



Environment,
Climate Change & Water
National Parks & Wildlife Service



Kooraban National Park

Plan of Management



KOORABAN NATIONAL PARK

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

Part of the Department of Environment, Climate Change and Water

February 2011

This plan of management was adopted by the Minister for Climate Change and the Environment on 11th January 2011.

Acknowledgments

This plan of management is based on a draft plan prepared by staff of the Far South Coast Region of the National Parks and Wildlife Service (NPWS), part of the Department of Environment and Conservation.

The NPWS acknowledges that this Kooraban National Park is in the traditional country of the Yuin people.

Cover photograph by Sam Rando.

Inquiries about this park or this plan of management should be directed to the NPWS Narooma Office, PO Box 282, Narooma, 2546 or by telephone on (02) 4476 2888.

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FOREWORD

Kooraban National Park is located approximately 5 kilometres north of the township of Cobargo on the South Coast of NSW. It was reserved in 2001 and covers an area of 11,644 hectares.

Kooraban National Park extends from the edge of the Narira Creek valley in a north-westerly direction for a distance of 20 kilometres to the banks of the Tuross River, and forms part of an east-west link between the protected areas of the coast and the Monaro tablelands. It contains most of the upper catchment of Dignams Creek, which is a major tributary of Wallaga Lake, four regionally significant vegetation communities and habitat for 20 species of threatened animals, including koalas, spotted-tailed quolls, long-nosed potoroos and southern brown bandicoots.

The park is part of the traditional country of the Yuin Aboriginal people, and many of the roads, walking tracks and bridle trails in the park follow the routes of Aboriginal pathways linking the coast with the Monaro tablelands.

The New South Wales *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each national park. A draft plan of management for Kooraban National Park was placed on public exhibition from 17th November 2006 until 26th February 2007. The submissions received were carefully considered before adopting this plan.

The plan contains a number of actions to achieve the State Plan priority to “Protect native vegetation, biodiversity, land, rivers and coastal waterways”, including liaising with the Southern Rivers Catchment Management Authority with the aim of minimising impacts upon water quality, undertaking koala surveys, undertaking weed and pest animal control, and closing and rehabilitating roads no longer required. The plan also contains a number of actions to help “Increase the number of visits to parks”, including the park’s continued use for scenic driving, bushwalking and horse riding, and the development of a number of low key interpretive sites.

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

A handwritten signature in black ink, appearing to read 'Frank Sartor', written in a cursive style.

Frank Sartor MP
Minister for Climate Change and the Environment

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1. INTRODUCTION

This plan of management has been prepared in accordance with the New South Wales *National Parks and Wildlife Act 1974* to provide a framework of objectives, policies and actions to guide the long-term management of Kooraban National Park.

The provisions of the plan have been influenced by legislative requirements, government strategies and policies, and regional and local planning instruments. They are based upon an appreciation of the significance of the values of the park, and relevant management issues and opportunities. This information has been gained from a variety of sources including field staff, specialists and members of the local community.

A plan of management is a legal document. Once the Minister for the Environment has adopted this plan, no operation may be undertaken within Kooraban National Park except in accordance with this plan. The plan will also apply to any future additions to the park. Where management strategies or works are proposed that are inconsistent with this plan, a formal amendment will be required.

2. MANAGEMENT CONTEXT

2.1 NATIONAL PARKS IN NEW SOUTH WALES

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

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

The key legislation governing the management of national parks in New South Wales is the *National Parks and Wildlife Act 1974*. Section 30E of the Act is based upon the IUCN definition. It states that the purpose of reserving land as a national park is to identify, 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 and enjoyment.

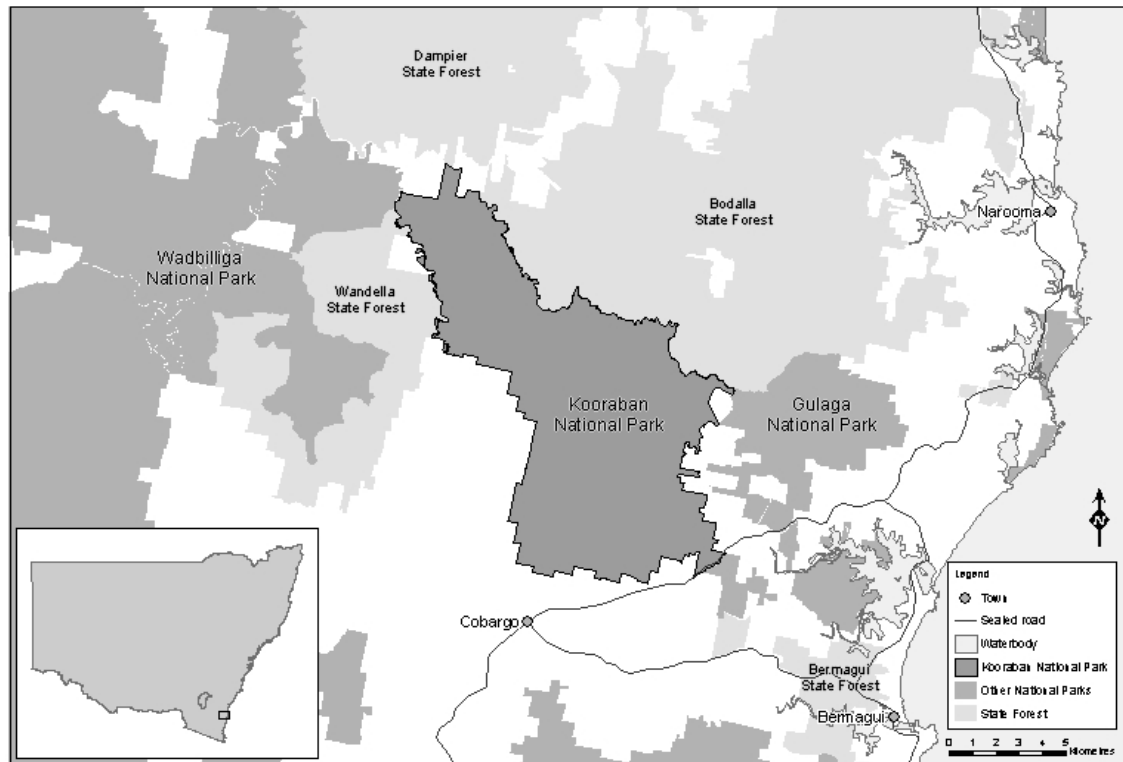
2.2 KOORABAN NATIONAL PARK

2.2.1 Location, Reservation and Regional Setting

Kooraban National Park is located on the South Coast of NSW, approximately 5 kilometres north of the township of Cobargo (refer Map 1). Covering 11,644 hectares, the park extends from the edge of the Narira Creek valley in a north-westerly direction for a distance of 20 kilometres to the banks of the Tuross River. The name “Kooraban” is the local Aboriginal word for “koala”.

The park was proclaimed on 1st January 2001 as an outcome of the Southern Regional Forestry Agreement following the passage of the *National Park Estate (Southern Region Reservations) Act 2000*. Prior to gazettal, the area formed a

portion of Bodalla State Forest and was primarily managed for timber production. The park includes the former Tinpot Flora Reserve which was dedicated in 1966 as an extension to Bodalla State Forest.



Map 1 Kooraban National Park and Surrounds

Kooraban National Park forms part of a 50 kilometre long east-west regional corridor of contiguous protected areas that stretches from sea level at Wallaga Lake to over 1000 metres above sea level (ASL) in the upper reaches of the Tuross River. To the east, the park adjoins Gulaga National Park and freehold properties located along the middle reaches of Dignams Creek. In the north-west, the park joins Wadbilliga National Park and Wandella State Forest while to the south and west it is bounded by largely cleared freehold properties in the valleys of Narira and Wandella Creeks. The northern boundary of the park adjoins Bodalla State Forest and a number of private holdings situated along the Tuross River.

The national park is located within the Bega Valley and Eurobodalla Shires, and the boundaries of the Merrimans and Wagonga Local Aboriginal Land Council areas.

2.2.2 Significance of Kooraban National Park

Kooraban National Park is regionally significant in that it forms part of an east-west link of protected areas that extends inland from the coast to the Monaro tablelands. This corridor, in turn, joins a north-south aligned chain of national parks that stretches along the escarpment forests from the Illawara to East Gippsland in Victoria.

Six vegetation communities in the park are considered to be of conservation significance. Of these, the following four communities are regarded as regionally significant as large parts of their former extent have been cleared or severely modified for agriculture:

- Coastal Lowlands Riparian Herb/Grass Forest – various eucalypts;
- Southern Hinterland Shrub/Herb/Grass Riparian Forest - rough-barked apple (*Angophora floribunda*), river peppermint (*Eucalyptus elata*) and black wattle (*Acacia mearnsii*);
- Riparian Acacia Shrub/Grass/Herb Forest - river oak (*Casuarina cunninghamiana*); and
- Southern Escarpment Herb/Grass Dry Forest - rough-barked apple (*Angophora floribunda*), forest red gum (*Eucalyptus tereticornis*).

