COPPERHANNIA NATURE RESERVE

PLAN OF MANAGEMENT

National Parks and Wildlife Service

Part of the Department of Environment and Climate Change NSW

October 2007

This plan of management was adopted by the Minister for Climate Change, Environment and Water on 15th October 2007.

Acknowledgments

This plan of management was prepared by staff of the Western Rivers Region of the National Parks and Wildlife Service, with the assistance of members of the Western Rivers Region Advisory Committee.

Valuable information and comments that assisted the compilation of this draft were provided by NPWS specialists and park neighbours, in particular Trevor and Leonie Fenton and David Byrnes.

Enquiries about Copperhannia Nature Reserve should be directed to the Macquarie Area Office, National Parks and Wildlife Service, Department of Environment and Climate Change, Level 2, 203-209 Russell Street BATHURST NSW 2795, or by telephone on 02 6332 9488.

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FOREWORD

Copperhannia Nature Reserve is located 15 kilometres west of Trunkey within the Central Tablelands of New South Wales and covers an area of 3,497 hectares.

Copperhannia Nature Reserve is located on the edge of both the South Eastern Highlands and NSW South Western Slopes Bioregions and contains a reasonably large remnant of grassy and shrubby dry sclerophyll woodlands and forests on rolling to steep hills. The Creekside Apple Box Woodlands, Low Altitude Dry Woodlands and Granite (Gully) Woodlands found in the reserve are considered to be vulnerable and inadequately conserved.

The reserve is located in the Lachlan River Catchment. The majority of the creeks in the reserve flow west into the Abercrombie River and eventually join the backed up waters of Wyangala Dam before reaching the Lachlan River.

Five Aboriginal sites have been recorded within Copperhannia Nature Reserve, as well as an old gold mining shaft. There is anecdotal evidence that the reserve may have been used by bushrangers.

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 Copperhannia Nature Reserve was placed on public exhibition from 16th December 2005 until 27th March 2006. The submissions received were carefully considered before adopting this plan.

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

Phil Koperberg
Minister for Climate Change, Environment and Water

TABLE OF CONTENTS

1. MANAGEMENT CONTEXT

1.1 LEGISLATIVE AND POLICY FRAMEWORK

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

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

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 Copperhannia Nature Reserve except in accordance with the plan. The plan will also apply to any future additions to Copperhannia Nature Reserve. Where management strategies or works are proposed for Copperhannia Nature Reserve or any additions that are not consistent with the plan, an amendment to the plan will be required.

1.2 MANAGEMENT PURPOSES AND PRINCIPLES

Nature reserves are reserved under the NPW Act to protect and conserve areas containing outstanding, unique or representative ecosystems, species, communities or natural phenomena (Section 30J NPW Act).

Copperhannia Nature Reserve will be managed in accordance with the above purposes of reservation and the management principles identified in Section 30J of the Act, that is

(a) the conservation of biodiversity, the maintenance of ecosystem function, the protection of geological and geomorphological features and natural phenomena;
(b) the conservation of places, objects, features and landscapes of cultural value;
(c) the promotion of public appreciation, enjoyment and understanding of the reserve's natural and cultural values; and
(d) the provision for appropriate research and monitoring.

In terms of management principles, nature reserves differ from national parks in that they do not have to provide for visitor use.

1.3 MANAGEMENT DIRECTIONS

Management priorities will be in line with protecting and conserving the biodiversity (flora and fauna) and the other natural and cultural heritage values of the reserve, as well as encouraging compatible nature conservation activities as part of scientific and educational programs.

Specific management objectives for Copperhannia Nature Reserve are to:

- Conserve remnant native vegetation communities, including those communities considered to be vulnerable and inadequately conserved such as Creekside Apple Box Woodlands, Low Altitude Dry Woodlands and Granite (Gully) Woodlands;

- Conserve all native plant species particularly those species considered to have conservation significance including *Astrotricha linearis*, *Carex incomitata*, Finger Flower *Cheiranthera cyanea var cyanea*, *Choretrum pauciflorum*, Longhair Plumegrass *Dichelachne crinita* and *Pultanaea lapidosa*;

- Conserve native animals, particularly those species listed as threatened such as the endangered Regent Honeyeater *Xanthomyza phrygia* and the vulnerable species Brown Treecreeper *Climacteris picumnus*, Black chinned Honey-eater *Melithreptus gularis gularis*, Hooded Robin *Melanodryas cucullata* and Diamond Firetail *Stagonopleura guttata*.

