

TURALLO NATURE RESERVE

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

Part of the Department of Environment and Climate Change NSW

April 2009

This plan of management was adopted by the Minister for Climate Change and the Environment on 19th May 2009.

Acknowledgments

The NPWS acknowledges that this reserve is on the border of the traditional country of the Ngunawal and Ngarigo people.

This plan of management is based on a draft plan prepared by the staff of the South West Slopes Region of the NSW National Parks and Wildlife Service (NPWS), part of the Department of Environment and Climate Change.

For additional information or any inquiries about this reserve or this plan of management, contact the NPWS Queanbeyan Area Office at 6 Rutledge St, Queanbeyan NSW 2620, or by telephone on 62992929.

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FOREWORD

Turallo Nature Reserve is located in the southern tablelands of NSW, approximately three kilometres south of Bungendore. The reserve covers an area of 25 hectares.

Turallo Nature Reserve protects one of the region's best examples of Natural Temperate Grassland of the Southern Tablelands, an endangered ecological community listed under Commonwealth legislation. It has a particularly high native plant species richness, with around 100 species being recorded.

A number of threatened fauna have also been recorded in the reserve, including the diamond firetail, little whip snake, and the Canberra raspy cricket (listed under ACT legislation). It also contains a rare large green weevil which has not been recorded in recent years except in 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 the Turallo Nature Reserve was placed on public exhibition from 27th July until 29th October 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 maintenance and enhancement of the diversity of the grassy understorey, control of introduced plants and animals, and fire management.

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



Carmel Tebbutt MP
Deputy Premier
Minister for Climate Change and the Environment

1. TURALLO NATURE RESERVE

Turallo Nature Reserve is located in the southern tablelands of NSW, approximately three kilometres south of Bungendore. The reserve, comprising 25 hectares, was gazetted in February 2003, and comprises a rare sample of native grassland.

The reserve was previously gazetted as a travelling stock reserve and camping reserve (No. 37801). Although it was also used as a golf course from 1938-1970, this reservation ensured the protection of an ecological community that has been lost from much of the surrounding agricultural land. The reserve was named after the nearby Turallo Range.

The reserve is located within a largely rural area, administered by the Palerang Council, and falls within the boundary of the Murrumbidgee Catchment Management Authority. The Ngunnawal Local Aboriginal Land Council area includes the reserve.

2. MANAGEMENT CONTEXT

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) may require the assessment and mitigation of the environmental impacts of 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 Turallo Nature Reserve except in accordance with the plan. The plan will also apply to any future additions to Turallo 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.

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, nature reserves are managed to:

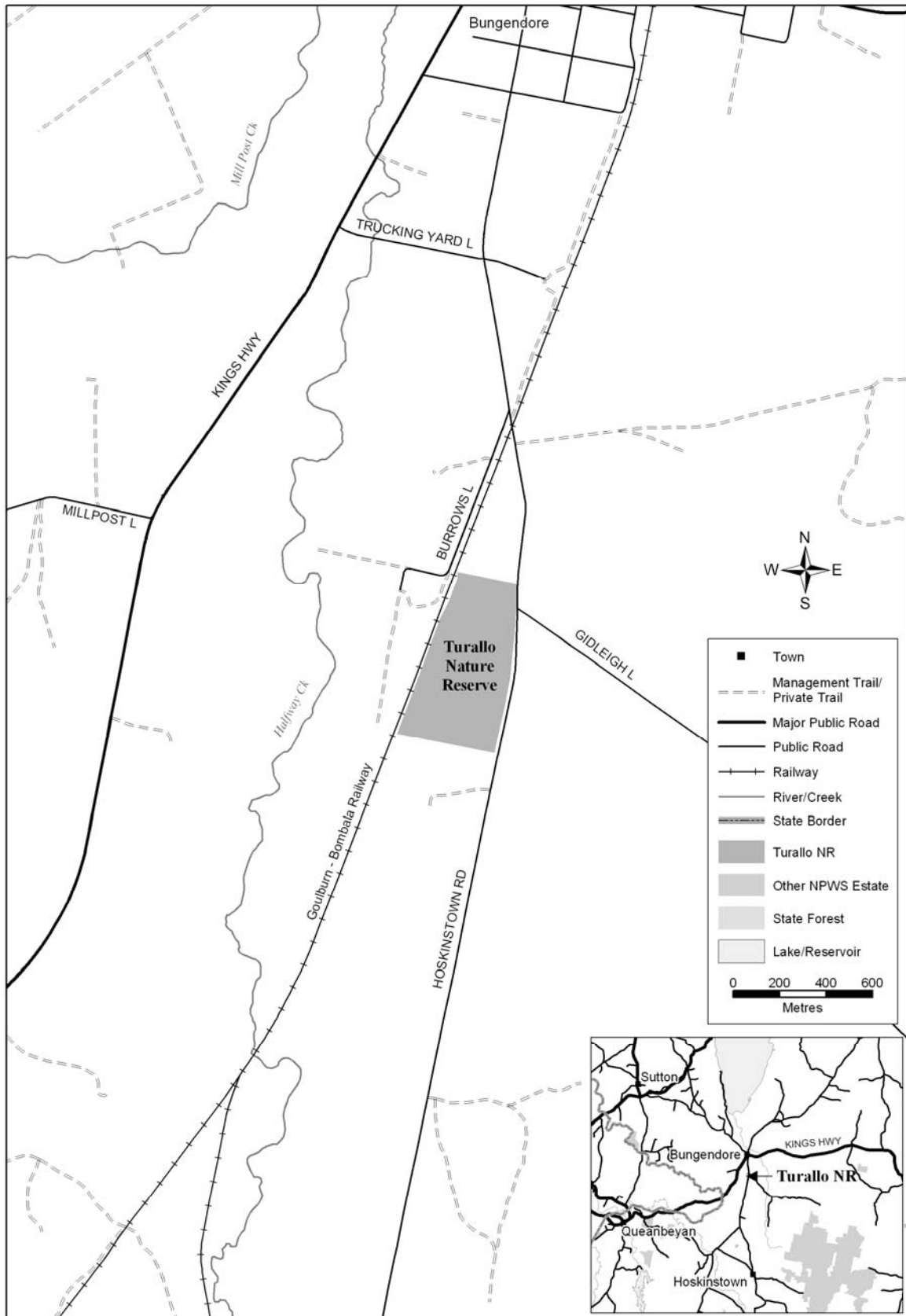
- conserve biodiversity, maintain ecosystem functions, and protect geological and geomorphological features and natural phenomena;
- conserve places, objects, features and landscapes of cultural value;
- promote public appreciation, enjoyment and understanding of the reserve's natural and cultural values; 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 MANAGEMENT DIRECTIONS

Management of Turallo Nature Reserve will focus on maintaining and enhancing the diversity of the grassy understorey and protecting the threatened or rare fauna found on the reserve.

RESERVE MAP



3. VALUES OF THE RESERVE

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

The reserve is located in the Bungendore valley, at approximately 700m above sea level. It is sited on a gentle, west-facing foot-slope and is intersected by several shallow drainage lines. Quaternary sediments and the Upper Silurian Captains Flat formation underlie the reserve. The soils are generally poorly draining clays, though the upper slopes are more gravelly.

3.2 NATIVE PLANTS

The reserve protects one of the region's best examples of Natural Temperate Grassland of the Southern Tablelands (NSW and ACT), an endangered ecological community, listed under the Commonwealth's *Environmental Protection and Biodiversity Conservation Act, 1999*. The grassland at Turallo is dominated by wallaby grass *Danthonia carphoides* on the upper gravelly slopes and by kangaroo grass *Themeda australis* on deeper or moister soils. The kangaroo grass grades from a medium density on the slopes to a high density on deeper soils in the lower basin.

The reserve has a particularly high native plant species richness, totalling some 100 species, including grasses, other graminoids and forbs. Many species of forbs regarded as indicators of sites of good condition are found in the reserve, some in large populations. Many forb species present at the site are declining in abundance across the broader landscape in response to agricultural practices such as grazing and cultivation.

Regionally declining forbs recorded on the reserve include nodding chocolate lily *Dichopogon fimbriatus*, spur velleia *Velleia paradoxa*, golden moths *Diuris chryseopsis*, golden cowslips *Diuris behrii*, *Polygala japonica*, grass cushion *Isoetopsis graminifolia*, yellow centauray *Sebaea ovata*, blue devil *Eryngium rostratum*, lemon beautyheads *Calocephalus citreus* and chamomile burr-daisy *Calotis anthemoides*. Other species include bulbine lily *Bulbine bulbosa*, common onion orchid *Microtis unifolia*, swan greenhood *Pterostylis cycnocephalus* and slender sun orchid *Thelymitra pauciflora*. Hoary sunray *Leucochrysum albicans* subsp. *albicans* var. *tricolor* (listed as threatened under the *Environment Protection and Biodiversity Conservation Act, 1999*) is found in the adjacent road reserve, and native flax *Linum marginale* is recorded in the adjoining rail reserve.