Stands of South Coast Acacia Scrubs - Bodalla wattle (*Acacia silvestris*) occurring in the park are of regional significance as they are near the northern limit of distribution for this community. The narrow strips of Southern Coastal Hinterland Dry Gully Rainforest – grey myrtle (*Backhousia myrtifolia*) that occur in the most sheltered valley locations are significant in the context of the park due to their limited and scattered distribution.

Despite a history of disturbance, the park is considered to be of regional significance as a refuge for threatened animal species. Twenty species listed as vulnerable under the NSW *Threatened Species Conservation Act 1995* have been recorded in the park including spotted-tailed quolls (*Dasyurus maculatus*), long-nosed potoroos (*Potorous tridactylus*) and southern brown bandicoots (*Isodon obesulus*). The small population of koalas (*Phascolarctos cinereus*) that persists in the Dignams Creek valley has high conservation significance as the species has suffered dramatic declines along the South Coast and may be facing regional extinction (Allen 2004).

Various tangible and intangible cultural values of the park are significant to local Aboriginal people. The route of a long-distance pathway linking the coast with the tablelands (part of which is located in the park) is likely to hold regional cultural significance for both Aboriginal and non-Aboriginal people. The history, stories and physical evidence of gold mining and timber cutting in the park are of local significance to people in the district.

The forested landscapes of the park contrast sharply with the nearby cleared valleys and are of considerable aesthetic value. The wooded ridges that mark the southern and western edges of the park form the principal backdrop to the village of Cobargo and various properties along the Narira and Wandella valleys. They are prominent landscape features in vistas from as far south as Brogo.

The park protects most of the upper catchment of Dignams Creek, which is a major tributary of Wallaga Lake. Maintaining high water quality in the creek is vital to the health of the lake which is an important fish hatchery and recreational and commercial fishing resource. (Wallaga Lake is now within the Batemans Marine Park.). It is also important to the residents of Dignams Creek valley who rely upon the creek for their domestic water use.

The park is an important recreational venue for a small number of visitors who undertake four wheel driving, trail bike riding, bushwalking and horse riding trips in the area. The undeveloped nature of the park, and the sense of isolation it affords, contrasts with the more developed recreational settings available at nearby coastal parks.

3 OBJECTIVES OF MANAGEMENT

3.1 GENERAL OBJECTIVES FOR NATIONAL PARKS

Under the *National Parks and Wildlife Act 1974*, the general objectives guiding the management of national parks are:

- 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 or tourist 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; and
- Provision for appropriate research and monitoring.

3.2 SPECIFIC OBJECTIVES FOR KOORABAN NATIONAL PARK

In addition to the general management objectives for national parks, the management of Kooraban National Park will be guided by the following specific objectives:

- Improvements in our knowledge of the natural and cultural values of the park and their significance and management requirements;
- Enhancement of the long-term viability of all significant vegetation communities and all populations of threatened animal species inhabiting the park;
- Restoration of areas and attributes disturbed by past forestry activities;
- Protection of the water catchment values of the park; and
- Retention of the largely undeveloped nature of the recreational settings provided in the park.

3.3 OVERALL MANAGEMENT STRATEGY

Kooraban National Park will primarily be managed so as to enhance its value as a refuge for native plants and animals, especially threatened species. The strategy to achieve this will include:

- Undertaking additional flora and fauna surveys to improve our knowledge and understanding of the natural attributes of the park and their management needs;
- Managing significant vegetation communities and threatened plant and animal species in accordance with relevant recovery plans and specific management regimes designed to facilitate their long-term survival;
- Rehabilitating areas and attributes disturbed by past forestry activities;
- Managing fire so as to maintain or enhance biodiversity, protect habitat attributes and minimise the deleterious effects of wildfires; and
- Continuing to conduct surveys to determine the distribution and abundance of weed and feral animal species and undertake cooperative control programs.

Cultural heritage surveys and research will be undertaken to ensure that these values are recorded and appropriately protected and interpreted. Site-specific conservation programs will be prepared and implemented as necessary.

The development of recreational or management infrastructure will be kept to a minimum. Recreation management will continue to be directed at providing opportunities for visitors to undertake activities in largely undeveloped settings.

4. POLICIES AND FRAMEWORK FOR MANAGEMENT

The management objectives for Kooraban National Park are to be realised through the implementation of a suite of policies and related actions. The following sections consist of background information and descriptions of pertinent management issues and opportunities relevant to particular park values, followed by sets of policies and actions. For reasons of clarity and document usefulness, individual natural and cultural values are dealt with separately, though their inter-relationships are recognised.

Where not specifically provided for in this plan, management will be in accordance with the provisions of the *National Parks and Wildlife Act 1974* and Regulation, the *Threatened Species Conservation Act 1995*, and the statewide policies of the National Parks and Wildlife Service.

4.1 NATURAL HERITAGE

4.1.1 Landforms, Geology, Soils and Hydrology

The topography of Kooraban National Park is relatively uniform, consisting of a series of moderate to steeply sloping ridges dissected by small creeks. These watercourses typically occupy narrow, incised valleys in which there is limited development of creek flats. Low cliffs are present along the banks of the Tuross River and in the upper reaches of Dignams Creek. Small caves have formed in some of the clifflines in the Dignams Creek valley. Jeffers Peak, at 549 metres ASL, is the highest point in the park. It is located along a short range of 400-500 metres elevation that forms the watershed of the north-east corner of the cleared Wandella valley. The remainder of the park is generally at moderate elevations of 50 to 300 metres ASL.

The underlying geology of the park primarily consists of Ordovician metasediments of folded greywackes and pelites (Packham 1969). The western and southern margins of the park bordering the cleared Wandella and Narrira Creek valleys are underlain by Devonian granite. A small part of the Cretaceous Mount Dromedary monzonite complex that outcrops in the valley of Jimmys Creek lies within the far eastern end of the park. Quaternary sediments (gravel, sand, silt) have been deposited in places along a number of creeklines in the park, most notably the Tuross River, Wandella Creek and Dignams Creek.

The soils formed from the Ordovician sediments are generally shallow, rocky and of low fertility, as are those derived from the Devonian granite. By contrast, soils in the Jimmys Creek area formed from the Mount Dromedary intrusion are moderately fertile.

Most of the watercourses in the park are ephemeral. Those in the southern and eastern parts of the reserve are mostly tributaries of Dignams Creek which flows across the park in an easterly direction. Northern watercourses feed into tributaries of the Tuross River, most notably Red Bank and Wandella Creeks. Water quality in these watercourses is generally high, though agricultural development in the upper reaches of Dignams and Wandella Creeks has impacted upon the integrity of these streams. Intensive logging and roading operations in parts of the park prior to reservation have resulted in localised alteration of soil profiles and may have caused erosion and stream sedimentation.

Broadscale episodic soil loss and sedimentation may potentially occur in the park as a result of inappropriate fire regimes or fire events that remove the soil stabilising vegetative cover and forest litter layer (refer Section 4.1.4). Such problems may also occur at a localised level due to road construction and maintenance activities.

POLICIES & ACTIONS

- 1 Investigate whether any sites associated with past forestry operations are actively eroding. If found, map and undertake stabilisation and rehabilitation works at these sites. Prioritise site rehabilitation works based upon the significance of values threatened and the potential for rapid deterioration.**
- 2 Maintain an inventory of all disturbed sites associated with past forestry activities and monitor the effectiveness of natural revegetation and active rehabilitation measures in stabilising these areas. Undertake remedial work, as necessary, in response to monitoring results.**
- 3 Close all roads no longer required for park management or public access purposes (refer also to Section 4.6).**
- 4 Liaise with the Southern Rivers Catchment Management Authority regarding the management of properties in the valleys of Wandella and Dignam Creeks with the aim of minimising impacts upon water quality in these streams.**

4.1.2 Native and Introduced Plants

The relatively uniform series of ridges and gullies of the park support a relatively consistent vegetation pattern. A number of related forest ecosystems intergrade or merge across the landscape, with gradual changes in species composition and dominance primarily reflecting changes in exposure to sun and fire.

The forest ecosystems of Kooraban National Park were mapped as part of the comprehensive regional assessment process that preceded the finalisation of a regional forest agreement for the South Coast in 2000 (Thomas et al 2000). The vegetation classification system developed during that process has been used in this plan. Additional vegetation survey work was subsequently commissioned by the NPWS for the park (NGH 2002).

The ridgetops and upper slopes of the park are largely covered by Southern Coastal Hinterland Shrub/Tussock Grass Dry Forest and Southern Coastal Lowlands Shrub/Grass Dry Forest. Together, these two dry open forest types account for a third of the park area. They are dominated by canopy species such as blue-leaved stringybark (*Eucalyptus agglomerata*), yellow stringybark (*E. muelleriana*), woollybutt

(*E. longifolia*), coastal grey box (*E. bosistoana*) and ironbark (*E. tricarpa*). The understoreys of these forests are sparse, mostly consisting of grasses and herbs with scattered small shrubs. On dry northerly and westerly aspects, these communities merge into forests dominated by silvertop ash (*E. sieberi*) and white stringybark (*E. globoidea*) known as Southern Coastal Hinterland Intermediate Altitude Dry Forest. This ecosystem also has a sparse understorey of grasses, herbs and small shrubs. Small patches of South Coast Acacia Scrubs dominated by Bodalla silver wattle (*Acacia silvestris*) also occur on exposed slopes. They are usually found on skeletal soils associated with steep rocky sites and are limited in extent within the park to about 100 hectares. These occurrences are significant in that they are near the northern limit of distribution of this community.

