BONDI GULF NATURE RESERVE

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

Part of the Department of Environment and Climate Change

July 2008

This plan of management was adopted by the Minister for Climate Change and the Environment on 21st July 2008.

Acknowledgments

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

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FOREWORD

Bondi Gulf Nature Reserve is located just west of the Monaro Highway, 20 kilometres south of Bombala. It has an area of 1,800 hectares.

Bondi Gulf Nature Reserve contains a diverse array of dry shrub forest, herb forest, woodland and heath. It contains the most southerly occurrence of *Allocasuarina nana* Montane Heath in NSW, and a pocket of Monaro Basalt Grass Woodland which is extremely significant as much of this community has been cleared and it is now restricted to small remnants. The nature reserve provides important habitat for a variety of fauna, with 119 species having been recorded to date.

Little is known about past Aboriginal use of the reserve, however, eight sites have been recorded within the reserve and 32 sites have been recorded within a five kilometre radius of the reserve.

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 Bondi Gulf 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 encouraging regeneration of plant species through erosion control, track rehabilitation and the application of appropriate fire regimes. A pest species control plan will also be prepared and implemented for the reserve.

This plan of management establishes the scheme of operations for Bondi Gulf 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. BONDI GULF NATURE RESERVE

Bondi Gulf Nature Reserve is located just west of the Monaro Highway, 20 kilometres south of Bombala. It lies on the south-eastern edge of the Monaro Tableland (Figure 1). The reserve is an island of natural vegetation dissected by the Genoa River. It contains remnant vegetation, which has now been largely cleared for pine plantations and agriculture.

Bondi Gulf Nature Reserve was gazetted in 1994 and has a total area of 1,800 hectares. The reserve was formerly part of Bondi State Forest.

The reserve falls within the Bombala Local Government Area. The surrounding district is used mainly for pine plantations and grazing and has been extensively modified.

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 Bondi Gulf Nature Reserve except in accordance with this plan. This plan will also apply to any future additions to Bondi Gulf 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.

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

Bondi Gulf Nature Reserve has an elevation ranging between 550 to 800 metres. It is dissected by the Genoa River and its two main tributaries, Bull Flat Creek and Kessers Creek. The Genoa River forms a gorge at Bondi Gulf. There is an area of undulating tableland to the north of the river.

The geology in the north east consists of Late Devonian granites, conglomerate, quartzite, sandstone, shale and siltstone. The geology in the south-west consists of undifferentiated flysch sediments. There is a distinct boundary between Devonian granites and Ordivician sediments within the reserve (NPWS 1992a).

Soils derived from granite are easily erodible. This is evident on the eastern side of the reserve where previous logging and associated roading has resulted in increased sediment flow into the Genoa River.

3.2 Native Plants

Bondi Gulf Nature Reserve contains a diverse array of dry shrub forest, herb forest, woodland and heath. Keith and Bedward (1999) identified the following vegetation associations found within the reserve.

Genoa Dry Shrub Forest, dominated by blue-leaved stringybark (*Eucalyptus agglomerata)*, is the most predominant vegetation type in Bondi Gulf Nature Reserve. It is found on the dry ridges and slopes on sandstone terrain around the Genoa River.

A patch of Montane Heath, dominated by *Allocasuarina nana,* occurs on the skeletal soils derived from Ordovician metasediments on the higher ridges in the north of the reserve and extends into private property (NPWS 1992a). This is the most southerly occurrence of *Allocasuarina nana* in NSW.

Pockets of Tableland Dry Shrub Forest dominated by mountain grey gum *(E. cypellocarpa)*, white stringybark (*E. globoidea)* and narrow-leaved peppermint (*E. radiata)* occur on the ridges and dry slopes, mainly in the north and along the western edges of the reserve.

Areas of Subalpine Dry Shrub Forest, dominated by mountain gum (*E. dalrympleana)* and narrow-leaved peppermint *(E. radiata),* occur between the sheltered gullies and the heath in the northern section of the reserve. This vegetation type was once widespread in the region but is now confined to remnant stands. The remnants within the reserve have previously been logged.

Mountain Wet Herb Forest, consisting of mountain grey gum (*E. cypellocarpa)*, messmate (*E. obliqua)* and silvertop ash (*E. sieberi),* is found on moist sheltered granitoid slopes, mostly to the east of the reserve. Much of this vegetation type is revegetating from previous logging.