Several specimens of mature candlebark *Eucalyptus rubida*, as well as a patch of regenerating trees of this species, are found on the lower slopes of the reserve. Within this patch is an individual of the black gum *Eucalyptus aggregata*. This species has a restricted distribution fringing frost-prone valleys and is poorly reserved. Both these tree species are typically associated with natural temperate grassland in the region. As candlebarks are often found at the boundary between woodland and lowland temperate grassland, the upper slopes of the reserve may once have supported woodland, and yellow box trees are found nearby on the road reserve.

3.3 NATIVE ANIMALS

A number of threatened fauna have been recorded in the reserve, including the diamond firetail *Stagonopleura guttata* and little whip snake *Suta flagellum*, listed as vulnerable under the *TSC Act* and the Canberra raspy cricket *Coorabarama canberrae*, listed as threatened under ACT legislation. The reserve contains suitable habitat for the endangered grassland earless dragon *Tympanocryptis pinguicolla* (*TSC* and *EPBC Acts*), the perunga grasshopper *Perunga ochracea* and the striped legless lizard *Delma impar* (both listed as vulnerable under the *TSC Act* and *EPBC Act*), though none of these species has been recorded in recent surveys. The gang-gang cockatoo *Callocephalon fimbriatus* and Latham's snipe *Gallinago hardwickii* have also been recorded in the reserve, but would only utilise it as part of the resources of the broader landscape.

A large green weevil *Leptopius glaucus*, a little known species, has also been recorded in the reserve in 2005. It was first described in 1882 and the type locality is Bungendore, but nothing is known of its habitat or habits and it is rarely collected. It has been recorded in the ACT and from a few places in southern NSW and Victoria, but except for this recording in the reserve, not in recent years (Rowell, 2005).

Herpetofauna recorded in the reserve include the three-lined skink *Bassiana duperreyi*, three-toed skink *Hemiergus decresiensis*, spotted grass frog *Limnodynastes tasmaniensis*, brown froglet *Crinia parinsignifera* and eastern brown snake *Pseudonaja textilis*.

A number of birds have been recorded within the reserve including white-faced heron *Ardea novaehollandiae*, Australian kestrel *Falco cenchroides*, crested pigeon *Ocyphaps lophotes*, Richard's pipit *Anthus novaeseelandiae*, dusky woodswallow *Artamus cyanopterus*, stubble quail *Coturnix pectoralis*, striated pardalote *Pardalotus striatus*, noisy miner *Manorina melanocephala*, red-rumped parrot *Psephotus haemototus*, white-winged triller *Lalage tricolor*, galah *Cacatua roseicapilla* and Australian magpie *Gymnorhina tibicen*.

3.4 ABORIGINAL HERITAGE

Aboriginal communities have an association and connection to the land. The land and water 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, kinship systems and strengthening social bonds. Aboriginal heritage and connection to nature are inseparable from each other and need to be managed in an integrated manner across the landscape.

The reserve lies within the area of the Ngunnawal Local Aboriginal Land Council. Traditional uses such as hunting, gathering and ceremony would have taken place over the entire landscape, of which the reserve is only a small part. No formal surveys have been undertaken in the reserve, and no sites have been recorded to date.

3.5 HISTORIC HERITAGE

The reserve was gazetted as a Travelling Stock Reserve and Camping Reserve in 1904. From 1938 until the 1970s the reserve was used as a golf course. Some areas of disturbance from old sand bunkers are still visible in the reserve. From the early 1980s the Rural Lands Protection Board issued a number of grazing permits over the reserve. No relics from previous occupation have been recorded.

3.6 EDUCATION AND RESEARCH VALUES

The reserve is frequently used by Friends of Grasslands and other scientific groups as a study and interpretive site. The reserve contains a number of monitoring transects and fauna survey plots installed since gazettal. General flora data has been collected regularly since 1995.

4. THREATS TO RESERVE VALUES

4.1 PEST SPECIES

Weeds present in the reserve include St John's wort, serrated tussock, Chilean needle grass, sweet briar, hawthorn, phalaris and cocksfoot. Other weeds of concern, recorded in adjoining lands, include African love grass. The exotic grasses in particular have a high potential to invade grassy ecosystems and reduce the abundance of native grass and herb species.

Most sweet briar and hawthorn plants have been killed since the reserve's gazettal, and significant areas of the other weeds have been treated.

Pest animals include rabbits, cats and foxes, as well as domestic pets, although all exist at very low densities in the reserve.

