Office of Environment & Heritage
NSW National Parks & Wildlife Service

Plan of Management

Goorooyarroo Nature Reserve

GOOROOYARROO NATURE RESERVE

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

March, 2013

This plan of management was adopted by the Minister for the Environment on the 27th February 2013.

Acknowledgements

This plan of management is based on a draft plan prepared by staff of the Southern Ranges Region of the NSW National Parks and Wildlife Service (NPWS), part of the Office of Environment and Heritage.

The NPWS acknowledges that this reserve is in the traditional country of the Ngunnawal people.

For additional information or any inquiries about this reserve or this plan of management, contact the NPWS Queanbeyan Area Office, 11 Farrer Place or by telephone on 02 6229 7166.

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FOREWORD

Goorooyarroo Nature Reserve is situated adjacent to the eastern ACT border, 6 kilometres north of Queanbeyan. It is comprised of two portions of land totalling 290 hectares in size.

Goorooyarroo Nature Reserve contains an area of the Yellow Box - Blakely's Red Gum Woodland endangered ecological community and habitat for twelve threatened bird species. It provides an important role in protecting native woodland vegetation in an extensively cleared and farmed landscape.

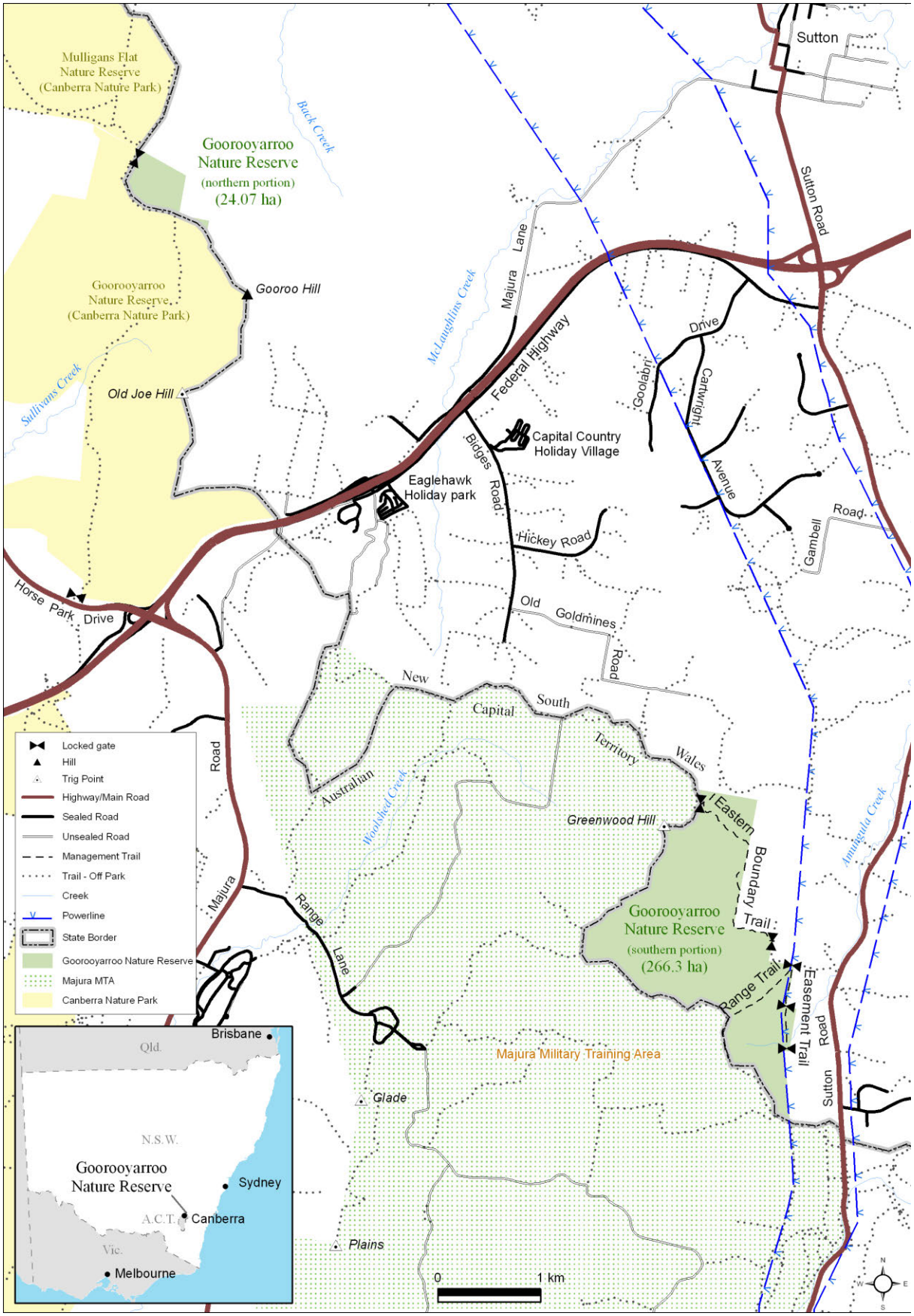
The New South Wales *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each national park and state conservation area. A draft plan of management for Goorooyarroo Nature Reserve was placed on public exhibition from 27 April until 30 July 2012. The submissions received were carefully considered before adopting this plan.