- Manage the Aboriginal heritage of the reserve in consultation with the local Aboriginal community;

- Control and where possible eliminate noxious plants from the reserve in consultation with relevant organisations, authorities, stakeholders and neighbours;

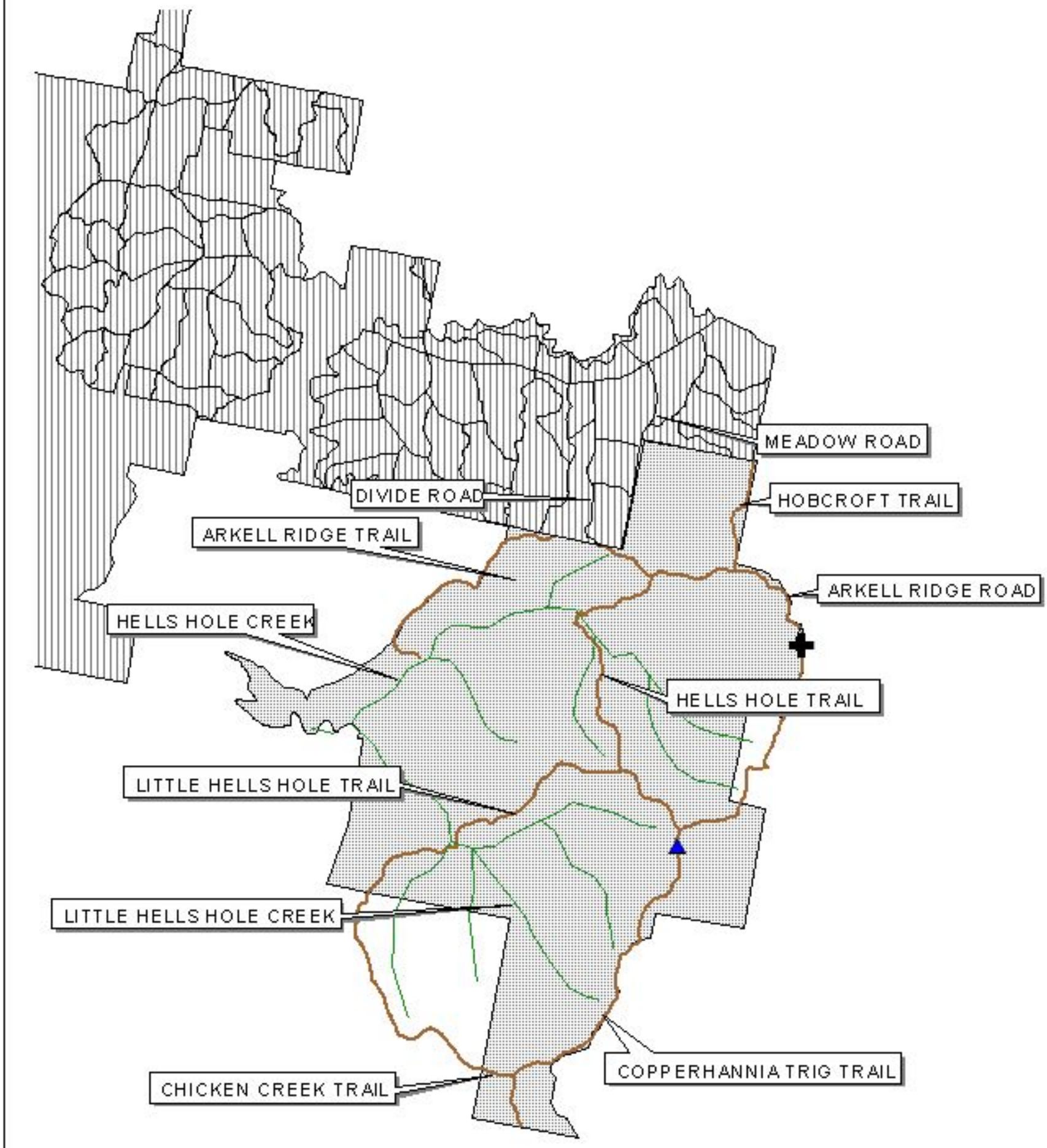
- Control pest animals in the reserve in consultation and cooperation with relevant organisations, authorities, stakeholders and neighbours;

- Maintain the existing network of management trails and install locked gates and fences (where necessary) on all trails;

- Encourage opportunities for scientific research and educational studies;

- Adopt appropriate fire management strategies and practices to protect the natural and cultural values of the reserve and prevent the detrimental impacts of large scale wildfires into and off the reserve; and

- Adopt appropriate strategies to allow for low impact passive recreational activities such as bushwalking, in such a way that these activities do not impact on the reserve's natural and cultural values.



