COOLUMBOOKA NATURE RESERVE

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

Part of the Department of Environment and Climate Change NSW

June 2008

This plan of management was adopted by the Minister for Climate Change and the Environment on 1st June 2008.

Acknowledgments

This plan was prepared by the Bombala Area of the Far South Coast Region of NPWS.

For additional information on Coolumbokka Nature Reserve or this plan, contact the NPWS Bombala Area Office at 153 Maybe St, P.O. Box 245, Bombala NSW 2632 or by phone on (02) 6458 4080.

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FOREWORD

Coolumbooka Nature Reserve lies to the west of the coastal escarpment on the eastern edge of the Southern Tablelands, approximately seven kilometres east of Bombala, and covers an area of 1,529 hectares.

The reserve contains a diverse array of tall open forests, open forests, woodland, closed heath and closed herbfield. Most of the reserve supports Subalpine Dry Shrub Open Forests and Woodlands, a vegetation type that was once widespread in the region but is now confined to remnant stands. Three species of significance have been found within the reserve, including the endangered Kydra westringia.

Coolumbooka Nature Reserve provides valuable habitat for local fauna, with a total of 127 species having been recorded to date including three threatened species. Potential habitat also occurs for a large number of other threatened species but further survey work is recommended to ascertain their presence or absence.

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

A draft plan of management for Coolumbooka Nature Reserve was placed on public exhibition from 15th December 2006 until 26th March 2007. The submissions received were carefully considered before adopting this plan.

This plan contains a number of actions to achieve "Better environmental outcomes for native vegetation, biodiversity, land, rivers, and coastal waterways" (Priority E4 in the State Plan) including undertaking erosion control and surveys for threatened fauna, preparation and implementation of a pest species control plan, encouragement of the maintenance of native vegetation on surrounding lands, and the encouragement of further research into the ecological effects of fire on the reserve and into the reserve's subterranean fungi.

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

Verity Firth
Minister for Climate Change and the Environment

1. COOLUMBOOKA NATURE RESERVE

Coolumbooka Nature Reserve lies to the west of the coastal escarpment on the eastern edge of the Southern Tablelands, approximately seven kilometres east of Bombala (Figure 1, page 3) and covers an area of 1,529 hectares.

Pine plantations, private property and a road separate the reserve into four distinct blocks of approximately 1,112 hectares (block 1), 144 hectares (block 2), 61 hectares (block 3) and 198 hectares (block 4) (Figure 2, page 4). The reserve was declared in 1995 from vacant crown land. Additional parcels of vacant crown land and private property were incorporated into the reserve in 1998.

The reserve lies in the Bombala Local Government Area. The surrounding district is used mainly for pine plantations and grazing and has been extensively modified. The reserve contains a small area of remnant vegetation, one of the few remaining areas of natural vegetation in the Bombala District.

2. MANAGEMENT FRAMEWORK

2.1 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), the NPW Regulation, the *Threatened Species Conservation Act 1995* (TSC Act) and the policies of the National Parks and Wildlife Service (NPWS). The policies are based on 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.

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

2.2 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 (section 30J), 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.

2.3 Specific Management Objectives

In addition to the above management principles, Coolumbooka Nature Reserve will be managed to:

- protect and maintain the structural and floristic diversity of each of the vegetation communities within the reserve;

- complement the conservation values of the reserve by providing opportunities to protect the values of the adjacent remnant vegetation and providing links to the reserve; and

- protect and conserve threatened flora species, including *Westringia kydrensis* and *Euryomyrtus denticulata* which occur in stands of *Allocasuarina nana,* and threatened fauna species.