The plan contains a number of actions to achieve the NSW 2021 goal to protect our natural environment, including strategies to assist the recovery of threatened species and ecological communities, to undertake remedial actions if needed to minimise erosion, to control weeds and pest animals, and to update the fire management strategy for the reserve.

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

Robyn Parker MP
Minister for the Environment

MAP OF GOOROOYARROO NATURE RESERVE



1. LOCATION, GAZETTAL AND REGIONAL CONTEXT

Goorooyarroo Nature Reserve is situated approximately 6 kilometres north of Queanbeyan and comprises of two portions of land totalling 290.37 hectares. Both portions are adjacent to the eastern ACT border.

The reserve was first gazetted on the 27th June 1973 over 216.3 hectares of what is now the southern portion of the reserve. Prior to being Goorooyarroo Nature Reserve it was part of Goorooyarroo State Forest. On the 18th August 1989 an additional 50 hectares was added to the southern side of the reserve.

On the 6th August 2010 the northern portion of the reserve was gazetted. It is located north of the Federal Highway and comprises 24.07 hectares adjacent to the ACT's Goorooyarroo Nature Reserve and Mulligans Flat Nature Reserve (see Reserve Map). The northern portion was transferred to NSW National Parks and Wildlife Service in line with the Australian Government's Commonwealth Property Disposals Policy.

The southern section of the reserve was established to protect a sample of woodland vegetation 'likely to be greatly reduced by the expected growth of Canberra/Queanbeyan' and not otherwise reserved in NSW (NPWS report 1971).

Much of the surrounding country is cleared for rural and urban development. However parts of the reserve are flanked by woodland that is largely owned by the Department of Defence. Immediately to the west of the southern portion is the Majura Training Area which is managed by the Department of Defence. This portion is within an area used in the 1940's as an aerial bombing site. There has been unexploded ordnance (UXO) found within the reserve. It is possible that unexploded artillery and aerial delivered weapons may exist within the reserve. For this reason no public access is permitted within the southern portion of the reserve and there is limited access for management and fire fighting.

The reserve is within the geographical area of the Palerang and Yass Councils, the Murrumbidgee Catchment Management Authority, and the Ngambri Local Aboriginal Land Council.

2. MANAGEMENT CONTEXT

2.1 LEGISLATIVE AND POLICY FRAMEWORK

The management of nature reserves in NSW is in the context of the legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPWS Act), the NPW Regulation, *Threatened Species Conservation Act 1995* (TSC Act), and the policies of the National Parks and Wildlife Service (NPWS).

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 Goorooyarroo Nature Reserve except in accordance with this plan. This plan will also apply to any future additions to this reserve. Should management strategies or works be proposed for the nature reserve or any additions that are not consistent with this plan, an amendment to this plan or a new plan will be prepared and exhibited for public comment.

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 the provision of recreation as a management principle.

