COURABYRA NATURE RESERVE PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

Part of the Department of Environment and Conservation (NSW)

May 2006

This plan of management was adopted by the Minister for the Environment on 2 nd May 2006.					
Acknowledgments					
This plan of management was prepared by staff of the South West Slopes Region of NPWS.					
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FOREWORD

Courabyra Nature Reserve is located 5kms north west of Tumbarumba on the South West Slopes of NSW. It covers an area of 239 hectares that was previously part of Mannus State Forest.

Courabyra Nature Reserve is located within the South West Slopes Bioregion of NSW. Although the vegetation in the reserve has been disturbed and is not a true reflection of that which existed prior to European settlement, the diversity in the vegetation of the nature reserve is considered to be significant given the lack of similar vegetation types in the region.

Courabyra Nature Reserve is important as an island habitat for a diverse range of native species. Nineteen species of mammals, including the feathertail glider which is uncommon on the South West Slopes, and 69 species of birds have been recorded in the reserve.

There are no facilities within the nature reserve and there is no public vehicular access to the reserve. The topography and size of the reserve, and surrounding private property, severely limits its potential for public use.

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

A draft plan of management for Courabyra Nature Reserve was placed on public exhibition from 18 June until 17 September 2004. The exhibition of the draft plan attracted 3 submissions that raised 1 issue. All submissions received were carefully considered before adopting this plan.

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

Bob Debus

Minister for the Environment

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1. MANAGEMENT CONTEXT

1.1 LEGISLATIVE AND POLICY FRAMEWORK

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

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

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

1.2 MANAGEMENT PURPOSES AND PRINCIPLES

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

Under the Act, nature reserves are managed to:

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

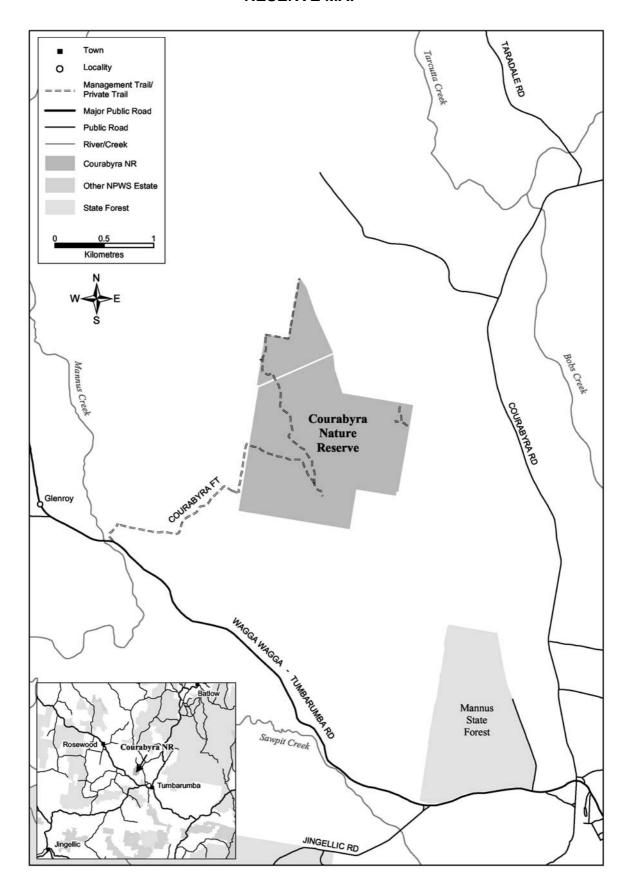
Nature reserves differ from national parks in that they do not have as a management principle to provide for visitor use.

1.3 REGIONAL FOREST AGREEMENTS

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

The Southern RFA covers the planning area. The process leading up to the RFA provided for major additions to the reserve system, including the establishment of Courabyra Nature Reserve

RESERVE MAP



2. COURABYRA NATURE RESERVE

2.1 LOCATION, GAZETTAL AND REGIONAL SETTING

Courabyra Nature Reserve is located 5kms north west of Tumbarumba on the South West Slopes of NSW. The reserve was previously part of Mannus State Forest (No 795) and was gazetted as nature reserve in 2001 as an outcome of the Southern Regional Forest Agreement. It covers an area of 239 hectares.