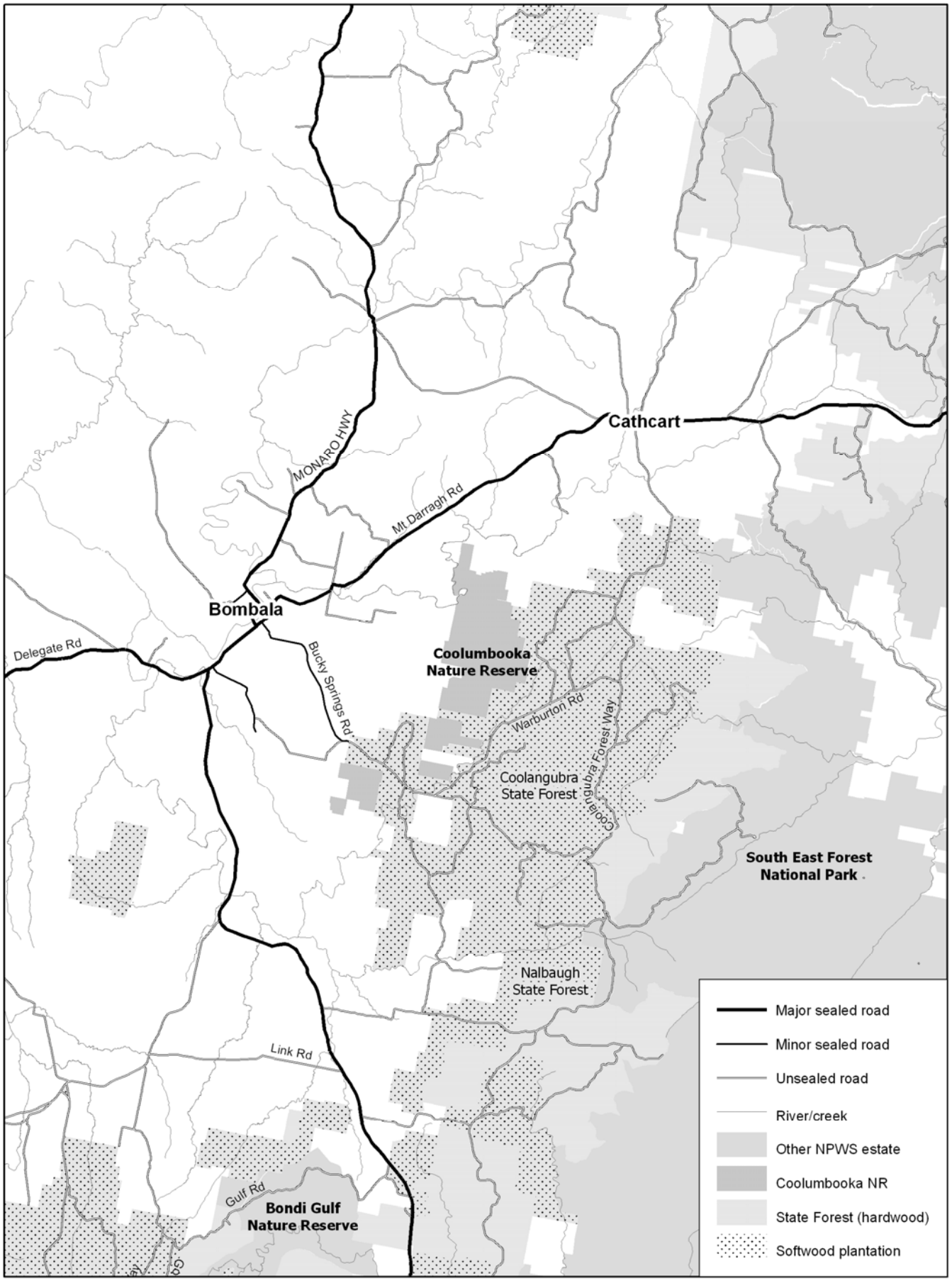

Figure 1: Coolumbooka Nature Reserve locality map

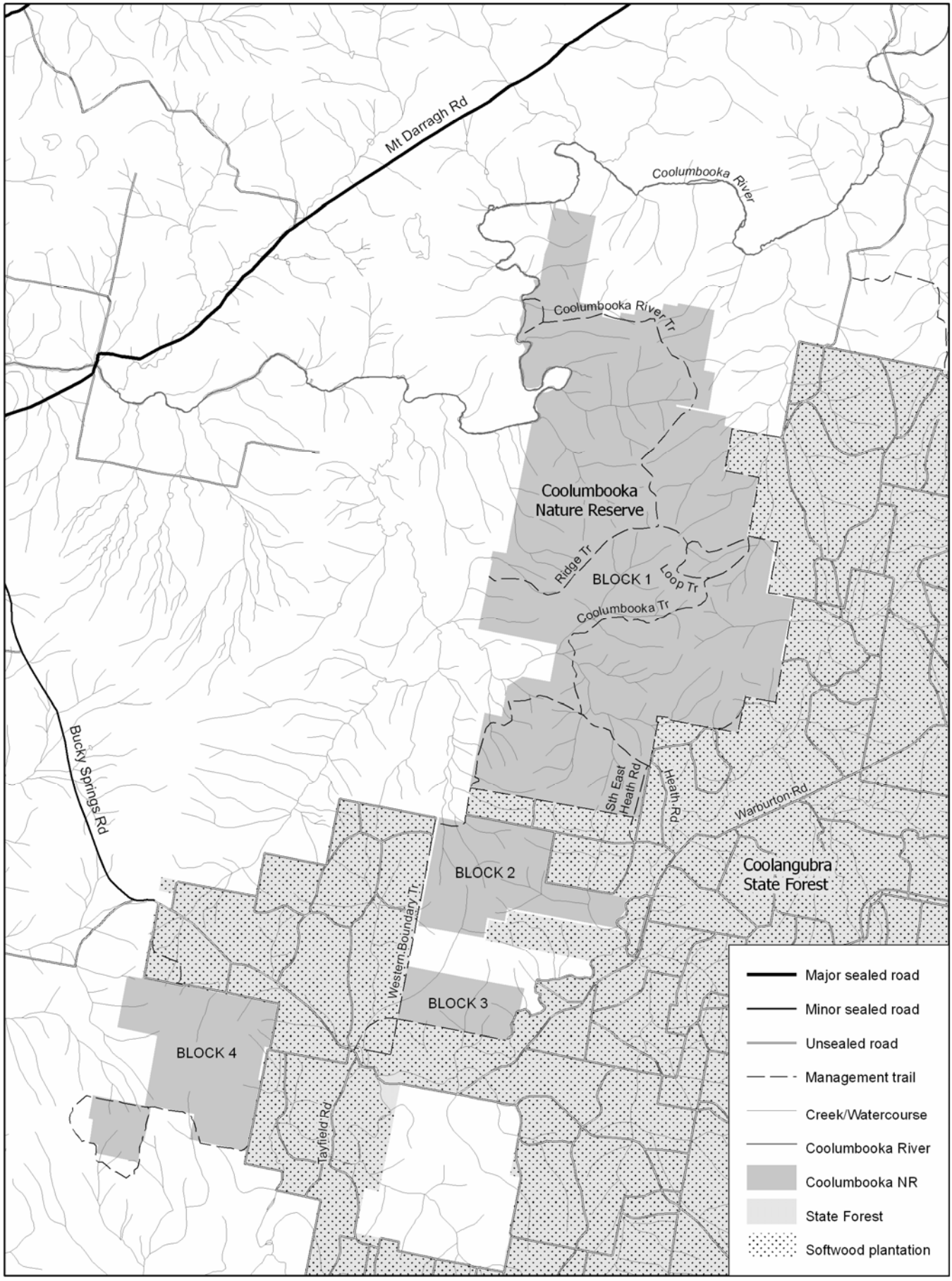

Figure 2: Coolumbooka Nature Reserve

3. NATURAL AND CULTURAL HERITAGE

The location, landforms and plant and animal communities of an area have determined how it has been used and valued. Both Aboriginal and non-Aboriginal people place values on natural areas, including aesthetic, social, spiritual and recreational values. These 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 heritage, cultural heritage, threats and on-going use are dealt with individually, but their inter-relationships are recognised.

3.1 Landform, Geology and Soils

Coolumbooka Nature Reserve is hilly to undulating, ranging from 760 to 930 metres above sea level, with the majority of the reserve being moderately steep to very steep.