2.3 SPECIFIC MANAGEMENT DIRECTIONS

Goorooyarroo Nature Reserve will be managed to protect its native plant and animal communities. Major efforts will be directed towards:

- the protection and encouragement of habitat diversity;
- the control of introduced plant and animal species;

- the reduction as far as possible of unplanned fire in the reserve;
- maintaining and improving the connectivity of the Gungahlin woodland complex and Box-Gum Woodland in the region;
- liaising with neighbours for cooperative implementation of pest control and broader management programs to promote reserve values in the northern portion;
- appropriate visitor use in the northern portion; and
- limiting access to the southern portion of the reserve.

3. VALUES

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, various aspects of natural heritage, cultural heritage, threats and on-going use are dealt with individually, but their inter-relationships are recognised.

3.1 GEOLOGY, LANDSCAPE AND HYDROLOGY

The reserves lie in central eastern New South Wales in the eastern Lachlan Fold Belt. The area consists of Palaeozoic age sequences (Ordovician to Permian) overlain in part by Cainozoic age volcanic rocks and sediments.

The southern portion of the reserve is within the Adaminaby group which are part of the older (Ordovician) sedimentary deposits and consist of clay, silt, and sand with scattered exposures of shale, sandstone and mudstone. This part of the reserve has high relief with elevations ranging from 710 metres above sea level to the highest point of the reserve which is 877 metres above sea level at Greenwood Hill. Soils are poor and skeletal, shallow fine to sandy loams.

The northern portion of the reserve is part of the Ainslie Volcanics geological formation from the Lower Devonian period, and consists of tuffs, quartz and porphyry. Rocky floaters and small outcrops occur, particularly in the higher areas. The relief is not as high in this portion of the reserve, with elevations ranging from approximately 660 metres to 700 metres above sea level. Soils are mostly eroded parent materials washed down from up-slope.

There are no permanent streams or watercourses within the reserve. There is one small dam that occurs on Amungula Creek, which is an intermittent watercourse in the southern portion of the reserve.

3.2 NATIVE PLANTS

The vegetation communities found within the southern portion of the reserve are consistent with Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest on skeletal hills of the Southern Tablelands, in the South Eastern Highlands Bioregion. This community is dominated by Red Stringybark (*Eucalyptus. macrorhyncha)*, Scribbly Gum (*E. rossi)*, Long-leaved Box (*E. goniocalyx)*, Candlebark *(E. rubida)*, Apple Box *(E. bridgesiana),* Yellow Box (*E. melliodora)*, Brittle Gum *(E. mannifera)* and Red Box (*E. polyanthemos)*. The understorey is dominated by Red-anthered Wallaby-grass (*Joycea pallida)*, wallby-grasses (Austrodanthonia spp.), Silver Tea-tree (*Leptospermum multicaule)*, and Peach Heath (*Lissanthe strigosa).*

There are a number of significant flora species found within the portion including Woolly Grevillea (*Grevillea lanigera)*, Rosemary Grevillea (*Grevillea rosmarinifolia),* Erect Guinea-flower (*Hibbertia riparia),* Murrnong or Yam Daisy (*Microseris lanceolata),* Dwarf Geebung (*Persoonia chamaepeuce), Persoonia rigida*, Autumn Greenhood (*Pterostylis revolute),* Five-corners (*Styphelia triflora)*, Purplish Beard Orchid *(Calochilus robertsonii)*, Golden Moth Orchid (*Diuris chryseopsis*), Waxlip Orchid *(Glossodia major), Caladenia dimorpha, Pterostylis setifera,* and Common Billy-buttons *(Craspedia variabilis).*

The northern portion of the reserve contains only one vegetation community, Yellow Box - Blakely's Red Gum Woodland. The composition of this community is consistent with the description of the endangered ecological community, White Box Yellow Box Blakely's Red Gum Woodland (known as 'Box-Gum Woodland'). Canopy and sub-canopy species present include Blakely's Red Gum (*E. blakelyi*), Yellow Box (*E. melliodora*), Apple Box (*E. bridgesiana*) and Red Stringybark (*E. macrorhyncha*). There are occasional Brittle Gum (*E. mannif*era) at the western side of the reserve.