A pocket of Monaro Basalt Grass Woodland occurs on relatively well drained undulating basalt terrain in the northern section of the reserve. The dominant species include snow gum (*E. pauciflora)* and manna gum (*E. viminalis).* This vegetation type is extremely significant as much of it has been cleared and it is now restricted to small remnants.

Small pockets of old growth forest are found in the gullies on the steeper slopes. The gullies are dominated by manna gum and sphagnum swamps occur on the flatter drainage lines in the northern section (NPWS 1992a).

3.3 Introduced Plants

Bondi Gulf Nature Reserve is 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 willows (*Salix spp*), spear thistle (*Cirsium vulgare*), great mullein (*Verbascum thapsus)* and blackberries (*Rubus fruticosus*).

3.4 Native Animals

The nature reserve provides important habitat for a variety of fauna. The surrounding areas have been significantly modified increasing the value of these remnants for native fauna habitat. A total of 119 species have been recorded to date, comprising 71 birds, 7 amphibians, 14 reptiles and 27 mammals.

Threatened fauna known to occur in the reserve include the yellow-bellied glider (*Petaurus australis*), eastern pygmy possum (*Cercarteus nanus*), gang-gang cockatoo *(Callocephalon fimbriatum)* and olive whistler (*Pachycephala olivacea*) which are all listed as vulnerable under the *Threatened Species Conservation Act 1995* (TSC Act).

Potential habitat exists in the reserve for the powerful owl *(Ninox strenua*), spotted-tailed quoll (*Dasyurus maculatus*), masked owl *(Tyto novaehollandiae*), square-tailed kite *(Lophoictinia isura),* pink robin (*Petroica rodinogaster),* large-footed myotis (Myotis marcopus), common bent-wing bat (*Miniopterus schreibersii*), eastern false pipistrelle (*Falsistrellus tasmaniensis*) and giant burrowing frog (*Heleioporus australiacus)*. All these species are listed as vulnerable under the TSC Act. The *s*tuttering frog *(Mixophyes balbus),* which is listed as endangered under the TSC Act, may also occur within the reserve. Further survey work is recommended to determine the presence or absence of these species.

Other species of significance which occur within the reserve include the greater glider *(Petauroides volans)* and the platypus (*Ornithorhynchus anatinus*).

3.5 Introduced Animals

Of the 119 species recorded in the reserve, six are introduced mammals and include the feral dog (*Canis familiaris*), fox (*Vulpes vulpes*), deer (*Cervus spp*), pig (*Sus scrofa*), cat (*Felis catus)* and rabbit (*Oryctolagus cuniculus*).

3.6 Aboriginal Heritage

The Bondi Gulf area was occupied by the Ngarigo people.

Little is known about past Aboriginal use of the reserve. Eight sites have been recorded within the reserve and 32 sites have been recorded within a five kilometre radius of the reserve.

The reserve is dissected by a major water course, the Genoa River, and it is possible that groups may have moved seasonally through the area.

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

3.7 Non-Aboriginal Heritage

Bondi Gulf Nature Reserve was formerly part of Bondi State Forest and was managed by the Forestry Commission of NSW. Approximately 450 hectares of the forest was declared as Bondi Gulf Flora Reserve in 1983.

Areas within and adjacent to the reserve have been extensively logged, the exceptions being the former flora reserve and the steep gullies surrounding Genoa River and the creeks (NPWS 1992a). Logging, associated log dumps, roads, trails and snig tracks have modified much of the area.

Under former management firewood collection was allowed in the reserve.

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.