Capped Mine
Creeks
Copperhannia Trig
Pennsylvania SF
Management Trails
Copperhannia NR

POM Map

Copperhannia NR

Department of Environment and Conservation (NSW)

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Printed By
Gavin Newton
06 December 2007

2.COPPERHANNIA NATURE RESERVE

2.1 LOCATION, GAZETTAL AND REGIONAL SETTING

Copperhannia Nature Reserve is located 15km west of Trunkey within the Central Tablelands. The reserve falls within the Bathurst Regional Council local government area and the State electorate of Bathurst.

The area was proclaimed a nature reserve on 21 April 1972 with an original size of 2,529.34ha. To date there have been three additions of land, on 14 December 1979 (714ha), 19 December 1980 (251ha) and 22 October 2004 (2.95ha) which have increased the total area reserved to 3,497ha. The original nature reserve was made up of unreserved Crown Land and the Copperhannia Trigonometric Station Reserve 20857. Subsequent reserved lands included a Public Utility Reserve 73568, a Special Purpose Lease 12117, Crown Lease 1976/1 and a Crown Reserve R95544 that incorporated both a Mining Lease (506) and Gold Lease (10).

The nature reserve ranges in elevation from 500m along the western edge of the reserve at Hells Hole and Rocky Bridge Creeks' to 966m at the Copperhannia Geodetic Trigonometric Station.

Copperhannia Nature Reserve is located on the edge of both the South Eastern Highlands and NSW South Western Slopes Bioregions and contains a reasonably large remnant of grassy and shrubby dry sclerophyll woodlands and forests on rolling to steep hills.

The reserve is located in the Lachlan River Catchment and provides one of the upper catchments for Wyangala Dam. The majority of the creeks in the reserve flow west into the Abercrombie River and eventually join the backed up waters of Wyangala Dam before reaching the Lachlan River.

To the east of the reserve lie predominantly cleared pastoral and agricultural land primarily used for grazing of sheep and cattle. Pennsylvania State Forest, an area that has been planted to radiata pine, is located along the northern boundary of the reserve. To the south and west of the reserve are both freehold and leasehold lands with a large amount of native vegetation.

2.2 LANDSCAPE CONTEXT

Natural and cultural heritage and on-going use are strongly inter-related and together form the landscape of an area. Much of the Australian environment has been influenced by past Aboriginal and non-Aboriginal land use practices, and the activities of contemporary Australians continue to influence and impact bushland through recreational use, cultural practices, the presence of introduced plants and animals and in some cases air and water pollution. Therefore the location, geology, landform, climate, plants and animals of reserves like Copperhannia Nature Reserve have determined how they have been utilised in the past and will continue to be used by humans.

Both Aboriginal and non-Aboriginal people place cultural values on natural areas, including aesthetic, social, spiritual, recreational and other values. Cultural values may be attached to the landscape as a whole or to individual components, for example to plant and animal species used by Aboriginal people. This plan of management aims to conserve both natural and cultural heritage values within the reserve as well as recognise and document the inter-relationships of these values with non-human threats and on-going use.

2.3 NATURAL AND CULTURAL HERITAGE

2.3.1 Landform, Climate, Geology and Soils

The reserve consists of rolling to steep hills which have been incised (eroded) primarily by Hells Hole Creek and Little Hells Hole Creek. Although these creeks account for the majority of water catchment within the reserve they, along with their upper tributaries, are considered to be ephemeral. Rocky Bridge Creek, which forms the western boundary of the reserve, is a source of permanent water in favourable environmental conditions. The reserve also includes the upper catchment for a number of smaller ephemeral creeks that flow east and include Willow Glen, Pot O'Tea, Little Bread and Bald Hill Creeks'.

The climate of the reserve is influenced by its position within the south western part of the Central Tablelands and is characterised by warm to hot daytime temperatures in summer while winters have mild daytime temperatures with cool to cold mornings often with frost. Based on climatic averages for the nearby town of Rockley, the reserve is estimated to have a maximum monthly temperature range from 27°C in February to 10°C in July and minimum monthly temperature range from 10°C in both January and February to –1°C in August. Rainfall is evenly distributed during the year with an average annual rainfall measuring between 600 – 700mm which peaks in January and is often associated with high intensity falls from thunderstorms. The most common wind direction is from the northwest and the windiest months occur between November and February.