In this portion there are some old-growth trees. Mistletoe (*Amyema miquelii*) is present on many of the mature trees. The mid storey is sparse with only isolated occurrences of seedling eucalypts and Silver Wattle (*Acacia dealbata*) or Hickory Wattle (*Acacia implexa*). The ground layer contains a diversity of grasses, native forbs and herbs.

3.3 NATIVE ANIMALS

There have been 168 animal species recorded in the southern portion of the reserve, with 156 of those being native species. The majority of the species recorded (145) are birds, with a number being declining or threatened. Other species present include Eastern Grey Kangaroo (*Macropus giganteus*), Echidna (*Tachyglossus aculeatus*), Common Wombat (*Vombatus ursinus*), Sugar Glider (*Petaurus breviceps*), Brown Antechinus (*Antechinus stuartii*), and Tiger Snake (*Notechis scutatus*).

Threatened species recorded within the southern portion of the reserve are Gang-gang Cockatoo *(Callocephalon fimbriatum),* Little Eagle (*Hieraaetus morphnoides),* Little Lorikeet *(Glossopsitta pusilla),* Brown Treecreeper *(Climacteris picumnus),* Speckled Warbler *(Chthonicola sagittata),* Painted Honeyeater *(Grantiella picta),* Regent Honeyeater *(Xanthomyza Phrygia),* Varied Sittella (*Daphoenositta chrysoptera),* Hooded Robin *(Melanodryas cucullata),* Scarlet Robin (*Petrooica boodang)*, Flame Robin (*Petroica phoenicea)*, and Diamond Firetail *(Stagonopleura guttata).* Southern Bell Frog *(Litoria raniformis)* has be recorded in the past although the species is believed to be extinct from the region. There has been limited fauna research conducted in the southern portion of the reserve due to the possible presence of unexploded ordnance.

The northern portion of the reserve provides good habitat for a range of fauna. Mature trees provide hollows for nesting as well as foraging resources for arboreal mammals and birds, while the rocky outcrops and fallen timber provide habitat for reptiles and ground-dwelling mammals. Although there have been no surveys in the northern portion of the reserve, its location adjacent to ACT Goorooyarroo and Mulligans Flat Nature Reserves means this portion of the reserve should sample the majority of the same fauna species. Threatened bird species found within Mulligans Flat Nature Reserve are Superb Parrott (*Polytelis swainsonii*), Brown Treecreeper (*Climacteris picumnus*), Varied Sittella (*Daphoenositta chrysoptera*), Regent Honeyeater (*Xanthomyza phrygia*), Painted Honeyeater (*Grantiella picta*) and Hooded Robin (*Melanodryas cucullata*). Other species present include Eastern Grey Kangaroo (*Macropus giganteus)*, Swamp Wallaby (*Wallabia bicolour*), Brush-tailed Possum (*Trichosurus vulpecula*), Common Wombat (*Vombatus ursinus*), Bearded Dragon (*Pogona barbata*), Jacky Lizard (*Amphibolurus muricatus*), and Delicate Skink (*Lampropholis delicata*).

In the year 2000 a Koala (*Phascolarctos cinereus)* was rescued from a property in the surrounding area and was later released into the reserve.

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 tribal boundaries of the Ngunnawal people and is within the area of the Ngambri Aboriginal Land Council.

There are no Aboriginal sites recorded on the southern portion of the reserve but this does not mean that there are no sites present as there have been limited surveys due to the possible presence of unexploded ordnance.

There are two sites recorded in the northern portion of the reserve, one site being quartz outcrop that could have been used as a quarry site and the other being an axe head. There was an isolated find of a quartz bipolar core in the northern portion of the reserve (Dsb Landscape Architects, 2006). A field survey was undertaken to record the artefact, however the site could not be located and therefore has not been recorded on Aboriginal Heritage Information Management System.

3.5 HISTORIC HERITAGE

Prior to gazettal of the southern portion it was part of Goorooyarroo State Forest which was dedicated in 1917. Prior to becoming a nature reserve it received little use; there was evidence of minor logging, and rubbish dumping.

Part of the Parish of Goorooyarroo was transferred to the Commonwealth for the establishment of the ACT.