The middle slopes of the park are occupied by Coastal Escarpment and Hinterland Shrub/Fern Dry Forest. This open forest is dominated by yellow stringybark (*E. muelleriana*), monkey gum (*E. cypellocarpa*), woollybutt (*E. longifolia*) and coastal grey box (*E. bosistoana*) and has a shrubby understorey of species such as *Leucopogon lanceolatus* and hickory wattle (*Acacia falciformis*). This ecosystem covers just over 4,000 hectares and represents the commonest vegetation type in the park.

Lowland Dry Shrub Forest dominated by red bloodwood (*Corymbia gummifera*) and yertchuk (*E. considianiana*) occurs on sandy shallow soils in moderately exposed situations such as low ridges and adjacent slopes. This community has a highly diverse shrub layer characterised by species such as hairpin banksia (*Banksia spinulosa*) and black-eyed susan (*Tetratheca thymifolia*).

Sheltered slopes and the upper reaches of gullies support stands of Southern Coastal Hinterland Shrub/Vine/Grass Moist Forest. This forest type occupies more than 2,900 hectares of the park and is dominated by yellow stringybark (*E. muelleriana*) and mountain grey gum (*E. cypellocarpa*). The most favourable locations support trees up to 40 metres in height and dense understoreys dominated by various wattles (*Acacia spp.*). Bangalay (*E. botryoides*) and river peppermint (*E. elata*) are both common canopy trees in these moist forests and the two key riverine communities that occupy the lower gully slopes and creek valleys.

Stands of Coastal Lowlands Riparian Herb/Grass Forest and Southern Hinterland Shrub/Herb/Grass Riparian Forest occur in belts up to 250 metres wide along various watercourses in the park including the Tuross River and Wandella, Red Bank and Dignams Creeks. Both of these communities are dominated by species such as rough-barked apple (*Angophora floribunda*), river peppermint (*E. elata*) and black wattle (*Acacia mearnsii*) and only differ in the degree to which rainforest plants such as grey myrtle (*Backhousia myrtifolia*) and lillypilly (*Acmena smithii*) have colonised the understoreys. These two riparian communities occupy some 440 hectares of the park. They are regarded as significant because large parts of their former extent have been cleared for agriculture.

The most sheltered valley locations in the park support small stands of Southern Coastal Hinterland Dry Gully Rainforest. Totalling 640 hectares in area, these narrow strips of closed rainforest are usually dominated by trees of grey myrtle and lillypilly that typically reach 15-20 metres in height. Taller emergents of blue box (*E. baueriana*) and yellow stringybark (*E. muelleriana*) are commonly scattered throughout these communities that generally have a sparse understorey except under canopy gaps. This vegetation type is considered to be of conservation significance due to its limited and scattered distribution in the park.

Another vegetation type of limited extent is Southern Escarpment Herb/Grass Dry Forest. This community, which is dominated by forest red gum (*E. tereticornis*) and rough-barked apple (*Angophora floribunda*), occurs on exposed lower slopes and ridges above the Tuross River and in a small area above Wandella Creek near the Recoil Road ford. It contains a dense understorey of small trees and shrubs such as hickory wattle (*Acacia falciformis*), narrow-leaved geebung (*Persoonia linearis*) and the characteristic prickly beard heath (*Leucopogon juniperinus*). Adjoining this community at the Tuross River is a fringe of Riparian Acacia Shrub/Grass/Herb Forest that extends for a width of up to 100 metres across the lower banks and bed of the river. This vegetation type is dominated by bands of river oak (*Casuarina cunninghamiana*) that run parallel to the direction of flow. The understorey includes white sally wattle (*Acacia floribunda*), tree violet (*Hymenanthera dentata*) and conspicuous stands of stout bamboo grass (*Stipa ramosissima*). Both of these vegetation types are of high conservation significance as elsewhere in the region they have largely been cleared for agriculture or are severely disturbed.

The park, itself, has a long history of disturbance. The area was formerly part of Bodalla State Forest and has been extensively logged. It has also been a source of firewood for contractors and local residents. The extent of past logging and fire impacts is reflected in the small amount of old-growth eucalypt forest remaining, which totals 2,348 hectares or 17% of the park area.

Past and ongoing disturbance within and adjacent to the park has also contributed to the presence and distribution of weed species. The dry ridges and slopes of the park do not provide favourable conditions for many introduced plants. Instead, weed infestations are usually found along gullies and creeklines with weed populations typically concentrated around and downstream of disturbed sites such as roads or farmland. Localised infestations of blackberry (*Rubus sp*) and mat-forming species such as wandering jew (*Tradescantia fluminensis*) and periwinkle (*Vinca major*) occur at a number of creek and gully crossings in the park. Small infestations of agricultural weeds such as petty spurge (*Euphorbia peplus*), flatweed (*Hypochaeris radicata*), centaury (*Centaureum erythraea*), cobblers peg (*Bidens pilosa*), black thistle (*Cirsium vulgare*) and fleabane (*Conyza albida*) also occur, as does kikuyu grass (*Pennisetum clandestinum*) which is present along some trail margins. Isolated infestations of lantana (*Lantana camara*) occur at a number of locations along the park boundary.

The forest red gum and river oak communities along the Tuross River contain significant weed infestations due to upstream disturbance. Minor infestations of semi-aquatic weeds, such as watercress (*Rorippa nasturtium-aquatica*) and water speedwell (*Veronica anagallis-aquatica*), occur in the upper reaches of Dignams Creek near where it leaves private property. Two rampant exotic vines, Cape ivy (*Delairea odorata*) and moth plant (*Araujia sericifera*), are common along the lower reaches of the creek on private property but have not yet been recorded in the park. Weed control is undertaken in accordance with the Kooraban National Park Pest Management Strategy (NPWS 2002) which gives priority to controlling most of the above-mentioned weed species.

Little is known of the non-vascular plants (lichens, mosses, fungi, liverworts) of the park.

POLICIES & ACTIONS

- 1 Investigate and pursue opportunities to undertake additional surveying and mapping of the composition and distribution of native plant communities**

and species through partnerships with appropriate tertiary institutions, voluntary organisations, community groups and individuals.

- 2 Map areas of recent logging regrowth.
- 3 Implement the relevant provisions of recovery plans and the priorities action statement for all plant species found to occur in the park that are listed under the *Threatened Species Conservation Act 1995*.
- 4 As far as possible, exclude fire from all areas of recent logging regrowth except for those contained within strategic hazard reduction burning zones (refer Section 4.1.4). Prepare fire protection strategies for recent logging regrowth areas.
- 5 Use fire to maintain or enhance the biodiversity of all vegetation communities present. Through the provisions of the Fire Management Strategy, provide special attention to the following vegetation communities to ensure their long-term health and viability:
 - Coastal Lowlands Riparian Herb/Grass Forest – various eucalypts;
 - Southern Hinterland Shrub/Herb/Grass Riparian Forest - rough-barked apple (*Angophora floribunda*), river peppermint (*Eucalyptus elata*) and black wattle (*Acacia mearnsii*);
 - Riparian Acacia Shrub/Grass/Herb Forest - river oak (*Casuarina cunninghamiana*); and
 - Southern Escarpment Herb/Grass Dry Forest - rough-barked apple (*Angophora floribunda*), forest red gum (*Eucalyptus tereticornis*);
 - South Coast Acacia Scrubs – Bodalla wattle (*Acacia silvestris*); and
 - Southern Coastal Hinterland Dry Gully Rainforest – grey myrtle (*Backhousia myrtifolia*). (refer to Section 4.1.4.)
- 6 Continue to undertake weed control programs in accordance with the priorities identified in the Kooraban National Park Pest Management Strategy.
- 7 Continue to monitor and map changes in the distribution of all major weed species in response to control programs. Alter control programs as required in response to monitoring results.
- 8 Within the context of the Kooraban National Park Pest Management Strategy, further develop cooperative arrangements with park neighbours concerning weed control programs, particularly landowners in the upper catchment of Dignams Creek and the Wandella Creek valley.

4.1.3 Native and Introduced Animals

Although systematic fauna surveys have yet to be undertaken in the park, the area is known to provide habitats for a wide variety of forest-dwelling animals. These include 20 species that are listed as vulnerable under the NSW *Threatened Species Conservation Act 1995* (TSC Act).

Ground-dwelling mammal species in the park include swamp wallabies (*Wallabia bicolor*), red-necked wallabies (*Macropus rufogriseus*), common wombats (*Vombatus ursinus*), long-nosed bandicoots (*Perameles nasuta*), brown antechinus (*Antechinus stuartii*) and dusky antechinus (*Antechinus swainsonii*). The park is also inhabited by spotted-tailed quolls (*Dasyurus maculatus*), long-nosed potoroos (*Potorous tridactylus*), southern brown bandicoots (*Isoodon obesolus*) and white-footed dunnarts (*Sminthopsis leucopus*), all of which are listed as vulnerable species.