The geology of the reserve is dominated by Middle Ordovician (Abercrombie Beds) sediments from the Adaminaby Group. This geology occupies approximately 90% of the reserve and consists of quartz sandstone, siltstone, slate, phyllite, chert and black carbonaceous slate. Soils within the reserve are dominated by shallow soil landscapes from the Copperhannia soil landscape group and consist of Ordovician metasediments composed primarily of greywacke and slate and are characterised by rolling to steep hills with relief between 100m – 250m and slopes of between 18% - 35%.

2.3.2 Native Plants

Based on a vegetation survey by Lembit and Skelton in 1998 the reserve consists of eight native vegetation communities:

Community 1	River Oak *Casuarina cunninghamiana* Forest
Community 2	Red Stringybark *Eucalyptus macrorhyncha* – Scribbly Gum *E.rossii* Woodland (associated with Long-leaved Box *E.goniocalyx*)
Community 3	Sheltered Woodland (Red Stringybark – Long-leaved Box) (associated with Red Box *E.polyanthemos*)
Community 3a	Sheltered Red Stringybark Forest (associated with Long-leaved Box and Red Box)
Community 4	Red Stringybark – Box Woodland (Red Stringybark, Long-leaved Box and Red Box)
Community 5	Copperhannia Creekside Apple Box Woodland (Apple Box *E,bridgesiana* associated with Red Box, Red Stringybark, Long-leaved Box and Scribbly Gum)
Community 6	Low Altitude Dry Woodland (Red Box, Tumbledown Red Gum *E.dealbata* and Red Stringybark) (associated with Long-leaved box and Black Cypress Pine *Callitris enlicheri*)
Community 7	Granite Woodland (Red Stringybark, Yellow Box *E.melliodora* and Long-leaved Box) (associated with Apple Box and Red Box)
Community 8	Cleared and/or Disturbed Forest or Woodland (7ha)

These vegetation communities have been grouped into four broad vegetation types:

- **SHRUBBY DRY SCLEROPHYLL FORESTS**, which is basically Community 2 Red Stringybark – Scribbly Gum Woodland and covers 2,061ha or 59% of the reserve.

- **SCLEROPHYLL GRASSY WOODLANDS**, which is made up of Community 3 Sheltered Woodland (788ha), Community 5 Copperhannia Creekside Apple Box Woodland (87ha), and Community 7 Granite Woodland (31ha). This vegetation type totals 906ha and occupies 26% of the reserve.

- **GRASSY DRY SCLEROPHYLL FORESTS**, which is made up of Community 3a Sheltered Red Stringybark Forest (228ha), Community 4 Red Stringybark – Box Woodland (237ha), and Community 6 Low Altitude Dry Woodland (37ha). This vegetation type totals 502ha and occupies 14% of the reserve.

- **SWAMP SCLEROPHYLL WOODLANDS,** which is composed of River Oak Forest and covers 24ha which is less than .01% of the reserve.

According to Benson (1989) the Apple Box and Granite Woodland (collectively called the Tablelands Woodlands Complex) are considered to be vulnerable in NSW and inadequately conserved.

Several other canopy species are found in the reserve and include Kurrajong *Brachychiton populneus,* Broad-leaved Peppermint *E.dives* and Blakely's Red Gum *E.blakelyi*.

A number of prominent understorey species occur in the reserve including Grass Trees *Xanthorrhoea glauca,* Brachyloma *Brachyloma daphnoides,* Five Corners *Styphelia triflora,* Kangaroo Thorn *Acacia paradoxa,* Silver Wattle *A. dealbata,* Spreading Flax Lily *Dianella revoluta,* Nodding blue Lily *Stypandara glauca,* Prickly Broom Heath *Monotoca scoparia,* Jam Tarts *Melichrus procumbens,* Dropping Cassinia *Cassinia arcuata,* Leptospermum *Leptospermum multicaule,* Guinea Flower *Hibbertia obtusifolia,* Pomaderris *Pomaderris prunifolia,* Native Blackthorn *Bursaria spinosa,* River Bottlebrush *Callistemon sieberi,* Spiny Mat Rush *Lomandra longifolia,* Kangaroo Grass *Themeda australis* and Snow Grass *Poa sieberiana spp sieberiana,*

A total of 169 native plants have been recorded within the reserve. No species listed under the *Threatened Species Conservation Act 1995* have been recorded, however, a number of plants were recorded by Lembit and Skelton as having conservation significance: *Astrotricha linearis, Carex incomitata,* Finger Flower *Cheiranthera cyanea var cyanea, Choretrum pauciflorum,* Longhair Plumegrass *Dichelachne crinita* and *Pultanaea lapidosa*.