The southern portion of the reserve was used as a practice bombing range during the 1940s. There was a short period during the mid 1970's prior to finding UXO in the reserve when the area was used as an exercise ground by the Royal Military College Duntroon and ACT Orienteering Association. Evidence of the use includes consent conditions, correspondence and the rare ammunition shell.

Both portions run along the ACT and NSW border. In the northern portion there are seven historic heritage sites. These are the original ACT/NSW boundary markers and are comprised of lines of stone laid along the border with a wooden triangular post in the centre. Boundary markers may exist in the southern portion of the reserve.

3.6 VISITOR USE, EDUCATION AND RESEARCH

The primary purpose of nature reserves is to protect and conserve areas containing outstanding, unique and or representative ecosystems, species, communities or natural phenomena. Under the NPW Act nature reserves are also managed to provide for research and monitoring.

The southern portion of the reserve is closed to public access due to the possible presence of unexploded ordnance. Some scientific surveys in relation to vegetation have been conducted in the past.

The northern portion is located adjacent to the ACT Goorooyarroo and Mulligans Flat Nature Reserves. This portion is open to the public with access through the ACT nature reserves. This portion is used for low key activities such as nature study, research, walking, bird watching and occasional educational groups.

There are no roads within the northern portion and no visitor facilities within the reserve.

4. ISSUES

4.1 WEEDS AND PEST ANIMALS

A weed is defined in this plan as any plant species not native to these reserves. Weeds can be listed as noxious weeds, weeds of national significance and environmental weeds. 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. Patterson's Curse *(Echium plantagineum)* is the only known noxious weed species to occur in the reserve, other weed species that occur within this reserve are Spear Thistle (*Cirsium vulgare),* and introduced grasses.

The reserve has a low density of weed cover, especially compared to the surrounding land. The weeds are in isolated pockets within the reserve. Weed infestations are concentrated in areas of previous disturbance, and along current agricultural/timbered boundaries. It is important to control any weeds invading from surrounding areas.

Introduced animals occurring within the reserve and in the surrounding area include Red Fox (*Vulpes vulpes*), European Rabbit (*Oryctolagus cuniculus*) and Feral Cat (*Felis catus*). The control of these species, particularly foxes and cats, is difficult as they have the capability to recolonise the reserve from surrounding areas. Any pest animal work in the reserve should be conducted on a cooperative basis with surrounding neighbours and take into consideration the limitations due to UXO. Straying stock may enter park on the rare occasion which will continue to be monitored.

A Regional Pest Management Strategy has been prepared (DECC 2008). The strategy outlines the types of pests and weeds commonly occurring in the reserve network within the region, strategies for their control, and priorities to best achieve reductions in targeted species.

4.2 FIRE

The primary fire management objectives of the NPWS are to protect life and property and community assets from the adverse impacts of fire, whilst managing fire regimes to maintain and protect biodiversity and cultural heritage.

Fire is a natural feature of many environments and is essential for the survival of some plant communities. However, inappropriate fire regimes can lead to loss of particular plant and animal species and communities, and high frequency fires have been listed as a key threatening process under the TSC Act.

Little is known about the fire regime in the reserve prior to European settlement in the area. In the southern portion there is no recorded ignition within the reserve, and since gazettal of the reserve there is no record of prescribed burns. There was one

wildfire that occurred in March 1985 that was started by arson at Mt Majura. The fire burnt a total area of 5,623 hectares including the entire southern portion of the reserve. It is thought that before this fire the area had not been burnt for at least 50 years.

In the northern portion the only recorded fire was in 1979, originating in Hall in the ACT, which burnt the entire portion of the reserve.

A separate map-based Fire Management Strategy (NPWS 2009a) has been prepared for the southern portion of the reserve (there is currently no fire strategy for the northern portion). The northern portion will be managed sympathetically with the adjoining conservation areas managed by the ACT. The fire management strategy outlines the recent fire history of that portion of the reserve, key assets within and adjoining the reserve including sites of natural and cultural heritage value, fire management zones, and fire control advantages such as management trails and water supply points.

There is also a Fire Operations Map (NPWS 2009b) for the southern portion of the reserve. All fire operations in the southern portion are restricted due to UXO. All fire operations within this portion are to be undertaken from formed trails only and all aircraft operations must maintain a minimum height of 100 feet.