The name Courabyra refers to the parish name in which the reserve lies. Downfall Nature Reserve is situated to the north west of the reserve, and they are both broadly linked by native vegetation. Bogandyera and Clarke's Hill Nature Reserves and Mannus, Maragle and Bago State Forests lie to the south and east and provide an almost continuously vegetated link between the reserve and the extensive forests of Kosciuszko National Park and beyond.

The major land use in the region consists of pine plantation forestry, viticulture and agriculture, including grazing and cropping. The reserve lies within the area of Tumbarumba Shire Council, the Gundagai and Hume Rural Lands Protection Boards, the Murray and Murrumbidgee Catchment Management Authorities and the Tumut-Brungle Aboriginal Land Council.

2.2 LANDSCAPE

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 introduced plants and animals and in some cases air and water pollution.

Courabyra Nature Reserve protects an area of remnant native vegetation within a highly disturbed landscape. The geology, landform, climate and plant and animal communities of the area, plus its location, have determined how it has been used by humans. Clearing, logging and grazing are all activities that have shaped the reserve, and indeed the surrounding region, and have led to the landscape that exists today.

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.

2.3 NATURAL HERITAGE

2.3.1 Landform, Geology and Soils

The reserve is dominated by moderately steep slopes with an elevation range between 620m and 770m. Most of the reserve has a westerly or south-westerly aspect. The reserve's eastern boundary is situated on a faultline, which forms a north-south aligned ridge top. This fault line provides a distinct geological boundary between the Upper Ordivican quartzite and slate dominated geology of the reserve and the uncommon Tertiary basalt beds to the reserve's immediate east. Underlying parent materials consist predominantly of Ordovician slate/sandstone/shale.

The soils of the reserve are dominated by red and yellow earths at lower elevations with a skeletal podzolic and/or lithosol on mid and upper slopes, dominated by rock and rock fragments. Clay content in lower soil horizons is generally high. The geological boundary forming the ridgeline in the reserve's east provides a distinct change in soil type.

There is no permanent water in the reserve. Drainage flows in two general directions from within the reserve. The eastern section of the reserve drains into Tarcutta Creek and onto the Murrumbidgee River, whilst the majority of the reserve drains west into Mannus Creek and onto the Murray River.

2.3.2 Native Plants

The South West Slopes bio-region of New South Wales is one of the most highly disturbed and altered landscapes in NSW (Gibbons & Boak, 2002). Given the history of clearing, burning and grazing in the region, all remaining areas of intact remnant native vegetation are now considered significant.

The reserve is comprised of dry open sclerophyll forest and woodland communities dominated by apple box (*Eucalyptus bridgesiana*), broad-leaved peppermint (*E. dives*), red stringybark (*E. macrorhyncha*) and large-flowered or long-leaved bundy (*E. nortonii*). The mid and understorey have been disturbed through grazing activities in the past with diversity in these species, in particular, at low levels in the reserve.

The vegetation of the reserve is comprised of up to 3 distinct forest ecosystems. Tables 1 show the various vegetation types and their known distribution within the nature reserve.

Description	Lithology and Soils	Environmental Niches
Apple Box forest	Moderately deep moist soils derived from Ordovician substrate	Within broad low lying gullies in the reserve
Peppermint-Red Stringybark moist grass forb forest	Shallow to Moderately deep soils on Ordovician substrate	On exposed slopes at low elevations on slopes between 5 and 20 degrees
Long-leaved Bundy- Peppermint grassy Open Forest	Shallow soils on Ordovician substrate	Western and northern slopes of reserve

Table 1: Forest ecosystems within Courabyra Nature Reserve

The vegetation within the reserve is highly disturbed and does not represent a true reflection of the diversity that would have existed prior to European settlement. Activities such as land clearing for pine plantations, grape growing, grazing and cropping and gathering of native timber from within and around the reserve for fencing materials and firewood have led to the reduction in diversity of vegetation that exists today. However, given the lack of similar vegetation types in the region, the diversity in the vegetation of the nature reserve is considered to be significant.