4.2 ISOLATION AND FRAGMENTATION

With the exception of the adjacent travelling stock reserve, the area surrounding the reserve has been extensively modified, which has resulted in a high loss of biodiversity and fragmentation of habitat. In this context and given the small size of the reserve, and associated small populations of threatened fauna and some flora, precautionary management is warranted to ensure against loss of species.

The reserve is vulnerable to invasion of exotic plants and animals from surrounding lands, reducing native plant diversity and abundance. The reserve is at risk from catastrophic events, such as widespread, intense fire or climate change as recruitment of any species lost will be hindered by the reserve's isolation.

5. REFERENCES

Crawford, I. (2003) *Turallo Grassland Monitoring*. Report for NPWS

Rowell, A and Bishop, N (2005) *Turallo Nature Reserve Fauna Survey –January 2004 to June 2005*. Report for NSW National Parks and Wildlife Service.

Taws, N (2005) *Flora Monitoring – Turallo, Stony Creek and Scott Nature Reserves* Report for NSW National Parks and Wildlife Service

6. MANAGEMENT ISSUES AND STRATEGIES

Current Situation	Desired Outcomes	Strategies	Priority
<p>Soil and water conservation</p> <p>Bare ground and lighter vegetation cover is still evident in the reserve where the soil has been disturbed in the past.</p> <p>Drainage lines in the reserve feed into Turallo Creek and ultimately into Lake George.</p>	<p>Soil erosion is minimised.</p>	<p>Undertake all works in a manner that minimises erosion and water pollution.</p>	<p>High</p>
<p>Native plant and animal conservation</p> <p>Extensive plant survey has been undertaken in the reserve. The reserve protects high diversity grassland.</p> <p>A number of threatened or rare fauna have been recorded in the reserve, including the diamond firetail, little whip snake, Canberra rasy cricket and the perunga grasshopper.</p>	<p>All native plant and animal species and communities are conserved.</p> <p>Structural diversity and habitat values are restored in areas subject to timber removal and grazing.</p>	<p>Promote re-establishment of native ground layer species in weed-treated areas.</p> <p>Monitor the abundance and distribution of regionally-declining ground layer species.</p>	<p>Medium</p>
<p>Candlebark <i>Eucalyptus rubida</i> regrowth is occurring around the base of the few remaining mature trees. The spacing between stems is very close (< 5m), draining nutrients and moisture from the soil, depositing a deep leaf litter bed and suppressing the grassy groundlayer.</p>	<p>Understorey diversity increases.</p> <p>Habitat quality for threatened species is maintained.</p> <p>Populations of threatened species persist.</p>	<p>If monitoring indicates that ongoing loss of diversity is occurring due to biomass build up assess options to reduce biomass (such as the application of fire or slashing). Assessment will consider impacts on threatened fauna as well as flora.</p> <p>If biomass control is undertaken, monitor impacts of single or repeated control measures on ground layer structure, species' diversity and abundance.</p> <p>Monitor the presence and distribution of the little whip snake and Canberra rasy cricket.</p> <p>Control candlebark regrowth to appropriate density to maintain grassy groundlayer.</p>	<p>Medium</p> <p>Medium</p> <p>Medium</p>

Current Situation	Desired Outcomes	Strategies	Priority
<p>Introduced species</p> <p>Weeds present in the reserve include St John's wort, serrated tussock, Chilean needle grass, sweet briar, hawthorn, phalaris and cocksfoot. Other weeds of concern, recorded in adjoining lands, include African lovegrass. The exotic grasses in particular have a high potential to invade grassy ecosystems and reduce abundance of native grass and herb species.</p> <p>Annual weed control programs have been implemented since the reserve's gazettal, controlling most of the hawthorn and sweet briar and treating a high proportion of the other weeds.</p> <p>Pest animals include rabbits, cats and foxes, as well as domestic pets from nearby properties. Rabbit control is undertaken.</p>	<p>The impact of introduced species on native species and neighbouring lands is minimised.</p>	<p>Control introduced plant and animal species. Priority will be given to the control of Chilean needle grass and serrated tussock.</p> <p>Monitor the reserve for the invasion of exotic grasses and other species and control when they are found.</p> <p>Seek the cooperation of other authorities and neighbours in implementing weed and pest animal control programs.</p> <p>Undertake control of rabbits in such a way as to limit spread of weeds into reserve and to minimise soil disturbance.</p>	<p>High</p> <p>High</p> <p>Medium</p> <p>Medium</p>