2.3.3 Native Animals

A total of 81 species of native animals have been recorded for the reserve comprising 4 mammals, 1 reptile and 76 birds. Common species observed in the reserve are the Eastern Grey Kangaroo, Swamp Wallaby, Red-necked Wallaby, White Winged Chough, Crimson Rosella and the White-eared Honeyeater.

One species, the Regent Honeyeater *Xanthomyza phrygia*, is listed as Endangered under Schedule 1 of the *Threatened Species Conservation Act 1995*, while four species are listed as Vulnerable under Schedule 2: the Brown Treecreeper *Climacteris picumnus,* the Black-chinned Honey-eater *Melithreptus gularis gularis,* the Hooded Robin *Melanodryas cucullata* and the Diamond Firetail *Stagonopleura guttata*.

2.3.4 Aboriginal Heritage

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

Copperhannia Nature Reserve is within Wiradjuri country, and it is likely that the reserve contributed to the social, economic and ceremonial life of the Wiradjuri people and may have cultural significance to contemporary indigenous communities.

Five Aboriginal sites have been recorded within Copperhannia Nature Reserve, and consist of three modified (scarred) trees and two artefact sites. Two "off park" sites are located along the boundary of the reserve and consist of modified (scarred) trees.

To date most Aboriginal heritage sites found in the reserve have tended to be opportunistically located and there is potential for more sites to be discovered, especially in riparian zones.

2.3.5 Historic Heritage

Six historic sites have been found in the reserve and consist of one mine shaft, four modified survey trees with scar markings and one cave. Three "off park" sites are located along the boundary of the reserve and these consist of modified survey trees, two of which have portion details carved into the scar.

The mine shaft was part of Crown Lease R95544 and was associated with a mining lease area (MLA 506 – Gold Lease G10) where gold bearing quartz was extracted. Given the proximity of the mine shaft to Arkell Ridge Road, the mine was capped in June 2002 by NPWS staff.

There is anecdotal evidence that the reserve may have been used by the Bushranger John Piesle, and perhaps also the Bushranger John Vane. The remains of a hut that is said to have been utilised by the bushrangers, their associates and families is believed to exist in the reserve but remains undiscovered to date.

The reserve has been subject to grazing and records exist of a grazing lease established over the area as early as the 1920's. Grazing continued up until the late 1960's. A number of internal fences remain as evidence of grazing use.

2.4 PUBLIC USE

From Trunkey the reserve is accessible via Colo Road along a public road through "Kempfield" and Pennsylvania State Forest. The reserve is accessible from Blayney and Neville via Gallymont, Kentucky, Pennsylvania, Carolina, Divide and Arkell Ridge Roads. The trails within the reserve are utilised for authorised access and management purposes only.

The remote and isolated location of the reserve means that it gets only infrequent public use for activities such as walking and nature study. Most visits to the reserve are generally made by people wanting to undertake inappropriate activities such as trail bike riding and firewood collection, or by people using the un-gated management trail network to try and gain access to the Abercrombie River for the purposes of hunting, camping and fishing.

Licence agreements have been issued to a number of neighbouring landholders who have bonafide and legitimate needs to use specified management tracks within the reserve to gain access to their lands. All applications and requests for formal access under the *National Parks and Wildlife Act 1974*, need to comply with the DEC Access to Inholdings policy and existing licence agreements will be updated in accordance with this policy.

2.5 THREATS TO RESERVE VALUES

2.5.1 Introduced Plants

Although there are currently 18 species of exotic plants that have been recorded for the reserve, the reserve can be considered as having a low concentration of occurrence and infestation of introduced plants. The species' of most concern are Serrated Tussock *Nassella trichotoma* and Blackberry *Rubus fruticosus.* The invasive nature of these noxious plants and the fact that they compete with native species requires their continued management and suppression.

Since acquisition of the nature reserve in 1972 most emphasis on weed control has been centred around controlling the spread of Serrated Tussock through the reserve. Serrated Tussock was first observed along the northern boundary of the reserve and west of Hobcroft trail. In recent years infestations have been concentrated within riparian areas along the reserve boundary in the Rocky Bridge Creek area and at the junction of Hells Hole and Little Hells Hole Creeks.