References

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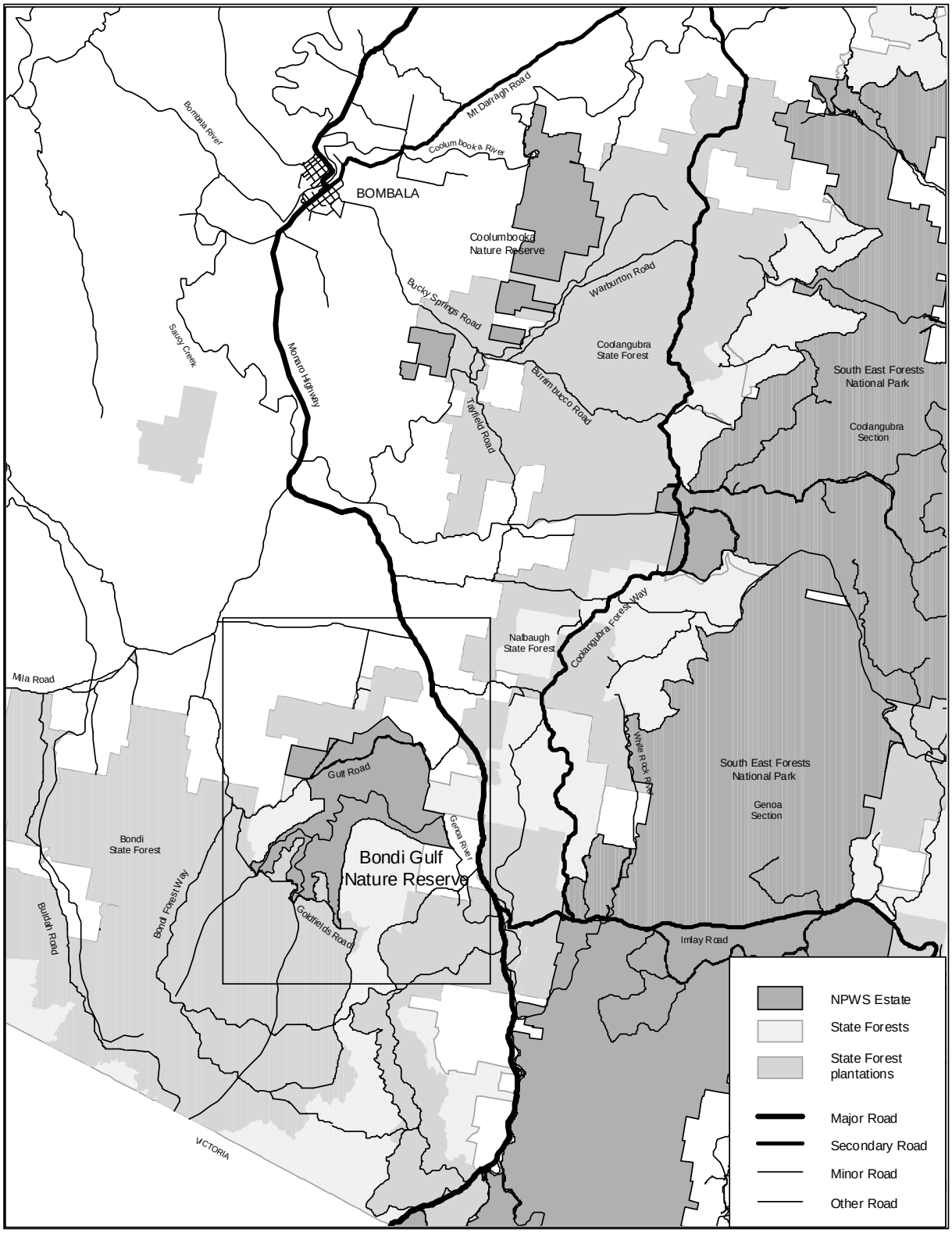