Dingoes (*Canis lupus dingo*) are also present in the park. Kooraban National Park, together with neighbouring national parks and state forest areas, is listed in Pest Control Order 2 for Wild Dogs under the *Rural Lands Protection Act 1998*. Wild dog management in listed areas is aimed at conserving as well as controlling dingo populations. To this end, the core area of Kooraban National Park is managed as a Dingo Conservation Area.

Arboreal mammals present in the park include the common brushtail possum (*Trichosurus vulpecula*), common ringtail possum (*Pseudocheirus peregrinus*) and a variety of gliders – greater gliders (*Petauroides volans*), sugar gliders (*Petaurus breviceps*), feathertail gliders (*Acrobates pygmaeus*), squirrel gliders (*Petaurus norfolcensis*) and yellow-bellied gliders (*Petaurus australis*). Squirrel and yellow-bellied gliders are both listed as vulnerable species, as is the brush-tailed phascogale (*Phascogale tapoatafa*) which has also been recorded.

A small population of koalas (*Phascolarctos cinereus*) is present in the Dignams Creek area of the park. Formerly abundant, koala numbers in the South Coast region have dramatically declined to perhaps less than 50 animals. The species is listed as vulnerable in NSW and may be facing regional extinction (Allen 2004). As such, the Dignams Creek population, which may only consist of a few individuals, has high conservation significance. These animals are likely to be linked with nearby koala breeding groups near Murrah, Bermagui and Tilba.

Platypus (*Ornithorhynchus anatinus*) have been observed in the Tuross River and Dignams Creek, and may also be present in suitable reaches of some of the other watercourses in the park. Echidnas (*Tachyglossus aculeatus*) also occur throughout the area.

The park contains a rich diversity of forest and woodland bird species that includes lyrebirds (*Menura novaehollandiae*), yellow-tailed black cockatoos (*Calyptorhynchus funereus*), crested shrike-tits (*Falcunculus frontatus*), dollarbirds (*Eurystomus orientalis*), white-throated nightjars (*Eurostopodus mystacalis*) and red-browed treecreepers (*Climacteris erythrops*). Three owl species, all of which are listed as vulnerable, have been recorded in the park – the powerful owl (*Ninox strenua*), masked owl (*Tyto novaehollandiae*) and sooty owl (*Tyto tenebricosa*). Other vulnerable bird species that are present are the glossy black cockatoo (*Calyptorhynchus lathami*), gang gang cockatoo (*Callocephalon fimbriatum*), olive whistler (*Pachycephala olivacea*), pink robin (*Petroica rodinogaster*) and square-tailed kite (*Lophoictinia isura*).

Of the forest bats, the little red flying fox (*Pteropus scapulatus*), golden-tipped bat (*Kerivoula papuensis*) and the common bentwing bat (*Miniopterus schreibersii*) are likely inhabitants of the park. Other bat species recorded or considered likely to be present include the eastern false pipistrelle (*Falsistrellus tasmaniensis*), greater broad-nosed bat (*Scoteanax rueppellii*) and large-footed myotis (*Myotis adversus*), all of which are listed as vulnerable under the TSC Act.

Little is known of the reptile, amphibian, fish or invertebrate fauna of the park. Four snake species - the southern death adder (*Acanthophis antarcticus*), red-bellied black snake (*Pseudechis porphyriacus*), eastern brown snake (*Pseudonaja textilis*) and diamond python (*Morelia spilota spilota*), commonly occur in the area, as does the lace monitor (*Varanus varius*). Of the frog species, the giant burrowing frog (*Heleioporus australiacus*), is likely to be present and is listed as vulnerable in NSW. The leaf green tree frog (*Litoria phyllocroa*) has been found in the park in Dignams

Creek, and the endangered green and golden bell frog (*Litoria aurea*) has been recorded within 5 kilometres of the park.

Of the threatened species found in or near the park, recovery plans have been prepared for southern brown bandicoots, yellow-bellied gliders, koalas, the large forest owls and green and golden bell frogs.

The effects of introduced species on the native fauna of the park are likely to be severe and include predation and competition for resources. Dingoes in the park, as elsewhere, are subject to genetic dilution from interbreeding with wild dogs (*Canis lupus*). Foxes (*Vulpes vulpes*), cats (*Felis catus*), deer (*Cervus spp*) and rabbits (*Orytolagus cuniculus*) are also present. The construction of vehicular tracks prior to the gazettal of the park are likely to have favoured the entry and dispersal of feral animal species. Strategic wild dog and fox baiting programs are undertaken in the peripheral areas of the park as part of the Wadbilliga Co-operative Wild Dog and Fox Control Plan involving the National Parks and Wildlife Service, Forests NSW, Rural Lands Protection Boards and private landowners (NPWS et al 2004). Feral animal control is also guided by the Kooraban National Park Pest Management Strategy (NPWS 2002) which gives priority to controlling all of the above-mentioned pest species.

Weeds may also impact upon the native fauna of the park, especially those species that inhabit or utilise riparian habitats. Infestations of weeds such as blackberry (*Rubus sp*) can create access barriers for some native animals and may harbour feral animals.

Fire is a significant determinant in the distribution, abundance and survival of many native animal species. While individual animals and populations are directly killed by fire, fire can also result in the loss of critical habitat such as hollow-bearing mature trees which are relied upon by many of the threatened arboreal mammal and bird species found in the park. Other fire-caused habitat alterations may include the depletion of fallen wood debris and changes in the availability or abundance of food resources. Conversely, frequent burning can result in population increases for some animal species.

The health of the aquatic fauna of the park is dependent on the maintenance of high water quality. This can be impaired through sedimentation associated with the loss of vegetative cover due to fires or agricultural and forestry activities on neighbouring lands.

POLICIES & ACTIONS

- 1 Investigate and pursue opportunities to undertake additional fauna survey work in the park through partnerships with appropriate tertiary institutions, voluntary organisations, community groups and individuals, including surveys for threatened animal species known or predicted to occur in the park or adjacent areas.**
- 2 Expand the koala survey work previously undertaken in the park to include areas that koalas are known to have occupied in the recent past.**
- 3 Implement the relevant provisions of recovery plans and the priorities action statement for all animal species found to occur in the park that are listed under the *Threatened Species Conservation Act 1995*.**

- 4 Use data management systems (eg FeralBASE) to record and evaluate pest species management programs in the park. Alter control programs as required in response to monitoring results.**
- 5 Continue to undertake feral animal control programs in accordance with the priorities identified in the Kooraban National Park Pest Management Strategy.**
- 6 Continue to prepare, review, evaluate and implement cooperative pest management programs with neighbours, Rural Lands Protection Boards and Forests NSW.**

4.1.4 Fire Management

Fire has had a significant influence on the biota of the area now included in Kooraban National Park for tens of thousands of years. Occasional fires ignited by electrical storms and those lit by Aboriginal people have largely shaped the pattern of plant species and communities present and their interdependent fauna.

Documentary evidence of Aboriginal use of fire in the forests of the South Coast region is extremely limited. Several early European accounts note that fire was used for hunting, either as a means of moving game or for smoking animals out of trees (Sullivan 1982). It was also used for signalling, the promotion of new growth to attract game to an area, and to clear undergrowth for easier walking along pathways and around living areas. Early records indicate that such fires often burnt large tracts of forest. Deliberately or inadvertently, these fires resulted in the containment of rainforest communities to fire-protected sites and the maintenance of more productive open forest types across large parts of the landscape.

The likely Aboriginal fire regime of relatively frequent low-intensity fires changed with the arrival of European settlers in the Cobargo district in the 1830s. Clearing of the foothills and valley floors for agriculture was accompanied by intensive use of fire as was gold mining. It is likely that these fires also burnt large areas of forest beyond the valley confines. With the cessation of Aboriginal burning practices and the scaling back of land clearing activities, the fire regime in the hinterland forests became characterised by infrequent but intense conflagrations. The park area (then a portion of Bodalla State Forest) was severely burnt in 1952 and again in 1968.

A hazard reduction burning program was introduced in the area in the 1970s and 1980s to change this fire pattern. The key aim of this program, which continues, has been to use frequent, low-intensity burns to reduce fuel loads. Under the program, annual burnt areas totalled more than 6,000 hectares in the late 1980s, to be reduced in later years to about 1,000 hectares annually.

Since the introduction of hazard reduction burning, there have been 18 wildfires in the park area that have together burnt almost 5,000 hectares. These fires have typically occurred during the four-month period between January and April with the highest incidence being in January. Most of these fires have been relatively small (less than 50 hectares) with larger fires usually coinciding with prolonged periods of drought conditions.

The management of fire in the park is an important and complex task that is directed at conserving the values of the area while protecting life and property within and adjacent to the reserve.

Fire is recognised as a natural feature of the park environment and essential to the ongoing survival of certain plant and animal species and communities. Conversely, too frequent burning can result in the extinction of particular plants and animals. A variety of fire regimes is necessary in order to conserve floristic and habitat diversity. Fire management aims to maintain or enhance this diversity by restricting planned and, if possible, unplanned fires to only a portion of the distribution of a vegetation type at any one time. The desired result of this approach is a mosaic of age classes for each of the vegetation types present in the park.