2.3.3 Native Animals

Systematic fauna surveys conducted during 2002 and 2004 (NPWS) revealed that Courabyra Nature Reserve is important as an island habitat for a diverse range of native species. Its significance as native habitat is relatively high, given that surrounding lands have been highly altered. A total of 19 species of mammals (including 9 bats), 5 frogs, 4 reptiles and 69 species of birds have been recorded. Of interest, is the existence of feathertail glider (*Acrobates pygmaeus*), a small arboreal mammal that, although considered widespread across south-east Australia, is relatively uncommon on the south west slopes. This species requires "a large diversity of native trees to provide year round nectar" (Menkhorst, 2001).

Disturbance to the forest such as logging and clearing has lead to a general lack of mature trees in the reserve. This has a major influence on fauna diversity.

Further surveys during different seasons are likely to reveal a number of threatened or declining forest and woodland bird species. Species such as the turquoise parrot (*Neophema pulchella*) and diamond firetail (*Stagonopleura guttata*) are likely to use the reserve periodically for food and shelter.

2.4 CULTURAL HERITAGE

2.4.1 Aboriginal Heritage

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

The reserve lies within Wiradjuri country. No Aboriginal sites have been identified within the reserve, although it forms part of a broader cultural landscape that supported Aboriginal populations for many thousands of years. Although not yet surveyed by NPWS, it is expected that evidence of this occupation exists within and around the reserve.

The reserve, in isolation, holds no known significance to Aboriginal people, but as part of a broader landscape may be considered significant.

2.4.2 Non-Aboriginal Heritage

Specific portions of the reserve have been previously used for either grazing under lease, or managed as forest reserve. Various families have leased or owned particular portions of the reserve since 1836 and up until 1967, when the majority of the reserve was declared a forest reserve (Dearling, 2003).

No historic sites have been identified within the reserve, apart from old fences that delineate previous lease boundaries.

The reserve displays evidence of prior use for grazing and timber harvesting.

2.5. THREATS TO RESERVE VALUES

2.5.1 Introduced plants

An introduced plant species is defined in this plan as any plant species not endemic to the reserve. Introduced species within the reserve and on adjoining land are of concern because they have the potential to have detrimental effects on ecological values and can spread to and from neighbouring land. The *Noxious Weeds Act* 1993 places an obligation upon public authorities to control noxious weeds on land that they occupy to the extent necessary to prevent such weeds spreading to adjoining lands. The NPWS also has a priority to control environmental weeds (not necessarily declared noxious) which threaten natural habitats.

Weed species alter soil chemistry and compete with natives for space and dominance. Grazing in the reserve occurred for a number of years under licence. Boundary fencing has not traditionally been maintained, but it is the aim of the Service to exclude uncontrolled grazing from the reserve for the long term.

The NPWS South West Slopes Region Pest Management Strategy identifies priority pest species and programs for action through set criteria. By following this same process the prioritisation of Reserve pest species programs may be established and directly linked into the regional strategies (refer to the South West Slopes Region Pest Management Strategy). This strategic approach will consider such issues as (yet not limited by) the control of weeds in endangered ecological communities, significant remnant vegetation associations, threatened/endangered species habitat and areas of community/neighbour concern.

Introduced plant species recorded in the reserve include: blackberry (*Rubus fruticosis*), St John's wort (*Hypericum perforatum*), Paterson's curse (*Echium plantagineum*) and some pasture species. A program of blackberry spraying commenced in 2002. Control of other weeds will be carried out in accordance with the regional pest management strategy.

2.5.2 Introduced animals

An introduced animal species is defined in this plan as any animal species not native to the reserve. Introduced animals may impact upon native fauna populations through predation or competition for food or shelter. Introduced animals in the reserve include wild horses, rabbits and foxes. These species are managed in accordance with the actions listed in the regional pest management strategy.

Horses exist within the reserve. Evidence suggests that these horses remain within the reserve, or its immediate vicinity for most of the year. The reserve may, however, be part of a broader home range for the animals. The Service does not see the horse as being part of Courabyra Nature Reserve and aims to exclude this species from this reserve permanently. The means by which this occurs is yet to be identified.

Rabbits have presented a problem in the past, however, removal of harbour both within and surrounding the reserve, combined with baiting, trapping and shooting programs has reduced rabbit populations to a low level.