Serrated Tussock is widespread within the Abercrombie catchment and occurs in all areas surrounding the reserve. The control of this species will continue to be a priority and will require a co-operative control effort by all land holders in this area if any margin of success is to be achieved in removing this weed.

Pennsylvania State Forest is located along the northern boundary of the reserve and, although not a significant issue at present, the potential spread of pine wildlings from this plantations is of concern as is the continued spread of blackberries and serrated tussock from this location.

2.5.2 Introduced Animals

There have been seven species of introduced animals recorded in the reserve which include four species of mammals (Pigs, Goats, Foxes and Rabbits) and three species of birds (House Sparrow, Common Starling and European Goldfinch).

Large populations of feral goats have been (and are still) known to occur along the upper reaches of the Abercrombie River and its tributaries. Many adjoining landholders stock their properties with goats to assist with the control of blackberries on their land or to provide "sport" for recreational hunting purposes. As a result (and given the remote, isolated and unfenced nature of lands surrounding the reserve) the reserve has experienced an ongoing problem with feral goats.

Pigs have been recorded but are generally not found in the reserve given the lack of water and suitable foraging habitat. They spasmodically occur in the reserve, mostly in riparian (creek) zones when conditions are favourable.

Since 1987 a regular aerial culling program has occurred within the reserve and to date at least 483 goats have been removed from the reserve by aerial shooting.

2.5.3 Fire Management

Although knowledge of wildfires within the reserve date back to 1939, and in particular the 1959 Cowra fire, it was not until the 1950's when fires were first mapped and even later still (1970's) when more detailed and accurate fire records started to be kept.

Since the reserve was gazetted in April 1972 seven wildfires have occurred on the main part of the reserve. However, if lands that are now included within the current boundaries of the nature reserve are considered, then the reserve has been subject to only nine known fires between 1939 and September 2005.

Although the reserve receives numerous lightning strikes during the fire season, the incidence of wildfire caused by lightning remains low and each of the resulting fires burnt an area of less than 1 hectare. The remaining fires are believed to have all been deliberately lit (arson) and these fires burnt a substantial area of the reserve. The most recent wildfire occurred in August 1994 and burnt 925ha.

A draft Fire Management Plan for the reserve was prepared in 1989 by Jeff Thomas and Nic Gellie which identified four burn blocks and recommended burning these areas on an eight-year rotational basis. However, in line with current standards and legislation a new Reserve Fire Management Strategy has been recently prepared in consultation with stakeholders and interest groups. The draft Copperhannia Nature Reserve – Fire Management Strategy forms part a larger map based (Type 2) Fire Management Strategy known as the Wyangala Landscape – Landscape Action Plan (2004).

To date there have been five known fuel reduction programs conducted within the reserve, the most recent being in April 2005. Previous fuel reduction activities have been ineffective due to the low amount and patchy distribution of available fuels.

In recent years the Service has been an active participant in discussions concerning fire management issues within the Trunkey area and in particular those issues pertaining directly to the nature reserve. Staff have attended public meetings at Trunkey where the local community has had the opportunity to discuss both park and fire management issues affecting them. Cooperative fuel management will continue to be carried out in accordance with the Fire Management Plan and will be based on a strategic landscape approach to managing fuels within the Wyangala landscape.

There are 7 designated management trails within the reserve, and all trails are classified as secondary fire (access) trails in accordance with the Bush Fire Coordinating Committee's trail classification system. This equates to approximately 29 kms of management tracks that require regular maintenance to ensure that access trails are maintained to a suitable standard for management and fire fighting purposes. Generally the majority of the firetrail network remains in a good to fair condition, however, there are several steep locations throughout the park that require more regular maintenance.

The reserve falls within the area administered by the Bathurst Regional Council area and as such comes under the jurisdiction of the Chifley Zone Bush Fire Management Committee (CZBFMC). A NPWS representative attends the CZBFMC and is also an Executive member of this committee. Where and when possible, staff attend local RFS brigade annual general meetings and may attend regular brigade meetings if invited.

2.5.4 Inappropriate Uses

The isolated location of the reserve tends to reduce visitation associated with the enjoyment and understanding of the reserve's natural and cultural values. However, this isolation has led to an increase in inappropriate activities such as four-wheel driving, trail bike riding and pig dogging/hunting, which are exacerbated by unregulated access to the management trail network.