Fire can also damage some Aboriginal sites, historic features and recreation facilities, and threaten visitors and neighbouring land. Broadscale fires originating in agricultural or forested lands to the north or west of the park have the potential to burn through the park and threaten properties located in the Dignams Creek valley. Elsewhere, the risk of fires burning from the park onto neighbouring properties is generally considered to be low, except in extreme fire years, as most holdings are located downhill of the reserve. Instead, private properties adjoining the park have been the source of the majority of the fires that have burnt parts of the park. For this reason, in recent years hazard reduction burning has focused on the interfaces of the park with private property.

A trail network has been maintained in the park to assist with fire management. This includes a system of boundary trails for property protection, strategic trails for back burning and hazard reduction burning operations, and through-roads for rapid fire access.

The fire trail network, hazard reduction burning program and optimal fire regimes for maintaining biodiversity are described in the Fire Management Strategy prepared for Kooraban National Park (NPWS 2004). This strategy also details fire management zones, fire history, fire frequency, operational guidelines and fire suppression strategies.

Effective fire management in the park requires a cooperative regional approach that is not constrained by land tenure and property boundaries. To this end, the NPWS has assisted neighbours with properties adjoining the eastern boundary of the park in preparing the Dignams Creek Community Fire Protection Plan (2002). NPWS representatives are also actively involved in the Eurobodalla and Bega Fire Management Committees established under the *Rural Fires Act 1994*. In accordance with the Act, these committees have developed District Bush Fire Risk Management Plans that together cover the park as well as other land in the region. These plans detail cooperative fuel reduction, fire trail maintenance and fire detection arrangements across the region.

POLICIES & ACTIONS

- 1 Continue to manage fire within the context of the Kooraban National Park Fire Management Strategy and Eurobodalla and Bega Bush Fire Risk Management Plans.**
- 2 The Fire Management Strategy will aim to ensure that, as far as possible:**
 - **Strategic fuel reduction measures are prescribed such that the likelihood of loss of human life and damage to infrastructure within and beyond the park is minimised;**
 - **The likelihood of a single wildfire burning out large parts of the park is minimised;**
 - **Fire is excluded from areas of recent logging regrowth;**

- **The requirements of species that are known to be reliant on particular fire regimes are met;**
 - **Critical habitat attributes such as tree hollows and fallen wood debris are maintained;**
 - **Catchment stability and water quality are not impaired by the impacts of fire; and**
 - **All heritage places and objects are protected from fire.**
- 3 Maintain roads included in the strategic fire trail network to an appropriate standard (refer also to Section 4.6).**
 - 4 Continue to participate in community-based fire management planning and operations, primarily through ongoing involvement in local Bush Fire Management Committees.**
 - 5 Continue to liaise with relevant public and private authorities and individuals regarding fire management including the Rural Fire Service, Forests NSW, NSW Fire Brigades, Bega Valley and Eurobodalla Shire staff and park neighbours.**
 - 6 Establish monitoring plots to measure biodiversity responses to different fire regimes.**

4.2 CULTURAL HERITAGE

4.2.1 Aboriginal Heritage

Kooraban National Park lies within Yuin country, which extends southwards from the Shoalhaven River to near the Victorian border and inland to the eastern edges of the tablelands. Archaeological records indicate the Yuin have inhabited this region for at least 20 000 years. Although very little specific research has been conducted on the Aboriginal cultural heritage values of the park, the work undertaken by Sullivan (1982), Byrne (1984), Organ (1990), Blay (2005) and Goulding and Griffiths (2004) provides information that is relevant to the area.

Oral tradition and physical evidence suggest that prior to the arrival of Europeans, the Yuin maintained a thriving society that incorporated sophisticated exchange patterns and rich social and ceremonial lives. While the coastal fringes provided plentiful and readily-accessible marine resources, the forested hinterland was also utilised for a variety of purposes.

The dry forests that typify the park provided a greater abundance and diversity of edible plants and mammal species than the coastal zone. The records of early European observers reveal that the diet of South Coast Aboriginal people included various forest products, from fruits, seeds, tubers and honey, to animals such as kangaroos, possums, wombats, bandicoots, dogs, lizards freshwater fish, eels, birds and grubs.

The forests were also a source of materials from which to fashion tools, weapons, utensils and shelters, or to use as bonding agents, decoration, or for medicinal and ceremonial purposes. Certain plants, animals and landforms continue to be imbued with spiritual meanings and associations.

The park area is unlikely to have been a centre of Aboriginal population in its own right. Instead, evidence indicates that forests within range of the coast were commonly exploited from base camps located up to 3 kilometres inland - the eastern

edge of the park is only 4 kilometres from Wallaga Lake and just over 8 kilometres from the ocean. These hinterland trips were probably undertaken by small parties for short periods of time and in pursuit of particular raw materials or types of food to supplement available coastal resources. Such trips are most likely to have been undertaken during autumn and winter when coastal food groups were less abundant and available. Areas utilised and routes taken would have been largely governed by the availability of fresh water, with open campsites most commonly located along the margins of watercourses and swamps.

It is likely that the hinterland forests were also utilised by small family groups (up to 35 people) that ranged widely throughout the region. The existence of groups of Aborigines in the Wandella valley that were primarily reliant on inland resources was noted by the then Commissioner for Crown Lands, John Lambie, in the 1840s. Localised movement throughout this forested landscape was largely, though not exclusively, along ridgelines or riverside flats.

Well-worn Aboriginal pathways ran along the major river corridors and ridgelines of the hinterland linking the coastal fringe with the Monaro tablelands. These long-distance paths were used by people to attend ceremonies and intertribal gatherings that mediated and maintained political, trade and social links between different language groups. Aboriginal guides led the first European to settle in the Cobargo district along one such pathway (Breakfast Creek - Woila Creek - Tuross River - Wandella Creek). Parts of this route now lie within Kooraban National Park and neighbouring Deua and Wadbilliga National Parks.

Prior to the arrival of European settlers in the district in the late 1820s, Yuin society was already seriously disrupted. The smallpox epidemic of 1789 and outbreaks of influenza and other introduced diseases had already decimated Aboriginal populations along the east coast.

By the late 1850s, the Aboriginal people remaining on the South Coast were involved in a variety of economic activities. Many worked for European settlers picking beans, gathering maize and potatoes, herding cattle and sheep, stripping bark, shearing, as domestic labourers, police trackers or in the whaling industry, while a small number were self-employed as farmers or contractors.

The passage of the *Crown Lands Alienation Act 1861* resulted in closer and more intensive settlement. The ramifications of this for the Yuin people were further restrictions on their ability to reside on, travel over and utilise the resources of their country. From this time onwards, the displacement of the Yuin from their country and culture was further entrenched as many people migrated, or were forcibly moved, to government reserves such as the one established at Wallaga Lake.

Despite resettlement, the separation of family members, the forced abandonment of traditional practices and a great loss of cultural knowledge, the Yuin people of the area have retained important strands of their culture, including a sense of identity and belonging.

Two Aboriginal sites have been recorded in the park – a cave containing habitation deposits and an isolated artefact. Systematic archaeological surveys have not been undertaken in the park, though surveys conducted in similar areas and predictive modelling suggest that the primary limitation on the location of artefact scatters is the availability of flat ground. Within the park, most Aboriginal sites are likely to be found in saddles along ridge tops and consist of open campsites marked by scatters of flaked stone artefacts. Large open campsites are likely to be confined to the riverine

flats that occur along the margins of major watercourses such as the Tuross River and Wandella Creek. The majority of Aboriginal sites in the park are likely to mark waypoints on a complex of pathways used by people during short-term hunting and gathering forays or on longer journeys along major pathways such as those that existed along the Tuross River and Wandella Creek. Aboriginal people would largely have avoided the steep slopes that are a common feature of the topography of the park.

It is highly likely that the construction of forestry roads along virtually all of the ridgelines in the park resulted in the destruction or disturbance of Aboriginal sites. The current paucity of knowledge concerning the location of surviving Aboriginal sites and features in the park raises the possibility that they may also be inadvertently destroyed or damaged in the future. This knowledge gap extends to intangible values that the park landscape, or places within it, may hold within contemporary Aboriginal culture.

POLICIES & ACTIONS

- 1 Conserve Aboriginal cultural values in accordance with the provisions of the Australia ICOMOS (International Council on Monuments and Sites) Charter for the Conservation of Places of Cultural Significance (Burra Charter) and its guidelines.**
- 2 Protect and interpret Aboriginal cultural sites and values in the park in consultation with relevant Aboriginal organisations, families and individuals. Do not publicise the locations of Aboriginal sites without the consent of appropriate Aboriginal people.**
- 3 Identify and record Aboriginal sites and objects that are potentially at risk of disturbance, and assess their cultural significance and management requirements. Implement measures to protect these sites and objects.**
- 4 Liaise with appropriate Aboriginal people concerning the possible interpretation and promotion of Aboriginal pathways, such as the one along the Wandella Creek valley (refer also to Sections 4.2.2, 4.3.1 and 4.4).**

4.2.2 Non-Aboriginal Heritage

Very little material is available concerning non-Aboriginal cultural heritage values in the park, though the research undertaken by Scott (1999) contains relevant information.