Foxes may inhabit the reserve periodically, as they do throughout the South West Slopes. Again, cooperative baiting programs between landholders, Rural Lands Protection Boards and the Service will be undertaken if populations in and around the reserve increase, and affect native plant and animal populations.

Evidence of grazing by domestic stock exists in the reserve. Improved fencing around the reserve will prevent stock wandering into the reserve from neighbouring farmland.

2.5.3 Fire

Fire is a natural feature of many environments. Many species are tolerant of fire, while others may not survive low or high fire frequencies. Inappropriate fire regimes can lead to loss of particular plant and animal species and communities. Fire can also damage or destroy cultural heritage, recreational facilities and can threaten visitors and neighbouring land.

The reserve's fire history is unknown, although anecdotal evidence suggests that the reserve has not seen fire for at least 50 years. Given the location of the reserve, vegetation types and its small size, fire in the reserve is most likely to be from larger fires burning from surrounding lands. There is potential for fire to start on the reserve due to natural causes such as lightning strikes, but this potential is considered to be low.

There are a number of assets adjacent to the reserve, including pine plantations, vineyards and neighbouring properties (homesteads, sheds, orchards and grazing land).

NPWS maintains cooperative arrangements with surrounding landowners and Wolseley Park and Courabyra RFS brigades and is actively involved in the Highlands Zone Bush Fire Management Committee. Cooperative arrangements include approaches to fuel management, support for neighbours fire management efforts and information sharing.

2.6 Access and Use

There is currently no signage indicating the reserve boundary, or activities permitted and not permitted within the nature reserve. All access to the reserve is via private property. Regardless of this, there appears to be some incidence of vehicular use of the reserve for firewood collection. Management trails within the reserve are stable during dry periods, but can get boggy during the wetter months.

Fencing around the reserve has been partially reconstructed by neighbours using fencing agreements in accordance with the NPWS Boundary Fencing Policy. Fences delineating the reserve's southern boundary require replacement. None of the gates accessing the reserve are padlocked at present.

A crown road reserve bisects the northern section of the reserve. This road reserve has never been used as a road and is not linked to any other roads.

2.7 References

- Dearling, C. 2003. Desktop Heritage research for Selected Nature Reserves in South West Slopes Region, NPWS. An unpublished report to the NSW National Parks and Wildlife Service, NSW.
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- NSW National Parks and Wildlife Service. 2001. Threat Abatement Plan for Predation by the Red Fox (Vulpes vulpes). NSW NPWS Hurstville
- NSW National Parks and Wildlife Service. 2000. Forest Ecosystem Classification and Mapping for the Southern CRA Region Volume 2: Appendices. Unpublished report to the NSW CRA/RFA Steering Committee
- NSW National Parks and Wildlife Service. 2001. Systematic Fauna survey of selected reserves SWS Region. Fieldwork undertaken by consultant and staff members.

3. MANAGEMENT ISSUES AND STRATEGIES

Current Situation	Desired Outcomes	Strategies	Priority
Soil and water conservation			
The soils of the reserve are unstable when disturbed, due to their high clay content.	Soil erosion is minimised.	Undertaken all works in a manner that minimises erosion and water pollution.	Med
There is no permanent water in the nature reserve, although at least one spring periodically produces water.	Water quality and health of reserve springs is maintained.	Liaise with local authorities to maintain and improve water quality in local catchments.	Low
Native plant and animal conservation			
Systematic survey and mapping of the reserve's native vegetation has been undertaken by NPWS (2002/03), as has	All native plant and animal species and	Remove horses permanently from the nature reserve.	High
fauna survey.	communities are conserved.	Monitor vegetation recovery following the removal of horses from the reserve.	Med
The habitat value of the reserve is locally high due to large scale disturbance on surrounding lands for forestry, vineyards and agricultural activities. On a broader scale, links between tracts of native vegetation are	Structural diversity and habitat values are restored in areas subject to	Work with neighbours and vegetation management committees to encourage conservation of remnant native vegetation in the vicinity of the reserve.	Med
reasonably intact.	past disturbance.	Install signage and consider padlocking of boundary gates to discourage firewood collection.	High
Horses within the reserve are having a large impact on flora species diversity. Low and mid storey species have been particularly heavily grazed.			
Evidence of firewood collection exists within the nature reserve.			