There is a prominent ridgeline that is aligned north/south with steep spurs and side slopes occurring along the northern section. The area is dissected by many minor creeks which flow into either the Coolumbooka River or Warburton Creek. Coolumbooka River lies along the northern boundary of the reserve and supplies water for the Bombala township. Warburton Creek lies along the eastern edge of the reserve. The floors of the valleys are alluvial flats on which a shallow humic soil has developed (Garvan 1982).

The Coolumbooka area is an island of granite, granodiorite, aplite and pegmatite. A narrow band of basalt separates the area from a broad occurrence of the same material to the east. A mixture of slate, siltsone, sandstone and quartzite lies to the southwest (NPWS 1992).

The soils are generally poorly developed with dispersable, gravelly clays dominating. Thin organic soils overlay deeper dispersible clays in the flat sections of the moist drainage lines (Marshall 1982).

3.2 Native Plants

The reserve contains a diverse array of tall open forests, open forests, woodland, closed heath and closed herbfield.

Most of the reserve supports the open forests and woodlands classified by Keith and Bedward (1999) as Subalpine Dry Shrub, a vegetation type that was once widespread in the region but is now confined to remnant stands. Garvan (1982) identified the following dominant vegetation associations found in these open forests and woodlands:

- Silvertop ash (*Eucalyptus sieberi)*
- Brown barrel (*E. fastigata*) / narrow-leaved peppermint *(E. radiata)*
- Mountain gum (*E. dalrympeana*) / narrow-leaved peppermint *(E. radiata)*
- Broad-leaved peppermint *(E. dives)*
- Broad-leaved peppermint *(E. dives*) / manna gum *(E. viminalis)* / narrow-leaved peppermint (*E. radiata)*
- Manna gum *(E. viminalis)* / snow gum *(E. pauciflora)*

A pure stand of silvertop ash (*Eucalyptus sieberi)* occurs along the drier exposed areas of the main ridgeline. This is of considerable interest as this species is usually associated with more coastal eucalypt communities to the east.

Patches of closed heath dominated by *Allocasuarina nana* occur throughout the reserve. This community is classified as Montane Heath by Keith and Bedward (1999). *Allocasuarina nana* has a restricted range and occurs mostly on the Southern Tablelands of NSW and is considered rare in the Australian environment. In the reserve it forms a mosaic of closed heath among the woodland and forest communities and the boundaries with such associations are generally abrupt. It occupies large tracts of ridge topography in the southern sections, while in the north it exists in isolated pockets.

A closed heath of swamp tea-tree (*Leptospermum myrtifolium)* is found on the banks of major water courses.

A large patch of remnant Monaro Dry Grass Forest, consisting of snow gum (*E. pauciflora)*, candlebark (*E. rubida)* and manna gum (*E. viminalis*) is present in the southern extreme of the reserve. This vegetation type is extremely significant as much of it has been cleared and it is now restricted to small remnants.

Three species of significance have been found within the reserve (Miles, 2004). Kydra westringia *(Westringia kydrensis)* occurs in association with *Allocasuarina nana* heathland and is listed as endangered under the *Threatened Species Conservation Act 1995. Euryomyrtus denticulata* (formerly known as *Baeckea denticulata)* occurs within both disturbed and undisturbed stands of *Allocasuarina nana. Euryomyrtus denticulata* is listed as rare by Briggs and Leigh (1995). A small stand of Ovens wattle *(Acacia pravissima)* exists in the eastern part of the reserve. Generally restricted to north-east Victoria and the Southern Tablelands, this species is rarely found south of the Divide (Costermans 1994) and this stand is considered to be at the eastern limit of its distribution in NSW.

3.3 Introduced Plants

Coolumbooka Nature Reserve is largely surrounded by pine plantations *(Pinus radiata*). Invasion of the reserve by pine wildings is occurring and is of concern as potential exists to alter structural and floristic diversity of the reserve. Vectors for spread of the pine wildings include wind and birds. Monitoring and removal of pine wildings will be an ongoing management issue for the reserve.