The first European to settle in the Cobargo area was William Duggan Tarlinton. In February 1829 he left the Braidwood district in search of new pasture for his cattle. Aboriginal guides led him and his small party down the coastal escarpment to present day Belowra and then along the Tuross River and Wandella Creek to the Nariria valley. Other pastoralists soon followed, and by the late 1830s the most arable land in the Bega district, including the Narira and Wandella valleys, had been selected.

These early land selections were relatively remote, being situated at least 60km south of the Moruya River which then marked the southern limit of location for settlement as defined by Governor Darling in 1824. The first few decades of European occupation were not marked by significant changes to the landscape. Broadscale clearing of the valleys and lower hillslopes only commenced after the

passage of the *Crown Lands Alienation Act 1861* which resulted in the creation of smaller holdings and an intensification of farming activity.

Closer settlement triggered the need for accurate surveying and mapping of the district. This required the establishment of trigonometric stations on prominent hill tops and ridgelines, two of which are located in the park on the summits of Narira and Jeffers Mountains.

The Aboriginal pathway along Wandella Creek used by William Tarlinton evolved into the key transport route linking the Cobargo and Eurobodalla districts prior to the development of the Reedy Creek road further to the east. (This bridle trail was upgraded to a formed road by the Bega Valley and Eurobodalla Shires around the time of WWI and maintained as such until about 1958. It remains a road reserve and most of it is not included in the park.)

Although alluvial gold had been discovered in Dignams Creek as early as 1852, mining did not commence until 1860. The southern part of the park area was proclaimed the Dromedary Gold Field South Extension in 1879 under the provisions of the *Mining Act 1874*. A significant, but unknown, quantity of gold was recovered from this area. A block of land on the eastern side of Wandella Creek (also now within the park) was reserved for mining purposes in 1903. A number of the gold mining adits dug in this area remain evident today.

The second half of the nineteenth century also saw many thousands of koalas shot for their skins in the hinterland forests, including the park area. Koalas were previously widespread, with Narira Mountain on Sam's Ridge known locally as "Koala Mountain".

The land clearing of the 1860s also gave rise to the establishment of a local forestry industry. Large quantities of bark from wattle regrowth on recently cleared land were sent to Bega, Sydney and Melbourne for use in the tanning of hides. Timber to supply the Sydney market was initially cut from the valleys and lowland coastal forests, with the dry hill forests that typify the park being dismissed as worthless. Yet by the end of the nineteenth century timber was being extracted for sawlogs and railway sleepers throughout the dry forest country.

In 1916 the Forestry Commission was created to regulate the commercial use of forests in NSW. As part of this new regulatory regime, the forests in the district (including the park area) were dedicated as Bodalla State Forest in the following year. Selective logging for sawlogs and railway sleepers continued in these forests up until the late 1960s. Sleeper pick-up points were located at Wandella and in the Dignams Creek valley which was also the site of a sawmill that operated up until the early 1960s.

The establishment of the woodchip industry in 1968 ushered in a period of unprecedented utilisation of the South Coast forests. Integrated harvesting, for both sawlogs and pulpwood, resulted in the cutting of trees of far lower quality than had previously occurred. This intensive form of logging commenced in the Bega region in 1977 and continued in the park area until shortly before it was reserved in January 2001.

Although cultural heritage surveys have not been undertaken in the park, the legacy of a century of timber harvesting is readily apparent in stands of regrowth forest, innumerable tree stumps, log dumps, snig tracks and a network of roads. The site of an old timber workers' camp exists in the Dignams Creek valley. It is marked by an

abandoned truck, the remains of several timber buildings, and assorted rubbish. Evidence of other timber camps may also remain in the park. Most of these obvious features are associated with relatively recent timber harvesting, though evidence of earlier logging activities is also likely to be present. The current lack of research into the existence or location of any such features raises the possibility that they may be inadvertently destroyed, damaged, ignored or forgotten.

POLICIES & ACTIONS

- 1 Conserve non-Aboriginal cultural values in accordance with the provisions of the Australia ICOMOS (International Council on Monuments and Sites) Charter for the Conservation of Places of Cultural Significance (Burra Charter) and its guidelines.**
- 2 Identify and record cultural landscapes, travel routes, sites and objects and assess their cultural significance and management requirements.**
- 3 Undertake a heritage assessment of the site of the timber workers' camp in the Dignams Creek valley.**
- 4 Prepare conservation plans or related documents where necessary to guide the management of significant sites or those likely to be visited by the public.**
- 5 Investigate and pursue opportunities to record oral histories and knowledge of people with long-standing connections to the park, including people associated with timber harvesting in the area.**
- 6 Do not publicise the location of historic sites prior to the establishment of appropriate site management regimes designed to protect the cultural values of the place and the safety of visitors.**
- 7 Consider interpreting and promoting historic places in the park that represent past land uses, including timber harvesting sites and the Aboriginal pathway along Wandella Creek valley that was subsequently used by European settlers (refer also to Sections 4.2.1, 4.3.1 and 4.4).**

4.3 PUBLIC USE

4.3.1 Recreational Activities

Kooraban National Park is located adjacent to the Princes Highway, the principal transport route through the South Coast region of NSW. Despite this proximity to a major tourism thoroughfare, no recreational infrastructure has been developed in the area which prior to 2001 was primarily managed for timber production.

The absence of recreational facilities partially reflects the lack of obvious drawcard features that are likely to attract large numbers of visitors. Instead, the attractions of the park are subtle, being confined to an appreciation of forested landscapes, wildlife, ephemeral creeks with corridors of rainforest, and views to distant landmarks. The undeveloped nature of the park means that people can enjoy these attractions while also experiencing a sense of isolation and self reliance.

Although visitor information has not been collected for the park, visitation levels are considered to be low. Most visitors are local people who undertake day or part-day trips. Overnight stays are rare. The majority of visitors utilise the extensive road

network to undertake activities such as four wheel drive touring, trail bike riding, bushwalking, mountain bike riding and horse riding. None of these uses have been formalised or are actively promoted.

All roads within the park are unsealed. The primary access roads are suitable for 2WD vehicles if driven with care. Most of these are located along ridgelines which provide broken views across the forested ridges and valleys of the park to Gulaga or across the neighbouring Wandella and Narira valleys to Peak Alone and the more distant escarpment mountains. Local four wheel drivers occasionally use these and other roads in the park, in particular the Tinpot Road from Wandella valley which joins the Tuross River Road. A small number of trail bike riders, primarily from the Wandella and Tinpot areas, also use the roads of the park.

Bushwalking within the park is primarily undertaken by residents of nearby Dignams Creek valley and occasionally by individuals and groups from further afield. As there are no formal walking tracks, people typically make their own way along creek valleys and ridgelines. A combination of maintained and disused vehicular trails are also sometimes used by walkers for all or part of their trips.

Small numbers of horse riders and the occasional mountain bike rider also use the vehicular trails in the park. The old bridle trail along the Wandella Creek valley to the junction with the Tuross River is occasionally cleared by members of the Cobargo Horse and Trail Riding Club and still used by local horse riders several times each year. Most horse riders are residents of Wandella or Dignams Creek valleys.

Opportunities for car-based camping in the park are limited by the scarcity of accessible creek or river flats. A few suitable camping sites do exist at creek crossings, but are rarely if ever used. One such site is located alongside Red Creek Road just outside the park in Bodalla State Forest.

There are currently no commercial tourism operators visiting the park.

At the currently low visitation levels, most of the environmental issues typically associated with recreation in natural areas are negligible or readily manageable. This is likely to change as the popularity of the park inevitably increases, and problems such as soil compaction, erosion, the spread of weeds and increased fire risk will need to be actively managed and monitored. Minimising environmental degradation will be an important consideration in decision-making concerning the future promotion of the park, permitting new recreational activities or the development of new visitor facilities.

Most of the recreational activities currently undertaken in the park are confined to the existing road network. While this has the effect of concentrating visitor use on already highly-disturbed corridors, it also creates opportunities for conflict between participants in different activities. The experiences sought by four wheel drivers, trail bike riders, horse riders, cyclists and bushwalkers are not necessarily compatible and shared use of the same trails may result in conflict and safety concerns if park visitation levels increase.

POLICIES & ACTIONS

- 1 Manage the park primarily as a day-use destination that provides visitors with opportunities to undertake recreational activities in largely undeveloped settings.**
- 2 Provide park orientation and interpretation information at key park entrance sites (refer Section 4.4).**
- 3 Continue to permit public vehicle use along the following roads (refer Map 2):**

- **Caves Link Road;**
- **Dignams Creek Road;**
- **Dignams Hill Trail;**
- **Jeffers Road (from intersection with Tinpot Road to intersection with Orange Ridge Road);**
- **Jeffers Trig Road;**
- **Jiliby Trail;**
- **Link Road;**
- **Narira Gap Road;**
- **Narira Road;**
- **Orange Ridge Road;**
- **Preserve Road;**
- **Recoil Road;**
- **Red Creek Road;**
- **Sams Ridge Road;**
- **Sams Ridge Link Trail;**
- **Timber Camp Trail (between the junction with Jeffers Trig Trail and Timber Camp); and**
- **Tinpot Road.**

Ongoing public vehicular use of individual roads and trails will be periodically reviewed and may be prohibited if unacceptable environmental damage is found to be occurring.