Current Situation	Desired Outcomes	Strategies	Priority
Introduced species			
Horses are having the biggest impact on the native flora and fauna of the reserve. Impacts evident include overgrazing, trampling of vegetation, compaction of soils and large manure piles which effect nutrient levels and availability in soils.	The impact of introduced species on native species and neighbouring lands is minimised.	Control introduced plant and animal species in accordance with the regional pest management strategy. Priority will be given to the permanent removal of horses and control of blackberry infestations.	High
Foxes and rabbits also exist within the reserve, at similar levels to that of surrounding lands		Seek the cooperation of other authorities and neighbours in implementing weed and pest animal control programs.	Med
Blackberry has infested some areas within the reserve, although a control program for removal commenced in 2002.		Undertake on-going control programs for foxes, rabbits and weed species as per priorities listed in the regional pest management strategy.	Med
Other weeds within the reserve include Paterson's curse, St John's wort, various thistle species and other pasture (non-native) species.			

Current Situation	Desired Outcomes	Strategies	Priority
Fire management			
Fire is a natural feature of the environment of the reserve and is essential to the survival of some plant communities. Frequent or regular fire, however, can cause loss of particular plant and animal species and	Life, property and natural and cultural values are protected from bushfire.	Prepare Type 2 Fire Management Plan, including fire operations map, for the reserve that details life, property and natural and cultural heritage management strategies.	High
communities. Fire could also damage cultural features, fences and threaten neighbouring land.	Fire regimes are appropriate for conservation of plant	Prohibit lighting of solid fuel fires in the reserve by visitors.	High
A large windrow of dead timber exists on the western boundary of the reserve. This presents some level of risk to the extensive vineyards located immediately adjacent to the reserve boundary in the case of fire.	and animal communities. Cultural features are protected from damage by fire.	Continue to participate in the Highlands Zone Bush Fire Management Committee. Maintain coordination and cooperation with Rural Fire Service brigades, fire control officers and neighbours with regard to fuel management and fire suppression.	Med
No permanent water exists within the reserve.		Suppress all unplanned fires in the reserve as soon as possible during high bushfire danger periods.	High
The reserve has not burnt for at least 50 years.		Use prescribed fire to reduce the risk to surrounding assets as presented by large windrows on western reserve boundary.	Med
		Encourage further research into the ecological effects of fire in the reserve.	Low
		Consider controlled ecological burning in the reserve and monitor vegetation response.	Med

Current Situation	Desired Outcomes	Strategies	Priority
Cultural heritage No Aboriginal or European historic sites have	Aboriginal and historic features and	Precede all new ground disturbance work by an assessment for cultural features.	High
been located within the nature reserve, however, it forms part of a broader cultural landscape.	values are identified and protected. Aboriginal people are involved in management of the Aboriginal cultural values in the reserve. Understanding of the cultural significance of the reserve is improved.	Consult and involve the Tumut Brungle Local Aboriginal Land Council, the Snowy Mountains Elders group and other relevant Aboriginal community organisations in the management of Aboriginal sites, places and values.	Med
Visitor use			
Use of the reserve must be carefully managed since it is a relatively small and significant area of remnant vegetation.	The local community is aware of the significance of the	Provide regulatory and interpretive signage at key locations.	High
There are no facilities within the nature	area and of	Prohibit camping, camp fires and horse riding.	Med
reserve and there is no public vehicular access to the reserve.	management programs.	Monitor levels and impacts of use.	Med
The topography and size of the reserve, and surrounding private property, severely limits its potential for public use.	Visitor use is ecologically sustainable.	Organise media releases, educational material and contact with neighbours and community organisations.	Low

Current Situation	Desired Outcomes	Strategies	Priority
Management operations			
Several management trails exist within the reserve. They are of varying standard.	Management facilities adequately serve management	Maintain trails to be retained for management purposes.	High
The reserve boundary is fenced to a varying standard and existing fences are generally in poor condition.	needs and have acceptable impact.	Consider constructing trail from east to west, dividing the reserve into two parcels, for access and management purposes.	High
A disused road reserve bisects the reserve.	Domestic stock do not enter the reserve.	In conjunction with neighbours, construct and maintain boundary fences in accordance with the NPWS Boundary Fencing Policy.	High

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

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

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