Other small weed infestations in the reserve include blackberry *(Rubus fruticosus*) in block 2 of the reserve and spear thistle (*Cirsium vulgare)* in block 1 of the reserve which may require ongoing monitoring and treatment (Marshall and Mackay, 1995). English broom (*Cytisus scoparius*) has been found on the eastern boundary, outside the reserve and willows (*Salix spp.)* occur along the Coolumbooka River.

3.4 Native Animals

The open forest and woodlands of Coolumbooka Nature Reserve provide valuable habitat for local fauna. A total of 127 species have been recorded to date, comprising 20 mammals, 84 birds, sixteen reptiles and seven frogs.

Three threatened species are known to occur within the reserve. These are the powerful owl *(Ninox strenua),* gang gang cockatoo *(Callocephalon fimbriatum)* and the spotted-tailed quoll (*Dasyurus maculatus*) which are all listed as vulnerable under the Threatened Species Conservation Act. Further survey work is required on the spotted-tailed quoll to determine the importance of Coolumbooka Nature Reserve to the species (Shulz, 2002).

Species of significance known to occur within the reserve are the greater glider *(Petauroides volans)*, and the platypus *(Ornithorhynchus anatinus)*.

It is also imperative to maintain a diversity of habitats within the reserve for other species of significance known to occur within the general area such as the peregrine falcon (*Falco peregrinus*) and migratory birds such as Latham's snipe (*Gallinago hardwicki)* which has been recorded at the nearby Warburton Creek.

Potential habitat exists in the reserve for the following species:

- Koala (*Phascolarctos cinereus*)
- Squirrel glider (*Petaurus norfolcensis*)
- Yellow-bellied glider *(Petaurus australis)*
- Eastern pygmy possum (*Cercartetus nanus*)
- Large footed myotis (*Myotis macropus*)
- Common bent-wing bat (*Miniopterus schreibersii*)
- Eastern false pipestrelle (*Falsistrellus tasmaniensis*)
- Masked owl (*Tyto novaehollandiae*)
- Barking owl (*Ninnox connivens*)
- Olive whistler (*Pachycephala olivacea*)
- Square-tailed kite (*Lophoictinia isura*)
- Smoky mouse (*Pseudomys fumeus*)

All these species are listed as vulnerable under the *Threatened Species Conservation Act 1995*, except for the smoky mouse which is listed as endangered. Further survey work is recommended to ascertain their presence or absence.

3.5 Introduced Animals

Of the 127 species recorded in the reserve five are introduced mammals and three are introduced birds. These are:

- Feral dog *(Canis familiaris*)
- Fox (*Vulpes vulpes*)
- Fallow deer (*Cervus dama*)
- Pig (*Sus scrofa*)
- Rabbit (*Oryctolagus cuniculus*)
- European goldfinch (*Carduelis carduelis*)
- Common blackbird (*Turdus merula*)
- Common starling (*Sturnus vulgaris*)

3.6 Aboriginal Heritage

The Coolumbooka area was occupied by the Ngarigo people.

Little is known about past Aboriginal use in the area. Only the fire trails within the reserve have been surveyed for Aboriginal sites. A total of 18 sites were identified, comprising six isolated finds and 12 artefact scatters.

The reserve is unlikely to have provided suitable sites for regular camping because of the steep slopes, however some sites may occur on the Coolumbooka River where it fronts

the northern section of the reserve. The river provides permanent fresh water and food sources such as platypus and freshwater mussels.

The reserve falls within the Eden Local Aboriginal Land Council area.

3.7 Non-Aboriginal Heritage

The majority of Coolumbooka Nature Reserve was formerly vacant crown land. Although there are old tracks and signs of timber extraction, the area is unlikely to have experienced a pattern of permanent settlement or continuous use associated with grazing (NPWS, 1992). The northern part of block 1 was formerly private property and was used for rough grazing and some timber extraction.

As the reserve is a remnant area of natural vegetation surrounded by cleared land and pine plantations, the area has also been used, in the past, for the collection of firewood. Appropriate signage has seen this activity reduced dramatically.