Current Situation	Desired Outcomes	Strategies	Priority
<p>Fire management</p> <p>The reserve is very small within a landscape context. While the grass fuels on the reserve are highly flammable, the likelihood of ignitions occurring within the reserve is slight.</p> <p>A small fire (<0.2 ha) occurred near the railway in May 2002, ignited from a train or by arson. No other signs of fire are apparent in the reserve and there are no reports of fires affecting the reserve in the last 50 years. A house is sited immediately adjacent to the northern boundary of the reserve.</p> <p>Fire is a natural occurrence in the Australian environment. However, too frequent fire can cause the loss of particular plant and animal species and communities. The threatened invertebrate and reptile fauna in the reserve are known to be vulnerable to impacts of winter burning, particularly to stress caused by winter burns which increase exposure of these animals to cold and moisture.</p> <p>A Fire Operations Map has been prepared for the reserve.</p> <p>Monitoring will continue to assess the impacts of the fire regime on the flora and fauna of the reserve.</p>	<p>Persons and property are protected from bushfire.</p> <p>Fire regimes are appropriate for conservation of plant and animal communities.</p> <p>Cultural features are protected from damage by fire.</p> <p>Maintain key structural features for threatened fauna such as timber for shelter sites.</p>	<p>Continue to participate in the Lake George District Bush Fire Management Committee. Maintain coordination and cooperation with Rural Fire Service fire control officers, brigades and neighbours with regard to fuel management and fire suppression.</p> <p>Suppress all unplanned fires in the reserve as soon as possible.</p> <p>For biodiversity management within the reserve:</p> <ul style="list-style-type: none"> • Contain fires to as small an area as possible • Maintain as much of the reserve as possible in as old a fire age class as possible <p>Should monitoring indicate that there is a significant loss of groundlayer species, and trial burns indicate that burning will increase species diversity, the burning regime may be modified.</p>	<p>Medium</p> <p>High</p> <p>Medium</p> <p>Medium</p>

Current Situation	Desired Outcomes	Strategies	Priority
<p>Cultural heritage</p> <p>No Aboriginal sites or sites of historic importance have been identified within the reserve. The reserve contains scars of old sand bunkers from previous use as a golf course.</p>	<p>Cultural features are conserved and managed in accordance with their significance.</p>	<p>Precede all ground disturbance work by a check for cultural features. If any sites are found, incorporate conservation measures to mitigate impacts on cultural heritage.</p> <p>Consult and involve the Ngunnawal Local Aboriginal Land Council and other Aboriginal stakeholders in all aspects of management of any Aboriginal sites, places and values relating to the reserve.</p> <p>The bunkers will be allowed to revegetate.</p>	<p>Medium</p> <p>Medium</p> <p>Medium</p>
<p>Visitor use</p> <p>The reserve has had little recent public use. The reserve provides an important resource for the people of Canberra-Queanbeyan including nature study groups, and adjoining rural residential areas to enjoy, appreciate and understand the natural environment, and in particular the values of grassland.</p> <p>An interpretive sign describing the flora values of the grassland has been installed. Currently there is no information displayed describing the fauna values of the reserve.</p>	<p>The local community is aware of the significance of the area and of management programmes.</p> <p>Visitor use is ecologically sustainable.</p>	<p>Permit day walks, (no facilities will be provided and no fires permitted) and educational visits, subject to limits on numbers and other conditions if necessary to minimise impacts.</p> <p>Erect signs indicating that domestic animals, camping, driving, trail bike riding and horse riding are prohibited.</p> <p>Monitor levels and impacts of use.</p>	<p>Medium</p> <p>Medium</p> <p>High</p>

Current Situation	Desired Outcomes	Strategies	Priority
<p>Research</p> <p>Recent research into the flora and fauna of the reserve provides a basis for informed management. A program has been established to monitor changes in the diversity and abundance of flora species in response to environmental and management factors.</p>	<p>Research enhances the management information base and has minimal environmental impact.</p>	<p>Monitor the abundance and diversity of significant groundlayer species using established transects.</p> <p>Monitor fauna in response to any significant impacts on the reserve by repeating survey methodology as established by Rowell.</p> <p>Trial biomass reduction of less than 10% of the reserve to measure biodiversity response to single and repeated treatments, if appropriate.</p>	<p>Medium</p> <p>Medium</p> <p>Medium</p>
<p>Management operations</p> <p>There are no management facilities in the reserve.</p> <p>Routine management operations include weed and rabbit control.</p>	<p>Management operations have acceptable impacts.</p>	<p>Exclude vehicular access except for essential management requirements of the reserve. Where practicable, management activities will be undertaken on foot or by ATV, to reduce impacts on groundlayer vegetation.</p>	<p>Medium</p>

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.