NSW GOVERNMENT
Environment, Climate Change & Water
National Parks & Wildlife Service

Mann River Nature Reserve

Plan of Management

MANN RIVER NATURE RESERVE

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

Part of the Department of Environment, Climate Change and Water

November 2010

This plan of management was adopted by the Minister for Climate Change and the Environment on 17th November 2010.

ACKNOWLEDGMENTS

This plan of management is based on a draft plan prepared by staff of the Glen Innes Area, in the Northern Tablelands Region of the National Parks & Wildlife Service.

Cover photos by Koen Dijkstra, NPWS.
Top – Brush-tailed Rock Wallaby, Yellow Paper Daisy, Whip-tail Wallaby and Carpet Python. Bottom – View from Tommy's Rock Lookout.

Inquiries about Mann River Nature Reserve should be directed to the Ranger at the Glen Innes Area Office, PO Box 281 Glen Innes 2370, or by telephone on (02) 6732 5133.

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FOREWORD

Mann River Nature Reserve is located 35 kilometres east of Glen Innes on the Old Grafton Road and covers an area of 7,400 hectares.

Mann River Nature Reserve encompasses mountainous terrain with unique rock formations and tall forest, and provides scenic views to the east of the Great Dividing Range. It conserves a number of significant vegetation communities, including heath swamps which are part of the Endangered Ecological Community 'Montane Peatlands and Swamps of the New England Tableland'. It provides habitat for at least 50 species of birds and many species of macropods. Two animal species recorded in the reserve are listed as endangered and a further twelve animal species listed as vulnerable under the Threatened Species Conservation Act, while the tusked frog population has been listed as an endangered population.

Within Mann River Nature Reserve is the Town of Mitchell Day Use and Camping Area which adjoins the Old Grafton Road. This is named after a proposed town that was gazetted in 1871 but never developed. The reserve also contains Tommys Rock, a prominent feature named after the Aboriginal bushranger "Black Tommy".

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 Mann River Nature Reserve was placed on public exhibition from 6th July until 15th October 2007. The submissions received were carefully considered before adopting this plan.

The plan contains a number of actions to achieve the State Plan priority to "Protect our native vegetation, biodiversity, land, rivers and coastal waterways" including implementation of recovery plans and priority actions for threatened animal species, systematic monitoring of threatened flora species and communities, control of pest species, and fire management.

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

Frank Sartor MP
Minister for Climate Change and the Environment

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1.1 LEGISLATIVE AND POLICY FRAMEWORK

The management of Mann River Nature Reserve in NSW is undertaken in the context of a legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act), the National Parks and Wildlife Regulation (NPW Regulation), the *Threatened Species Conservation Act 1995* (TSC Act) and the policies of the NPWS. Section 72A of the NPW Act lists the matters to be considered in the preparation of a plan of management. The policies are compiled from the legislative background, the NPW Regulations 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 environmental impacts of any works proposed in this plan.

The plan of management is a statutory document under the NPW Act. Once the Minister has adopted a plan, no operations may be undertaken within Mann River Nature Reserve except in accordance with the plan. The plan will also apply to any future additions to Mann River 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.