The reserve is within the Lake George Bush Fire Management Committee area. NPWS maintains a cooperative arrangement with the surrounding landholders, local Rural Fire Service brigades and the ACT Emergency Services Agency in relation to fire management. A Memorandum of Understanding for Fire Management and Suppression has been agreed with the ACT.

4.3 ISOLATION AND FRAGMENTATION

Much of the area surrounding Goorooyarroo Nature Reserve has been extensively cleared, which has resulted in a high loss of biodiversity and fragmentation of habitat in the region. Long term conservation of biodiversity depends upon the protection, enhancement and connection of remaining habitat across the landscape, incorporating vegetation remnants on both public and private lands. Nearby vegetated areas contribute to the habitat values of the reserve and provide ecological corridors to other vegetated areas. Maintaining the integrity of the remaining habitat within the reserve and, where possible, linking this to adjacent areas of vegetation to facilitate wildlife corridors is important in ensuring long term viability of the reserve's biological values. The reserve assists in maintaining and improving the Gungahlin Woodland Complex and the Box-Gum Woodlands of the region. The northern portion adjoins the ACT Goorooyarroo and Mulligans Flat Nature Reserves and increases the protected connectivity of the reserves.

4.4 CLIMATE CHANGE

Anthropogenic climate change has been listed as a key threatening process under the TSC Act. The NSW Climate Impact Profile (DECCW 2010) for the southern tablelands outlines projected changes in climate and the physical responses expected to these changes. The projections for the Southern Tablelands are that temperatures are very likely to rise, there is likely to be a substantial increase in summer rainfall (between 20-50%) but conversely, winter rainfall is projected to decrease the same amount

Many parts of the Southern Tablelands are likely to become significantly drier than in the past, especially during the winter. Water stress, particularly during drought years, is likely to kill many trees in woodlands, and stressed trees are also likely to die from additional pressure from insect attack and disease. Such impacts are likely to be most severe for resident species or those with low dispersal capacity including many threatened woodland birds such as Gang-gang Cockatoos and Diamond Firetails, and small mammals. The seasonality of growth in the tablelands is likely to intensify. This change is likely to increase the browsing and grazing of herbivores on grasslands and grassy woodland during drier winter periods. Summer-growing grasses such as wallaby grass, red grass and weeds such as St John's Wort are likely to expand and displace other native species such as poa tussocks (DECCW 2010).

Programs to reduce the pressures arising from other threats, such as habitat fragmentation, weeds and pest animal species and fire, will help reduce the severity of the effects of climate change.

4.5 MANAGEMENT OPERATIONS AND OTHER USES

There are three management trails in the southern portion of the reserve (refer to Map), with use restricted to essential management purposes only. In 2009 a UXO technical assessment and survey was conducted in the southern portion of the reserve, from which it was recommended that the reserve continue to be off limits to the public. Prior to the Eastern Boundary Trail being created in 2010, the trail path and immediate area were cleared for UXO.

In the event that an item suspected of being UXO or ordnance related is found, it should not be touched, tampered with or moved in any way. Its appearance and location should be carefully noted including the best route to the item. The location should be clearly marked and Queanbeyan Area office of OEH notified immediately.

Access to the northern portion of the reserve is gained either through the ACT reserves which have a good network of formed trails or through adjoining private property. There are no management trails within this portion.

There are two power lines and easements managed by Essential Energy and Transgrid along part of the eastern edge of the southern portion of the reserve.

5. REFERENCES

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http://www.environment.nsw.gov.au/resources/firemanagement/final/goorooyarrooNR.pdf

NPWS (2009b) *Goorooyarroo Nature Reserve Fire Operations Map.* NSW National Parks and Wildlife Service.

6. IMPLEMENTATION

*** 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.

Ongoing is for activities that are undertaken on an annual basis or statements of management intent that will direct the management response if an issue that arises.