The reserve has also been used in recent times for scientific research. Current research includes studies on subterranean fungi (sporocarps) and their associated fauna herbivory.

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4. MANAGEMENT ISSUES AND STRATEGIES

Current Situation	Desired Outcomes	Strategies	Priority
Soil and water conservation			
The area is generally well vegetated and stable, however the soils of the reserve are easily eroded when disturbed.	Soil erosion is minimised.	Undertake all works in the reserve in a manner that minimises erosion.	High
Rill and sheet erosion are evident in *Allocasuarina nana* heath that has been burnt in previous years. Some of the existing tracks in the area show signs of past erosion but are slowly revegetating to *Allocasuarina nana.*	Water quality is protected.	Monitor tracks that are currently regenerating and take action if needed to arrest any erosion.	Medium
		Maintain soil stability along management trails by undertaking appropriate erosion control as part of the scheduled road maintenance program.	Medium
Protection of the soil is dependent on the *A. nana* heath developing a litter layer as well as a dense canopy.		Trails or firebreaks constructed during wildfire control operations will be rehabilitated as soon as possible. No other tracks or trails will be constructed.	Medium
		Liaise with neighbours and community organisations regarding erosion and water quality issues as needed.	Low
Cultural heritage			
Some Aboriginal sites have been recorded in the reserve, however little is known about Aboriginal use or values in the reserve.	Cultural features are conserved and managed in accordance with their significance.	Precede all ground disturbance work by a check for cultural features. Assess the significance of any sites found and determine management strategies.	High
No historic heritage places are known in the reserve.		Consult and involve the Eden Local Aboriginal Land Council in all aspects of management of Aboriginal sites, places and values.	High
		Survey and record Aboriginal sites.	Medium
		Undertake further research relating to the non-Aboriginal history of the area (e.g. through liaison with historical societies, oral histories etc)	Low

Current Situation	Desired Outcomes	Strategies	Priority
Native plant and animal conservation			
There is limited knowledge about the reserve's native animal communities, particularly with regard to rare and threatened fauna. Three significant plant species have been recorded in the reserve.	All native plant and animal species and communities are conserved.	Undertake further targeted fauna surveys as per the recommendations in Shulz (2002) for large-footed myotis, common bent-winged bat, eastern false pipistrelle, smoky mouse, eastern pygmy possum, square-tailed kite, masked owl, barking owl, olive whistler, spotted-tailed quoll, yellow-bellied glider, koala, squirrel glider, and reptiles and amphibians.	High
Actions to conserve species listed under the TSC Act are included in recovery plans and the Threatened Species Priorities Action Statement.		Protect and conserve the significant plants *Euryomyrtus denticulata, Acacia pravissima and Westringia kydrensis.*	High
The reserve is isolated from other substantial areas of native vegetation. There are no wildlife corridors between Coolumbooka Nature Reserve and South East Forest National Park to the east. The reserve is a significant distance from Kosciuszko National Park to the west.		Participate in the development and implementation of species recovery plans and priority actions for threatened species.	High
		Encourage the retention and management for conservation values of native vegetation adjacent to the reserve through such means as regional vegetation management plans, regional environmental plans, voluntary conservation agreements and possible acquisitions.	High
The reserve is separated into four distinct blocks therefore long term conservation of the area is dependent on the conservation of vegetation on neighbouring land, particularly the parcels of land separating the nature reserve into blocks. This includes: • freehold strip between block 2 and 3 that contains remnant vegetation including Sub Alpine Dry Shrub Forest and *A. nana* heath communities, • the parcel of land between block 1 and 2 that contains a pine plantation and is a potential source of pine wildings, and • freehold to the south of block 4 that contains *E. viminalis* / *E. pauciflora* associations and some of the oldest heaths in the area.		Encourage long term fauna surveys to monitor the changes in the fauna populations and the effectiveness of management for biodiversity.	Medium