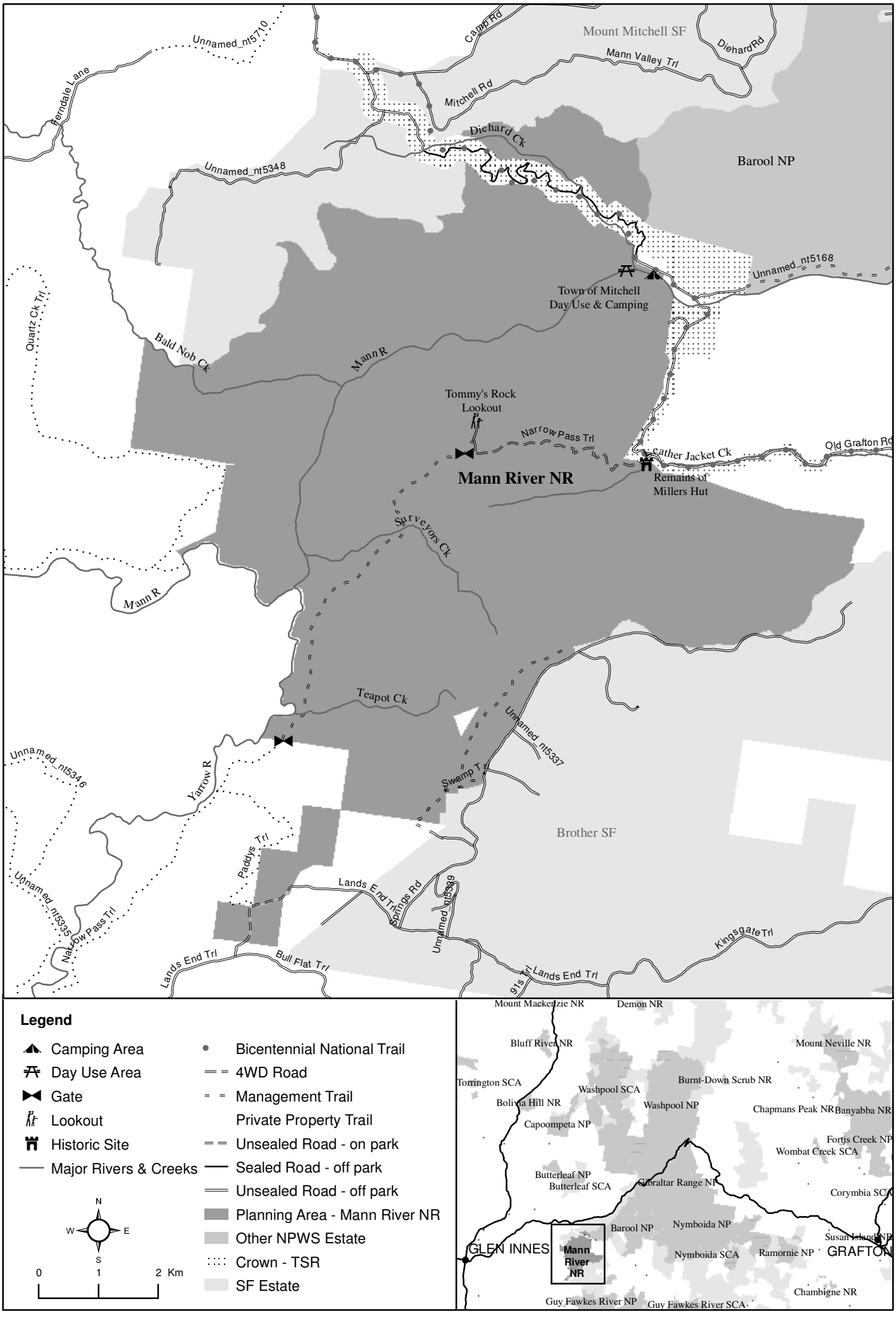
1.2 MANAGEMENT PURPOSES AND PRINCIPLES

Nature reserves

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.


Mount Mitchell SF
Barool NP
Brother SF
Mann River NR
Town of Mitchell
Day Use & Camping
Tommy's Rock
Lookout
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Bald Nob Ck
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4WD Road
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Unsealed Road - on park
Sealed Road - off park
Unsealed Road - off park
Planning Area - Mann River NR
Other NPWS Estate
Crown - TSR
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Mount Mackenzie NR
Demon NR
Bluff River NR
Mount Neville NR
Torrington SCA
Washpool SCA
Burnt-Down Scrub NR
Bolivia Hill NR
Washpool NP
Chapmans Peak NR
Banyabba NR
Capoompeta NP
Fortis Creek NP
Wombat Creek SCA
Butterleaf NP
Butterleaf SCA
Gibraltar Range NP
Corymbia SCA
Barool NP
Nymboida NP
Susan Island NR
GLEN INNES
Mann River NR
Nymboida SCA
Ramornie NP
GRAFTON
Chambigne NR
Guy Fawkes River NP
Guy Fawkes River SCA