- 4 Prohibit public vehicle use along the following management trails (refer Map 2):**
 - **Compartment 78 Link Fire Trail;**
 - **Jeffers Fire Trail;**
 - **Jeffers Trig Trail Link;**
 - **Jeffers Road (from intersection with Orange Ridge Road to intersection with Jeffers Trig Road);**
 - **KB Fire Trail;**
 - **Narira Gap Fire Trail;**
 - **Reserve Fire Trail;**
 - **Stone Arrow Fire Trail;**
 - **Wandella Link Fire Trail.**
- 5 Manage the Narira Road - Caves Link Road - Sams Ridge Road loop as the key recreational driving opportunity in the park. Consider developing a number of low-key interpretive sites along this loop drive that explain the values of the park (refer Section 4.4).**

- 6 Install traffic counters along key public access roads in accordance with the NPWS Far South Coast Visitor Monitoring Strategy.**
- 7 Install signs warning motorists that roads in the park are shared with horse riders and cyclists if warranted by increased visitation levels and safety concerns.**
- 8 Roads and trails may be temporarily closed to all public access during:**
 - **Periods of extreme weather conditions, fire events or other natural hazards;**
 - **wet conditions when vehicle use is likely to result in damage to road surfaces; and**
 - **road maintenance works.**
- 9 If possible, notify park visitors and neighbours of road closures, the reason(s) for closures and when the road(s) will be reopened to traffic.**
- 10 Do not develop car-based camping or picnic areas or permit car-based camping.**
- 11 Permit walk-in camping except within 200 metres of any road open to public vehicle use.**
- 12 Continue to permit walking throughout the park.**
- 13 Depending on the findings of the conservation plan for the timber workers' camp, consider establishing a parking area and interpretive shelter or sign opposite the junction of Narira and Narira Gap Roads and encouraging visitors to walk along the access road to the camp (refer Section 4.4).**
- 14 Permit horse riding to occur in the park on the Wandella bridle trail and all roads open to public vehicle use, subject to the results of monitoring for environmental impacts (refer Section 4.7).**
- 15 Prohibit camping with horses.**
- 16 Continue to permit cycling on all roads and management trails subject to the results of monitoring for environmental impacts (refer Section 4.7).**

4.3.2 Other Uses

Thirty-eight commercial apiary sites are located in the park. The establishment of these sites predates the gazettal of the park. Originally licensed under state forest occupational permits that related to apiary ranges, the current park consent for this activity is specifically for the provision of apiary sites. These sites are licensed by the NPWS under Clause 16(2) of the *National Parks and Wildlife (Land Management) Regulation 1995*.

Commercial beekeeping in national parks is generally regarded as an inappropriate activity, as European honey bees (*Apis mellifera*) can have adverse impacts on some native plants and animals. It is only permitted to continue in Kooraban National Park because it was a pre-existing activity when the area was transferred from state forest to the national park estate. After thorough assessment, it may be necessary to relocate existing apiary sites where they result in unacceptable environmental impacts, conflict with park visitors or are inconsistent with the aims of park management. Access to apiary sites requires the use of roads or management trails, some of which may be proposed for closure and rehabilitation because they could be hazardous to users or pose a threat to the environment.

Preserve Road in the far northern end of the park provides vehicular access to a number of private properties. These are located along the southern bank of the Tuross River both to the east and west of the former Tinpot Flora Reserve, which is now included in the park.

A substantial rubbish dump is located just inside the park boundary, a short distance north of where Dignams Creek Road crosses the bridge over Dignams Creek. The tip contains numerous car bodies, a large number of bottles and general refuse. The tip does not appear to have been used in recent years. Rubbish is also present at the site of the timber workers' camp in Dignams Creek valley.

POLICIES & ACTIONS

- 1 Manage beekeeping in accordance with the NPWS statewide beekeeping policy, apiarist consent terms and the following conditions:**
 - Maintenance of apiary sites will be by mowing or slashing only;
 - Mineral earth or top soil may not be disturbed as part of normal site maintenance works; and
 - Tree clearing (definition: greater than 20cm in diameter), the clearing of heavy regrowth and the widening of an existing apiary site are not permitted without the written consent of the Regional Manager and/or the preparation of a Review of Environmental Factors.
- 2 Identify set-down sites for all existing apiarist licences. Where apiary sites cannot be identified or are unacceptable because of access, safety or environmental reasons the site may be relocated within the apiarist's bee range, in consultation with the apiarist. Where an alternative apiary site cannot be found, the licence for the particular site will be cancelled.**
- 3 No additional apiary sites will be permitted to be established.**
- 4 Close and rehabilitate access tracks to apiary sites if there are unacceptable environmental or safety risks associated with them.**
- 5 Subject to the findings of a heritage assessment, remove all rubbish from the rubbish dump located north of where Dignams Creek Road crosses the bridge over Dignams Creek. Close and rehabilitate the site.**
- 6 Depending on the findings of the heritage assessment (refer Section 4.2.2), clean up rubbish left at the timber workers' camp in the Dignams Creek valley.**

4.4 PROMOTION AND INTERPRETATION

The forested ridges of Kooraban National Park are prominent landscape features of the Cobargo district, forming backdrops to the Narira and Wandella valleys. Despite this, the area and its values are not well known. This is partially due to the lack of obvious destinational features in the area but also to the paucity of visitor information about the park. Promotional material is currently limited to a brief entry in a brochure produced by the NPWS on the parks and reserves of the Far South Coast region. On-site visitor information is restricted to park entrance and road name signs.

The provision of additional promotional and interpretive material about the park would facilitate greater public enjoyment, appreciation and understanding of the values of the area. Basic visitor orientation and safety information, details of the recreational opportunities available, and information on the various natural and cultural attributes of the park are all required. Such information would not only enhance the

experiences of visitors to the park, it can also influence visitation patterns and visitor behaviour. Additionally, information provided about the park can be used to promote the broader concepts of environmental sustainability and stewardship.

Within local communities, the provision of information on management activities in the park, such as weed, feral animal and fire control programs, can foster public support for the conservation goals and strategies of the NPWS.

While raising the profile of the park is likely to result in certain environmental and recreational benefits, it also has the potential to create management problems. Increased visitation due to increased promotion may create or exacerbate localised environmental degradation such as soil compaction and erosion, the formation of new tracks through repeated use of popular routes, the introduction and spread of weed species and increased fire risks. It may also result in changes to the recreational experiences currently available in the park by reducing the sense of remoteness and isolation that the area currently affords.

POLICIES & ACTIONS

- 1 Public information prepared about the park will inform potential visitors that the area is managed for low-key recreation and only limited visitor facilities are provided.**
- 2 Interpretive material will address one or more of the following themes:**
 - the role of the park in the east-west corridor of protected areas;
 - the significance of the park as a refuge for threatened species;
 - Aboriginal cultural values; and
 - mining and timber harvesting histories.
- 3 Construct park orientation/interpretation shelters at or near the following park entrances:**
 - where Narira Road enters the park (Dignams Creek valley);
 - the junction of Dignams Creek and Reedy Creek Roads (Dignams Creek valley); and
 - the junction of Wandella and Tinpot Roads (Wandella Creek valley).
- 4 The three park orientation/interpretation shelters will include information on:**
 - the recreational opportunities available;
 - the prohibition on vehicle-based camping;
 - minimal impact recreational practices; and
 - the natural and cultural values of the park.
- 5 Consider installing interpretive shelters or signs at points of interest along the Narira Road-Narira Gap Road (linking section only)-Caves Link Road-Sams Ridge Road loop drive, including at the start of the proposed walk into the timber workers' camp (refer Section 4.3.1).**
- 6 Keep park neighbours and other stakeholders in the local community informed of progress in implementing the provisions of the plan of management.**

4.5 RESEARCH

A thorough understanding and appreciation of the suite of values present in the park is required for well informed decision-making and effective management. The lack of knowledge of particular values, such as the presence of a particular species or a significant cultural feature, may result in them being inadvertently damaged or destroyed through the application of inappropriate management regimes or simple neglect.

To date, only limited research has been conducted in the park. Prior to the gazettal of the park, flora and fauna surveys were undertaken before the logging of compartments. Shortly after the park was proclaimed, selective survey work was undertaken to refine the vegetation map of the area which was developed as part of the comprehensive regional assessment process. In recent years, koala surveys have been conducted in parts of the park.

There is much still to be learnt about the natural and cultural values of the park, their significance and their management needs. Significant knowledge gaps include the lack of systematic surveying of native plants and animals, including threatened species, and information on the presence, distribution and impacts of weeds and feral animal species in the park. Virtually no information has been collected on tangible and intangible cultural heritage values or on recreational use of the area.

The NPWS has only limited resources for conducting research. Opportunities exist to undertake collaborative research projects with relevant organisations and academic institutions, other State government agencies, local government, and community groups and individuals.