Figure 1: Bondi Gulf Nature Reserve Location Map

See Figure 2 for details of inset area

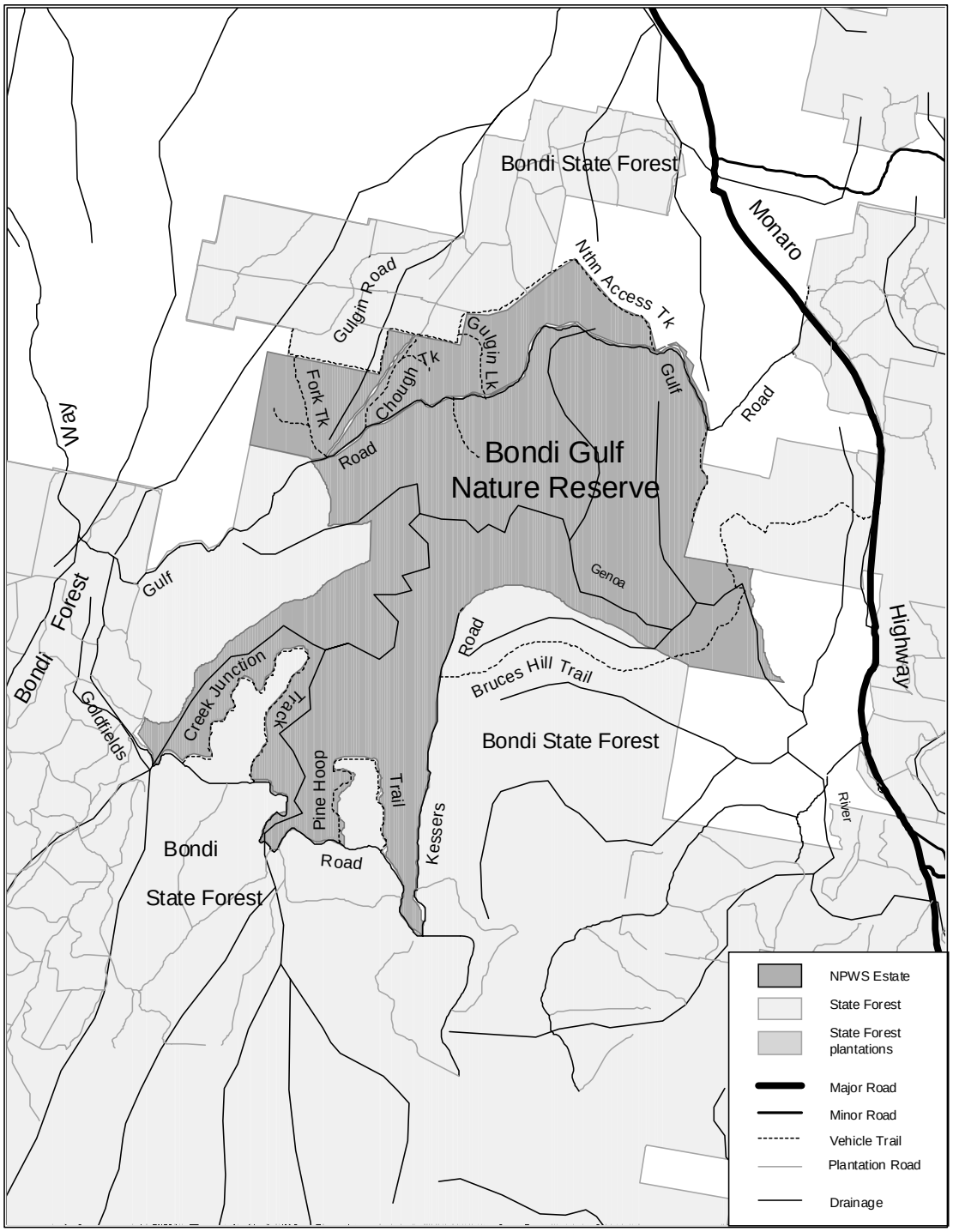

Figure 2: Bondi Gulf Nature Reserve

4. MANAGEMENT ISSUES AND STRATEGIES

Current Situation	Desired Outcomes	Strategies	Priority
Soil and water conservation			
The soils derived from granite are highly susceptible to sheet and gully erosion.	Soil erosion is minimised.	Undertake all works in the reserve in a manner that minimises erosion and water pollution.	High
Past logging practices and road construction has resulted in accelerated erosion, particularly on the eastern ridge. This affects the sediment flows into the Genoa River and its tributaries and impedes the regeneration of disturbed sites.		Undertake a survey to determine actively eroding areas, particularly areas associated with former logging trails, tracks and coupes.	High
		Stabilise and monitor sites of accelerated erosion.	Medium
Native plant and animal conservation			
There is limited knowledge about the reserve's native animal communities, particularly with regard to rare and threatened fauna.	All known native plant and animal species and communities are conserved.	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 and voluntary conservation agreements.	High
Past logging and associated activities have degraded substantial areas of the reserve's vegetation.	Structural diversity and habitat values are restored in areas subject to past logging.	Encourage fauna surveys to develop an inventory and monitor the changes in the fauna populations and the effectiveness of management for biodiversity.	Medium
The reserve is an island of remnant vegetation, surrounded by pine plantations, Forests NSW and grazing property. It provides a refuge for fauna from adjacent forest in times of disturbance including logging and fire. Long term conservation depends upon retention of remnant vegetation on neighbouring properties and re-establishment of links between the remnants.		Monitor plant communities degraded from past logging operations to ensure adequate natural revegetation occurs. Encourage regeneration of plant species through erosion control, track rehabilitation and the application of appropriate fire regimes.	Medium
A large area of *Allocasuarina nana* lies outside the reserve, on private property to the north.			