Current Situation	Desired Outcomes	Management Response	Priority*
6.1 On-Park Ecological Conservation			
Goorooyarroo Nature Reserve enhances the protection of a number of key vegetation communities. The reserve protects native vegetation in an extensively cleared and farmed landscape.	Native plant and animal species and communities are conserved.	6.1.1 Protect endangered ecological communities and threatened species, by maintaining and improving connectivity, and working with other land agencies.	Ongoing
There are a number of threatened species recorded in the reserve and surrounding areas, and the northern portion of the reserve contains Yellow Box - Blakely's Red Gum Woodland endangered ecological community.	Negative impacts on threatened taxa are stable or diminishing. Structural diversity and habitat values are restored in areas subject to past disturbance.	6.1.2 Implement relevant strategies in the Priorities Action Statement (PAS) and recovery plans for threatened species and communities within the reserve, limitations may occur in the southern portion due to UXO.	Ongoing
Erosion may occur along the trails in the reserve.		6.1.3 Monitor the erosion along trails in the southern portion and undertake remedial actions if needed to minimise erosion. Ensure work is conducted within the unexploded ordnance cleared zone.	Ongoing
Climate change has been identified as a key threatening process under the TSC Act. Climate change may significantly affect biodiversity by changing the population size and distribution of species, modifying species composition, and altering the geological extent of habitats and ecosystems.	Landscape and catchment values are protected. The effects of climate change on natural systems are reduced.	6.1.4 Undertake pest and weed management programs to increase the reserve's ability to cope with future disturbances, including climate change. Within restrictions and set out in section 6.5	Ongoing

Current Situation	Desired Outcomes	Management Response	Priority*
6.2 Cultural Heritage Little evidence of Aboriginal occupation has been located within the reserve, however only limited surveys have been undertaken. Two Aboriginal sites have been located in the northern portion of the reserve. One being a quartz outcrop that could have been used as a quarry, and the other being an axe head. Several artefact sites have been found within the surrounding area. The ACT/NSW boundary markers are located on the border of the reserve and the ACT. These are considered to be significant historic heritage sites.	Historic features are appropriately identified and protected. Aboriginal places and values identified and protected.	6.2.1 Precede all ground disturbance work by a check for cultural features. 6.2.2 Any works undertaken will incorporate appropriate conservation measures to mitigate impacts on cultural heritage. 6.2.3 Record historical sites, assess for heritage value and retain in situ. 6.2.4 Record suitable artefacts and sites on the Aboriginal Heritage Information Management System (AHIMS) and Historic Heritage Information Management System (HHIMS). 6.2.5 Consult and involve the Ngambri Aboriginal Land Council and other stakeholders in the management of Aboriginal sites and values.	Ongoing Ongoing Medium High Medium

Current Situation	Desired Outcomes	Management Response	Priority*
6.3 Visitor Use and Services Access to the southern portion of the reserve is closed to the public due to the possible presence of UXO. The northern portion of the reserve can be used by bushwalking and birdwatchers. Some educational groups may also use the portion. No visitor facilities are provided in the reserve. Inappropriate activities such as bike riding can damage the important natural and cultural values of the reserve. A proposed future ACT suburb, if it goes ahead, will border ACT Goorooyarroo and Mulligans Flat Nature Reserves.	The public is protected from harm due to UXO Visitor use is appropriate and ecologically sustainable. Visitor use and services encourage appreciation of the park's values. Negative impacts of visitors on park values are stable or diminishing.	6.3.1 Maintain locked gates on access points in the southern portion. 6.3.2 Maintain signs to inform the public that the southern portion of the reserve is closed to the public due to unexploded ordnance. 6.3.3 Nature observation and educational purposes will be permitted in the northern portion of reserve, subject to limits on numbers and other conditions if necessary to minimise impacts. The southern portion will continue to be closed to public access. No visitor facilities will be provided. 6.3.4 Erect reserve identification and regulatory signs at the main entry locations to the northern portion of the reserve, if deemed necessary. 6.3.5 Monitor levels and impacts of use. 6.3.6 Work with adjoining ACT reserves, neighbours and law enforcement agencies to control illegal activities.	High High Ongoing Low Medium Medium