It is considered that by formalising access within the reserve, by installing locked gates and fences at strategic locations, these inappropriate activities can be discouraged and eventually eliminated. This situation will help to ensure that management of the area is consistent with the management principles for a nature reserve, reduce any potential for use of the reserve as an access route to the Abercrombie River and more importantly enhance the biodiversity and conservation values of the reserve. In addition, the access strategy has significant potential to reduce trail maintenance requirements, limit the spread of weeds and pests and restrict opportunities for arson (which is believed to be the major cause of large scale wildfires in the reserve).

Within the adjoining Pennsylvania State Forest, activities which are considered to be inappropriate within the nature reserve are condoned or have tacit approval, and are in some circumstances licensed, by Forests NSW. The unregulated and unrestricted access from the state forest into the nature reserve increases use of the reserve for inappropriate activities. In addition, given that the northern boundary between the state forest and the nature reserve remains unfenced, illegal firewood collection continues within the reserve. The impact of this activity will be monitored and management strategies (including legal action) will be implemented where necessary.

3. MANAGEMENT ISSUES AND STRATEGIES

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.

Current Situation	Desired Outcomes	Strategies	Priority
Geology, Soil and water conservation There are no known soil erosion or water quality problems that need to be specifically addressed at this time.	Soil erosion is minimised and the quality of water remains healthy.	All works and activities will be undertaken in a manner that minimises impacts and water pollution. Sedimentation and erosion control measures will be implemented as necessary. Liaise with local authorities and neighbours to maintain and improve water quality in the reserve's catchments.	High Low
Native plant and animal conservation A number of flora and fauna species have been recorded in the reserve. Limited data is available on these populations and future surveys may find other protected and threatened species. Conservation of vegetation on neighbouring lands that surround the reserve would increase the value of the reserve and provide wildlife corridors.	All existing native plant and animal species and communities are recorded and conserved. Biodiversity and habitat values are restored in areas subject to past land management practices.	Undertake a survey for threatened plant species Undertake a fauna survey (including threatened fauna) Work with neighbours and vegetation management committees to encourage conservation of remnant native vegetation in the vicinity of the reserve	Medium Medium Low

Current Situation	Desired Outcomes	Strategies	Priority
Introduced species Programs to control introduced plants and animals occur on an annual basis throughout the reserve but there is no pest management plan.	That the impact of introduced species on native species and neighbouring lands is minimised.	Prepare a pest management plan for the reserve by July 2007 Control and where possible eradicate introduced plant species. Priority will be given to the control of Serrated Tussock and Blackberry. Control introduced animal species. Priority will be given to the control of goats by aerial culling programs. Seek the cooperation of other authorities and neighbours in implementing weed and pest animal control programs for biodiversity outcomes. Implement a cooperative fox baiting program	High High High Medium Low

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 can cause loss of particular plant and animal species and communities, as can too infrequent fires. Fire can also damage cultural heritage features and fences and threaten neighbouring land. Since 1972 there have been seven "on park" wildfires recorded on the reserve with a total of nine "known" wildfires occurring on the area that now forms part of the nature reserve, with the majority starting from lightning strikes. Five fuel reductions burns have occurred on the reserve, the majority being conducted along the eastern boundary to protect grazing lands. Future programs will be focused on ecological outcomes A large percentage of the reserve is classified as long unburnt (an adverse fire regime) and exceeds the "recommended" fire frequency thresholds for these vegetation communities. If this situation is not addressed there is expected to be a decline in biodiversity and conservation values within the reserve.	Life, property and natural and cultural features and values are protected from bushfire Fire regimes are appropriate for conservation of plant and animal communities, and enhance biodiversity in accordance with fire interval guidelines for broad vegetation types. All fire management activities are managed in accordance with the map based Type 2 Reserve Fire Management Strategy as part of the Wyangala Landscape Action Plan which was prepared (and will be annually updated) by the Canobolas Zone Bush Fire Management Committee as part of their Risk Management Plan.	Continue to participate in Chifley Zone Bush Fire Management Committee. Maintain coordination and cooperation with Rural Fire Service brigades, Forests NSW and neighbours with regard to fuel management and fire suppression. Suppress all unplanned fires in the reserve ASAP. Use prescribed fire to protect assets and enhance/promote biodiversity values. All fuel reduction burning will be preceded by an assessment of environmental impacts. All fuel management activities will be conducted in accordance with the map based Copperhannia Nature Reserve Fire Management Strategy. Encourage further research into the ecological effects of fire in the reserve.	High High High High High Low