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 communities. Fire could also damage cultural features and fences and threaten neighbouring land. 75% of the reserve was burnt in a major wildfire in 1983. Fire history prior to this is unknown. Fuel reduction burns were undertaken by the Service within the northern part of the reserve in 1999. 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.	Implement the Fire Management Strategy for the reserve, which details life, property and natural and cultural resource protection and management strategies. Use prescribed fire to achieve appropriate fire regimes in different vegetation types. Restrict the incidence of fire in areas naturally regenerating from the effects of logging. Exclude fire from Genoa River and associated catchments, and reduce the risk of wildfire spreading to adjoining Forests NSW and private property. Participate in Bombala District Bush Fire Management Committee. Maintain coordination and cooperation with Rural Fire Service brigades and neighbours with regard to fuel management and fire suppression. Encourage further research into the ecological effects of fire in the reserve, particularly the fire response of *Allocasuarina nana*.	High High High High Medium
Cultural heritage Little is known about Aboriginal use or values in the reserve. Eight sites have been recorded in the reserve. No significant historic heritage places are known in the reserve.	Cultural features are conserved.	Precede all ground disturbance work by a check for cultural features. Record and protect any sites found. Consult and involve the Eden Local Aboriginal Land Council in management of Aboriginal sites, places and values.	High High

Current Situation	Desired Outcomes	Strategies	Priority
Introduced species			
Foxes and wild dogs occur in the area and are subjected to annual fox and dog baiting programs. Reactive baiting and trapping programs are also undertaken in response to domestic stock attacks on neighbouring property.	The impact of introduced species on native species and neighbouring lands is minimised.	Prepare a pest species control plan for the reserve which is consistent with Regional Pest Strategy.	High
		Continue to undertake fox and dog control as part of a cooperative program with neighbours and other stakeholders.	High
Pigs, cats, deer and rabbits also occur within the reserve. Control is undertaken on an opportunistic basis.		Continue to work cooperatively as part of the Interstate Pest Animal Working Group.	High
Radiata pine wildings, willows, spear thistle, great mullein and blackberries occur within the reserve.		Monitor the condition of the Genoa River riparian area in relation to willows and other weed species. Participate as an active member of the Genoa River Interstate Liaison Committee.	High
		Monitor for any noxious and significant environmental weed infestations. Treat any outbreaks.	High
		Map pine wildings and seek cooperative programs with Forests NSW for pine wilding control.	Medium
		Monitor pest animal species in conjunction with fauna surveys.	Medium

Current Situation	Desired Outcomes	Strategies	Priority
Research Scientific study will 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 subterranean fungi research program in the reserve. A prospectus will 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 Bondi Gulf area; • protection requirements of montane heaths; and • effects of fire on species diversity of the heaths, fuel accumulation and soil stability.	Medium Medium
Visitor use There are no recreational facilities in the reserve, however public vehicle access is currently permitted on the trails. Gulf Road and Bruces Hill Trail provide vehicle access into the reserve from the Monaro Highway. Vehicle access to the southern part of the reserve is via Goldfields Road and Kessers Road. Use of the reserve must be carefully managed since it is a relatively small and significant area of remnant vegetation. The Genoa River Gorge offers scenic recreation for bushwalkers.	The local community is aware and supportive of the significance of the area and of management programs. Visitor use is ecologically sustainable.	Camping and horse riding are prohibited in the reserve. Walking and bicycle riding are permitted in the reserve. Cycling will be restricted to roads and management trails and not permitted off formed trails. Monitor levels and impacts of use. Provide information to promote public awareness of the reserve's values, in particular the rare and remnant plant communities.	High Medium Low Low

Current Situation	Desired Outcomes	Strategies	Priority
Management operations			
Management facilities consist of vehicle tracks, boundary fences and signs.	Management facilities adequately serve management needs and have acceptable impact.	Maintain fire breaks between the reserve and pine plantations, on a cooperative basis with neighbours.	High
Gulf Road is the major access route through the reserve and is a dedicated Forests NSW Road.		Maintain trails required for management purposes (refer Figure 2).	High
The main vehicle tracks will be maintained for management purposes. A number of dead-end snig trails and logging tracks are no longer required.		Close and rehabilitate all dead-end trails and old snig and logging tracks.	High
		Provide appropriate signage for the reserve.	Medium
		Undertake fencing agreements with neighbours where necessary.	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.