3. MANN RIVER NATURE RESERVE

3.1 LOCATION, GAZETTAL AND REGIONAL SETTING

Mann River Nature Reserve (referred to as 'the reserve' in this plan) is located off the Gwydir Highway, 35 kilometres east of Glen Innes and approximately 100 kilometres west of Grafton along the Old Glen Innes-Grafton Road. The reserve was first gazetted in March 1985 over former freehold land and Crown Lease Reserve. Additions of 638 hectares in 1999 (*Forestry and National Park Estate Act 1998*) and 535 hectares in 2003 (*National Park Estate (Reservations) Act 2002*) has seen the reserve increase in area to 7,400 hectares. The reserve encompasses mountainous terrain with unique rock formations and tall forest, and provides scenic views east of the Great Dividing Range.

The reserve forms part of an extensive range of bushland reserves in the area including Barool, Gibraltar Range, Washpool and Nymboida National Parks. The reserve adjoins Mount Mitchell State Forest on the northern side and Brother State Forest on the southern side. Freehold grazing land adjoins the reserve on the western side. There are a number of rural residential properties located near the reserve including a multiple occupancy located on the eastern side with approximately 90 dwellings.

The reserve lies within the Glen Innes Severn Local Government Area, and is situated within the Clarence River Catchment. The reserve is predominantly within the Glen Innes Local Aboriginal Land Council area. Small sections of the reserve also fall within the Ngerrie Local Aboriginal Land Council area.

With its remote, largely unmodified landscape, the reserve presents many opportunities for solitude and self-reliant recreation (NPWS, 2001). Approximately 6,700 hectares of the reserve has been identified as potential wilderness. If in the future, additional lands with identified wilderness values are added to the reserve, the area could be nominated for wilderness declaration.

3.2 LANDSCAPE CONTEXT

The reserve is situated on the eastern escarpment of the Northern Tablelands and straddles both the North Coast and the New England Tableland bioregions, however it is predominantly within the New England Tableland bioregion. This bioregion extends over three degrees of latitude and varies in altitude between 400 metres and 1,500 metres above sea level, with rainfall varying from 2000 millimetres in the east to less than 700 millimetres in the west. These variations, and its diverse geology, make it a complex region providing for a large diversity in flora and fauna (Morgan and Terry, 1999).

The reserve has regional significance because it has the highest level of floristic diversity between survey sites of any reserve surveyed in the Northern Tablelands Region (Hunter, 2004) (refer to Section 4.1.2).

Natural and cultural heritage along with on-going uses, are strongly inter-related and together constitute 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 modern day Australians continue to influence bushland through recreational use, cultural practices, the presence of introduced plants and animals, fire and in some cases air and water pollution.

Both Aboriginal and non-Aboriginal people attribute 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 values. For reasons of clarity and document usefulness, natural and cultural heritage, non-human threats and on-going use are dealt with individually, but their inter-relationships are recognised.

3.3 MANAGEMENT DIRECTIONS

In addition to the general objectives for nature reserves (refer to Section 1.2), the specific objectives of management of Mann River Nature Reserve will be:

- protect the rugged natural character of the reserve;
- improve knowledge related to the management of the habitat values of the reserve by encouraging scientific research;
- provide and maintain minimal impact recreation facilities within the Town of Mitchell Day Use and Camping Area;
- control introduced plant and animal species in accordance with the Regional Pest Management Strategy;
- promote visitor appreciation and responsible attitudes to the varied natural, cultural and recreational values of the area; and
- implement and regularly review the Reserve Fire Management Strategy.