Current Situation	Desired Outcomes	Strategies	Priority
Visitor use There are no recreational facilities in the reserve, however public access is currently permitted on the trails. Use of the reserve must be carefully managed since it is a relatively small and significant area of remnant vegetation. The reserve is appropriately sign posted at each entry point. There are gates on Heath Road, Coolumbooka Trail and Western Boundary Trail into the reserve.	The local community is aware and supportive of the significance of the area and of management programs. Visitor use is ecologically sustainable.	Permit only walking and bicycle riding in the reserve. Cycling will be restricted to roads and management trails. Camping and horse riding are prohibited. Monitor levels and impacts of use. If there is adequate demand, provide educational material to promote public awareness of the reserve's values, in particular the rare and remnant plant communities.	Medium Low Low
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 communities. Fire could also damage cultural features and fences and threaten neighbouring land. The fire history of the reserve is largely unknown. According to several sources it has been 40 years since a wildfire has occurred within the area. A fuel reduction burn was undertaken by the Forestry Commission in 1990, in which approximately 475 ha within Block 1 and 90 hectares within Blocks 2 and 3 were treated by aerial ignition. The NPWS undertook fuel reduction burns in 1999 (107ha), 2001 (130ha) and in 2005 (35ha). A Fire Management Strategy has been prepared for the reserve.	Persons and property are protected from bushfire. Fire regimes are appropriate for conservation of plant and animal communities.	Participate in Bombala District Bush Fire Management Committee. Maintain coordination and cooperation with Rural Fire Service brigades, Council fire control officers and neighbours with regard to fuel management and fire suppression. Implement the Fire Management Strategy for the reserve, which details life, property and natural and cultural resource protection strategies. Encourage further research / monitoring into the ecological effects of fire in the reserve, particularly the fire response of *Allocasuarina nana*, *Westringia kydrensis, Euryomyrtus denticulata* and *Acacia pravissima.*	High High Medium

Current Situation	Desired Outcomes	Strategies	Priority
Management operations Management facilities in the reserve consist of vehicle trails, fences, gates and signs. The main vehicle trails will be maintained for management purposes. The reserve boundary fences, particularly along the western boundary, are in poor condition and are a hazard to wildlife.	Management facilities adequately serve management needs and have acceptable impact.	Maintain trails required for management purposes (refer Figure 2). Close 850 Peak Trail and maintain as negotiable access in the event of a wildfire. Place slip rails at either end of trail. Remove internal and boundary fences where they are of no management value to the reserve or neighbouring properties.	High Medium Medium
Introduced species Radiata pines are the major weed species in the reserve. Infestations occur most frequently where the reserve borders pine plantations. Blackberry occurs in Block 2. English broom has been found outside the eastern boundary of the reserve. Willows occur along the Coolumbooka River. Foxes are known to occur in the area and are subjected to a fox baiting program. Wild dogs occasionally move through the area, however, there has been no record of stock attacks on neighbouring properties. Pigs and deer species have been known to move through the area periodically.	The impact of introduced species on native species and neighbouring lands is minimised.	Prepare a pest species control plan. Continue to undertake fox control in cooperation with neighbours. Seek the cooperation of other authorities and neighbours in implementing weed and pest animal control programs. Monitor the reserve for any noxious and significant environmental weeds. Treat any outbreaks. Monitor pest animal species in conjunction with fauna surveys.	High High High High Medium

Current Situation	Desired Outcomes	Strategies	Priority
Research Scientific study is needed to improve understanding of the reserve's natural and cultural heritage, the processes that affect them and the requirements for management of particular species. An ongoing research project currently undertaken in the reserve includes the study of subterranean fungi and their associated fauna herbivory.	Research enhances the management information base and has minimal environmental impact.	Continue to support the subterranean fungi research program in the reserve. A prospectus wil be prepared to encourage and guide research by educational organisations and students in the reserve. The priority research areas include: • species diversity and richness in the reserve; • changes in the status of species in the Coolumbooka area; • protection requirements of montane heaths; • effects of fire on species diversity of the heaths, fuel accumulation and soil stability; and • spread and treatment of pine wildings	Medium Medium

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.