Current Situation	Desired Outcomes	Management Response	Priority*
6.4 Community Programs and Education Areas surrounding the reserve have been extensively cleared resulting in a loss of biodiversity and fragmentation of habitat in the region. Maintaining the integrity of the reserve and, where possible, linking this area to adjacent bushland to facilitate wildlife corridors is important in ensuring long term viability of the reserves biological values.	Park neighbours support conservation of native vegetation near the park. The local community is aware of the significance of the park and of park management programs.	6.4.1 Liaise with neighbours to encourage the retention and appropriate management of key habitats and corridors adjacent to the park. 6.4.2 Undertake cooperative management with the adjoining ACT reserves. 6.4.3 Maintain and improve the connectivity of the Gungahlin Woodland Complex and the Box-gum Woodlands in the region by working co-operatively with the ACT Parks, Conservation and Lands in relation to the northern portion.	Low Ongoing Ongoing
6.5 Weeds and Pest Animals Weeds present in the reserve include Serrated Tussock, Thistle, and Patterson's curse *(Echium plantagineum)*. These mainly occur in areas of disturbance such as near trails and neighbouring properties. Limited pest and weed control programs are undertaken in the southern portion due to the presence of UXO. Stock occasionally enter the reserve.	Introduced plants and animals are controlled and where possible eliminated. Negative impacts of weeds on park values are stable or diminishing. Negative impacts of pest animals on park values are stable or diminishing.	6.5.1 Manage introduced species in accordance with the Regional Pest Management Strategy. 6.5.2 Conduct weed control programs to ensure the weed presence remains low. Weed control from vehicles will be limited to drivable trails in the southern portion. 6.5.3 Prepare a weed map to assist ongoing control. 6.5.4 Monitor the park for straying stock and encourage maintenance of boundary fences to exclude stock from the reserve. Fencing assistance may be provided in accordance with NPWS policy.	Medium Medium Ongoing Ongoing

Current Situation	Desired Outcomes	Management Response	Priority*
6.6 Fire Management Fire is a natural feature of many environments but inappropriate fire regimes can lead to loss of particular plant and animal communities. High frequency fires have been listed as a key threatening process under the TSC Act. On park assets at risk from fire include fence lines, trails, gates and a Country Energy easement on the eastern edge of the southern portion. There are a number of residential properties in close proximity surrounding the reserve. There are two fire records for the reserve, in 1979 a bushfire originating from Hall passed through the northern portion of the reserve, and in 1985 a fire starting from Mt Majura burnt through the southern portion of the reserve. There are no hazard reductions or ecological burns planned in the reserve due to the possible presence of UXO in the southern portion. Monitor results of ecological burns in adjoining reserves to northern portion for possible future management implementation.	Life, property and natural and cultural values are protected from fire. Fire regimes are appropriate for conservation of native plant and animal communities. Negative impacts of fire on natural and cultural heritage values are stable or diminishing.	6.6.1 Implement the Fire Management Strategy for the reserve. 6.6.2 Participate in the Lake George BFMC. Maintain cooperative arrangements with local RFS brigades, ACT Emergency Services and fire control officers, other fire authorities and surrounding landowners in regard to fuel management and fire suppression. 6.6.3 Suppress all unplanned fires in the reserve where possible as quickly as achievable. Refer to the Fire Management Strategy and Operations Plan for restrictions in the southern portion of the reserve due to UXO. All vehicles must remain on formed trails in the southern portion of the reserve. 6.6.6 Update the existing Fire Management Strategy to include the northern portion of the reserve.	High Ongoing High High

Current Situation	Desired Outcomes	Management Response	Priority*
6.7 Infrastructure and Maintenance On average UXO have been cleared 1-3 metres from the formed Eastern Boundary trail. There is an Essential Energy and Transgrid easement along part of the eastern boundary of the southern portion of the reserve. There are three management trails within the southern portion of the reserve. Old wire and fencing material has been left in the northern portion of the reserve.	Management facilities and operations adequately serve management needs and have minimal impact. Infrastructure and assets are routinely maintained. Existing non-park infrastructure is managed to minimise impacts on natural and cultural values.	6.7.1 Maintain the management trails shown on the map within UXO restrictions. No additional trails will be constructed, including no trails within the northern portion of the reserve due to its small size. 6.7.2 Remove old wire and fencing material that are scattered on the ground within the northern portion of the reserve.	High Medium