4. VALUES OF THE RESERVE

4.1 NATURAL AND CULTURAL HERITAGE

4.1.1 Landform, Geology and Soils

The reserve is located to the east of the Great Dividing Range and is comprised of rugged Palaeozoic rocks including consolidated and deformed sediments and acid igneous volcanic rocks. These rocks are part of the New England Batholith which range in age from 230 to 280 million years (Morgan and Terry, 1999)

Acid igneous rocks are predominantly coarse grained siliceous rocks that weather to form course siliceous sands and duplex soils of predominantly low fertility and poor structure (Morgan and Terry, 1999). The landscape varies from slopes and widespread rocky outcrops to swamps in the upper tributaries. It is these varying landforms that provide the wide variety of habitats found within the reserve.

Tommys Rock, at 1,015 metres, is the highest point in the reserve and provides a spectacular lookout with impressive views of the Mann River valley as well as the 'Big Hill' to the north and Yellow Jacket Ridge to the east. A prominent feature known as Samson's Ribs is also visible from the lookout.

The reserve is part of the Mann River Catchment, also referred to as the greater Clarence River Catchment and is drained by the Mann River and Diehard, Surveyors, Leather Jacket, Bald Nob and Teapot Creeks.

4.1.2 Native Plants

The reserve conserves a number of significant vegetation communities that are found along the eastern escarpment from the Hunter region to the Queensland border. It is important regionally for having the highest level of plant diversity between sites of any reserve thus far surveyed in Northern Tablelands Region (Hunter, 2004).

The vegetation varies from closed forests, open forests and woodlands to wet heaths, sedgelands and shrublands. However, predominantly the reserve is divided almost equally between open forests at higher altitudes on plateaus and woodlands in the escarpment and valleys. The most prominent association in the reserve is New England blackbutt (*Eucalyptus campanulata)* and broad-leaved stringybark *(Eucalyptus caliginosa)* occasionally with a mid story of forest oak *(Allocasuarina torulosa)*. It has an understorey dominated by grasses and forbs, particularly long-leafed mattrush *(Lomandra longifolia),* snow grass *(Poa sieberiana),* barbed wire grass *(Cymbopogon refractus),* blady grass *(Imperata cylindrica)* and kangaroo grass *(Themeda triandra)*.

Also significantly for the reserve is the protection of the 'Montane Peatlands and Swamps of the New England Tableland' which are listed as an Endangered Ecological Community under the TSC Act. These heath swamps are recognised as part of the New England Bioregion, which is described as containing disjunct montane mires and represents the northern limit of this vegetation type in Australia (Hunter and Bell, 2006).

Three plants listed under the TSC Act and a further 14 rare plants have been recorded within in the reserve (refer Table 1). A further 49 species are considered to be

regionally significant. In total, 66 (9%) of the recorded plant species are of local, regional or state significance (Hunter, 2004).

Table 1. Threatened and Rare Plants Recorded in the Reserve.

Common Name	Scientific Name	Legal Status[1]	Conservation Status[2]
Tylophora	*Tylophora woollsii*	Endangered *	Rare Plant
Black Grevillea	*Grevillea scortechinii* var. *sarmentosa*	Vulnerable *	Rare Plant
	Sarcochilus fitzgeraldii	Vulnerable *	Rare Plant
	Acianthus apprimus		Rare Plant
Cangai Wattle	*Acacia cangaiensis*		Rare Plant
	Acacia sp. aff. *ingramii*		Rare Plant
Hop Bush	*Dodonaea serratifolia*		Rare Plant
	Eucalyptus olida		Rare Plant
Green Bottlebrush	*Callistemon flavovirens*		Rare Plant
Brown Wattle	*Acacia brunioides* subsp. *Brunioides*		Rare Plant
Wedding Bush	*Ricinocarpos speciosus*		Rare Plant
	Daviesia elliptica		Rare Plant
Dorrigo White Gum	*Eucalyptus dorrigoensis*		Rare Plant
Long-tailed Greenhood	*Pterostylis woollsii*		Rare Plant
	Pultenaea pycnocephala		Rare Plant
Bird Orchid	*Chiloglottis sphyrnoides*		Rare Plant
Cockspur Flower	*Plectranthus suaveolens*		Rare Plant

[1]Status under TSC Act.
[2] Rare Australian plant according to Briggs and Leigh (1996).
* Also listed under the EPBC Act.