Current Situation	Desired Outcomes	Strategies	Priority
Cultural heritage Limited knowledge is available regarding the traditional use of the reserve and the relative significance or value of existing Aboriginal sites. The recorded sites include modified (scarred) trees and scattered artefact sites. A small section of the reserve adjacent to Arkell Ridge Road was subject to gold mining exploration, most likely during the late 1880's and early 1900's. Prior to gazettal the reserve was used for grazing activities with grazing leases established over the area in the 1920's up until acquisition. Limited evidence exists that grazing occurred or has had any significant impact on the reserves conservation values. There is anecdotal evidence that the reserve may have been used by bushrangers including John Piesley and John Vane and that remnants of a dwelling utilised by them still exists.	Aboriginal and historic features and values are identified and protected. Aboriginal people are involved in management of the Aboriginal cultural values in the reserve. Understanding of the cultural significance of the reserve is improved.	Continue to conduct opportunistic searches for Aboriginal sites and record new items in the Aboriginal Heritage Information Management System (AHIMS). Consult and involve the Bathurst and Cowra Local Aboriginal Land Council, the Wiradjuri Elders group and other relevant Aboriginal community organisations in the management of the reserve. Continue to conduct opportunistic searches for historic sites and record new items in the Historic Heritage Information Management System (HHIMS). All known survey (portion marker/boundary) trees will be located and their condition assessed every three years. All historic sites related to gold mining, pastoral, grazing or agricultural activities, occupation sites and boundary fence lines, will be left in situ and no active management of these sites will occur.	Medium Medium Medium Low Low

Current Situation	Desired Outcomes	Strategies	Priority
Visitor use There are no visitor facilities within the reserve. The reserve is used on a very limited basis by walkers with most activities occurring along the management trail network. Given the significant landscape value of the reserve it is important that these and other conservation and biodiversity values are not diminished through inappropriate recreational activities.	No designated or formalised walking tracks or other facilities to be constructed Develop improved community awareness of the values the reserve contains	Bushwalking will continue to be permitted throughout the reserve Promote adjacent areas such as Abercrombie River NP, Abercrombie Caves and State Forests for recreational activities (camping and campfires) to eliminate any impact on the nature reserve. Improve community understanding and appreciation of the reserve by promoting the conservation values of the reserve to help ameliorate damaging visitor use and activities.	Medium Medium Medium
Research Further research will improve understanding of the reserve's natural and cultural heritage, the processes that affect them and the requirements for management of particular species. Priority areas for research are threatened plants and animals, pest and fire management (in particular post burn monitoring of communities following an ecological burn).	Research enhances the management information base and has minimal environmental impact.	Undertake and encourage research to improve knowledge and management of natural and cultural heritage.	Low

Current Situation	Desired Outcomes	Strategies	Priority
Neighbour relations There are 18 adjoining neighbours, with the largest landowner being Forests NSW that manage Pennsylvania State Forest that runs along the northern boundary of the reserve.	Develop environmental management practices (where possible) with surrounding landholders.	Encourage adjoining landowners to manage lands for biodiversity outcomes to achieve desired management and ecological outcomes on the reserve.	Low
Management operations A number of trails exist (see Reserve Map) which provide access for management purposes such as fire management, weed management and feral animal control. The majority of trails remain un-gated and unlocked. All boundary fencing matters to be dealt with under DEC fencing replacement policies. Plain wire fencing is preferred over netting, ringlock and hingejoint fences. This style of fence does not accumulate litter or debri. Unlike other fence material, a plain wire design is not subject to frequent damage by native animals that create concentrated access points into the reserve that can be used by domestic stock. Signposting is located throughout the reserve generally along key boundaries locations with neighbours or stakeholders and the start or termination of management trails. A number of licence agreements for access exist to use part of the reserve's management trail network.	To ensure that access trails are maintained in a trafficable condition for management purposes only. To restrict public vehicle access and inappropriate activities. To limit domestic stock entering the reserve. Ensure new areas have reserve boundary and trail signs installed. All access agreements are based on current policies and licence agreements.	Continue to maintain the existing management access network (firetrails) in line with fire management policies and other works priorities across the Region. Install locked gates and fences along management trails at strategic locations to prevent unauthorised access. Continue to upgrade/replace existing gates and fences throughout the reserve and introduce a master key system as part of the Regional access strategy. Continue to process boundary fencing applications on a case by case basis in line with other Regional fencing priorities. Replacement boundary fencing will be constructed of plain wire only. Continue to upgrade and replace signposting throughout the reserve in accordance with NPWS standards and establish a sign, gate and fire trail register. Continue to process access applications on a case by case basis and update existing access licence agreements in accordance with Access to Inholdings Policy.	High High Low Medium Low

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