>. The lowest strata is dominated by trim shield fern <i>Lastreopsis decomposita</i>, fragrant fern <i>Microsorium scadens</i>, settlers flax <i>Gymnostaches anceps</i> and jungle bristle fern <i>Macroglena caudata</i>.</p>	<p>Confined to the south facing slopes.</p>