While research contributes to better management, it may also result in environmental damage. For this reason, research proposals are subject to animal ethics and environmental assessment scrutiny. Research that is likely to impact upon park values is usually only permitted if it addresses timely and significant park management research questions and it cannot be undertaken elsewhere.

POLICIES & ACTIONS

- 1 Prepare a regional prospectus of preferred research and survey projects for the park. Priority projects will include research into:**
 - the distribution and management requirements of significant plant communities and species;
 - the presence, distribution, abundance and management needs of threatened animal species, especially the koala population; and
 - the cultural heritage values of the park.
- 2 Ensure the recording of oral histories and knowledge of people with long-standing connections to the area receives high priority, especially where important cultural or historical knowledge is likely to be held by only a small number of individuals.**
- 3 Actively promote and encourage the involvement of relevant research institutions, other government agencies, community groups and individuals in undertaking NPWS-identified research priorities.**

4.6 MANAGEMENT FACILITIES

The only management infrastructure located in the park is the extensive network of unsealed roads. These roads, which were constructed on virtually every ridgeline, are the legacy of more than a century of timber harvesting in the area. All are single lane, though they range from formed roads suitable for use by conventional vehicles if driven with care, to rough four-wheel drive tracks.

A number of strategically located and linked roads in the park are regularly used and maintained by the NPWS for fire management and suppression purposes and for weed and feral animal control access. Other secondary roads are occasionally cleared and kept open, while the large number of dead-end snig tracks that were only ever intended to provide one-off access are being allowed to naturally revegetate. All roads in the park are currently open for public vehicle use.

A key management objective for the park is to facilitate the rehabilitation of areas disturbed by past forestry activities. This, in part, requires the rationalisation of the current road system, so as to only retain those tracks that are required for public access and park management activities. The long-term environmental benefits of closing and rehabilitating the plethora of roads that are no longer required include localised soil stabilisation and the revegetation of disturbed road corridors, and reduced potential for roadside arson and the introduction and spread of weeds.

As an outcome of the Southern Regional Forestry Agreement, the gazettal of Kooraban National Park did not include the internal road network. Instead, all roads were vested in the Minister for the Environment under Part 11 of the *National Parks and Wildlife Act 1974* with decisions about their final status to be resolved by the end of 2007. At that time, all roads that are included in Kooraban National Park will be managed in accordance with the provisions of this plan of management.

POLICIES & ACTIONS

1 Manage the following roads as All Weather 2WD Roads (refer Map 2):

- Caves Link Road;
- Dignams Creek Road;
- Narira Road (between the junctions with Dignams Creek Road and Narira Gap Road);
- Narira Gap Road (between the junctions with Narira Road and Caves Link Road);
- Preserve Road.
- Recoil Road;
- Red Creek Road;
- Sams Ridge Road; and
- Tinpot Road.

2 Manage the following trails as All Weather 4WD Roads (refer Map 2):

- Narira Road (between the junctions with Narira Gap Road and Jeffers Fire Trail);
- Jeffers Road/Jeffers Fire Trail.
- Wandella Link Fire Trail;
- Orange Ridge Road (between the junctions with Tinpot Road and Jeffers Fire Trail);
- Compartment 78 Link Fire Trail;

- **Jeffers Trig Fire Trail;**
 - **Link Fire Trail;**
 - **Stone Arrow Fire Trail;**
 - **Narira Gap Road (from the junction with Caves Link Road);**
 - **Sam's Ridge Link Fire Trail;**
 - **Dignams Hill Fire Trail;**
 - **Reserve Fire Trail;**
 - **Timber Camp Fire Trail;**
 - **Jiliby Fire Trail; and**
 - **KB Fire Trail.**
- 3 Close all roads and trails that are not listed in 4.6.1 and 4.6.2.**
 - 4 Survey all roads and trails to be closed to determine:**
 - **which roads are to be passively managed and allowed to naturally revegetate; and**
 - **those roads requiring active rehabilitation works.**
 - 5 Initiate a rehabilitation program for those roads and trails identified as requiring active treatment (refer also to Section 4.1.1).**
 - 6 Limit the construction of additional management trails to the following situations:**
 - **realignment of an existing trail to a more environmentally acceptable location, combined with rehabilitation of the original route; and**
 - **construction of temporary trails in emergency situations such as wildfire control. (Such trails are to be rehabilitated as soon as possible after the emergency.)**
 - 7 Periodically review the status of individual roads and fire trails in the park, including their management roles, standard and public access.**

4.7 MONITORING, EVALUATION AND REPORTING

Management of the park can never be based upon a complete understanding of the values of the area or the implications of individual decisions and actions. Monitoring changes in the condition of the values of the park over time is essential for gauging the success or otherwise of the policies and actions being used to achieve the stated park management objectives. Without systematic long-term monitoring there is no way of knowing if the values for which the park was declared are being protected.

Understanding the nature and rate of change in the condition of values allows the effectiveness of chosen management regimes to be evaluated, adapted and improved. Regular reporting on changes in the condition of park values provides transparency and public accountability.

POLICIES & ACTIONS

- 1 Develop and implement a monitoring program for the park within the context of the NPWS Ecologically Sustainable Forest Management system. Limit the selection of performance indicators to those that can be readily utilised to measure:**
 - **short and long-term changes in the condition of significant values under threat (eg threatened species populations);**

- the effectiveness or otherwise of weed and feral animal control programs; and
 - environmental impacts associated with recreational infrastructure (eg bridle trail, road networks).
- 2 Change or refine management strategies as necessary based upon monitoring results so as to achieve desired management objectives.
 - 3 Periodically prepare and make publicly available reports on the trends in condition of park values and progress on plan of management implementation.

5 PLAN IMPLEMENTATION

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

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

Section 81 of the *National Parks and Wildlife Act 1974* requires that this plan shall be carried out and given effect to, and that no operations shall be undertaken in relation to Kooraban 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 75 of the Act.

As a guide to the implementation of this plan, relative priorities have been assigned to actions in the plan as summarised below. The following criteria have been used to allocate priorities:

<i>High</i>	Imperative to achievement of the management objectives for the park. Must be undertaken in the near future to avoid significant deterioration in the condition of natural or cultural values.
<i>Medium</i>	Necessary to achieve the management objectives for the park but not urgent.
<i>Low</i>	Desirable to achieve management objectives but can be deferred until resources become available.

(Note: Actions that are undertaken in the course of day to day park management are not listed below.)

Action	Plan Reference
<i>High Priority</i>	
Investigate whether any sites associated with past forestry operations are actively eroding. If found, map, stabilise and rehabilitate.	4.1.1
Close all roads no longer required for park management and public access purposes.	4.1.1/ 4.6
Map areas of recent logging regrowth.	4.1.2

Prepare and implement fire protection strategies for recent logging regrowth areas.	4.1.2
Prepare and implement fire management prescriptions for the six vegetation communities of conservation significance.	4.1.2
Undertake weed control programs in accordance with the Kooraban National Park Pest Management Strategy	4.1.2
Expand the koala survey work to include areas occupied in the recent past.	4.1.3
Identify and record Aboriginal sites and objects that are potentially at risk of disturbance, and assess their cultural significance and management requirements. Implement measures to protect these sites and objects.	4.2.1
Investigate and pursue opportunities to record oral histories and knowledge.	4.2.2
Install traffic counters on key public access roads.	4.3.1
Construct park orientation and interpretation shelters at main road entrances.	4.4
Survey all roads to be closed regarding rehabilitation needs and initiate rehabilitation program.	4.6
<i>Medium Priority</i>	
Maintain an inventory of all disturbed sites, monitor site rehabilitation and undertake any necessary remedial measures.	4.1.1
Liaise with the Southern Rivers Catchment Management Authority regarding the management of properties in the valleys of Wandella and Dignam Creeks with the aim of minimising impacts upon water quality in these streams	4.1.1
Investigate and pursue opportunities to undertake additional vegetation surveys.	4.1.2
Investigate and pursue opportunities to undertake additional wildlife surveys, including surveys for threatened species.	4.1.3
Establish monitoring plots to measure biodiversity responses to fire.	4.1.4
Liaise with appropriate Aboriginal people concerning possible interpretation and promotion of Aboriginal pathways.	4.2.1
Identify and record non-Aboriginal cultural landscapes, travel routes, sites and objects and assess their significance and management requirements.	4.2.2
Undertake a heritage assessment of the Dignams Creek timber workers' camp and other sites as necessary.	4.2.2
Develop and implement monitoring program to measure the condition of significant values and environmental impacts.	4.7

Periodically prepare and make available reports on trends in condition of park values and progress in plan of management implementation. 4.7

Low Priority

Consider interpreting and promoting historic places representing past land uses. 4.2.2

Install road safety signs if warranted by increased visitation. 4.3.1

Consider establishing a parking area and interpretive shelter at the start of the walk to the timber workers' camp and promoting walk. 4.3.1

Subject to heritage assessments, remove rubbish from the former rubbish dump and the timber workers' camp. 4.3.2

Consider installing interpretive signs at points of interest around main loop drive. 4.4

Prepare a regional prospectus of preferred research and encourage involvement of relevant organisations and individuals. 4.5

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