Acacia blakei has also been recorded in the reserve and is considered of conservation significance due to its rare distribution across eastern NSW.

4.1.3 Native Animals

The reserve is an important area contributing to the conservation of vertebrate fauna of the dry eastern tablelands and escarpment of NSW. It provides home to at least 50 species of birds, including the yellow-faced honeyeater (*Lichenostomus chrysops)*, king parrot (*Alisterus scapularis),* laughing kookaburra (*Dacelo novaeguineae*), rainbow bee-eater (*Merops ornatus*), yellow-rumped thornbill (*Acanthiza chrysorrhoa)* and peregrine falcon *(Falco peregrinus)*.

There are also many species of macropods that inhabit the reserve, including the eastern grey kangaroo (*Macropus giganteus*), wallaroo *(Macropus robustus*), whip-tail wallaby (*Wallabia parryi*), swamp wallaby (*Wallabia bicolor*) and the brush-tailed rock wallaby (*Petrogale penicillata*).

Common reptiles in the reserve are red-bellied black snakes (*Pseudechis porphyriacus)*, eastern brown snakes (*Pseudonaja textilis)* and diamond pythons (*Morelia spilota)*. Lace monitors (*Varanus varius),* water dragons *(Physignathus*

lesuerii), tree skinks (*Egernia striolata),* jacky lizards (*Amphibolurus muricatus)* and eastern blue-tongue lizards (*Tiliqua scincoides)* also occur in the reserve.

More significantly there are two endangered animal species and one endangered fish species recorded in the reserve, and a further twelve animal species listed as vulnerable under the TSC Act (Table 2).

Table 2. Threatened Animal Species Recorded in the Reserve.

Common Name	Scientific Name	Legal Status[1]
Amphibians		
Peppered Frog	**Litoria piperata*	Vulnerable [2]
Tusked Frog	*Adelotus brevis*	Endangered Population
Birds		
Speckled Warbler	*Chthonicola sagittatus*	Vulnerable
Diamond Firetail	*Stagonopleura guttata*	Vulnerable
Red-tailed Black Cockatoo	*Calyptorhynchus banksii*	Vulnerable
Glossy Black Cockatoo	*Calyptorhynchus lathami*	Vulnerable
Sooty Owl	*Tyto tenebricosa*	Vulnerable
Powerful Owl	*Ninox strenua*	Vulnerable
Masked Owl	*Tyto novaehollandiae*	Vulnerable
Red Goshawk	*Erythrotriorchis radiatus*	Endangered
Mammals		
Spotted-tailed Quoll	*Dasyurus maculatus*	Vulnerable
Rufous Bettong	*Aepyprymnus rufescens*	Vulnerable
Brush-tailed Rock Wallaby	*Petrogale penicillata*	Endangered
Eastern Cave Bat	*Vespadelus troughtoni*	Vulnerable
Yellow-bellied Glider	*Petaurus australis*	Vulnerable
Fish		
Freshwater Eastern Cod	*Maccuochella ikel*	Endangered[3]

[1]Status under TSC Act.
[2] Species taxonomy is under review.
[3] Status under the Fisheries Act.
* Also listed under the EPBC Act.

The tusked frog (*Adelotus brevis)* has been recorded in the reserve. The tusked frog population in the New England Tableland and Nandewar Bioregions has been listed as an endangered population under the TSC Act.

The dingo (*Canis lupus dingo)* can often been seen throughout the reserve and is regarded as a native animal and an integral part of the reserve's natural system. However, the dingo is unprotected under Schedule 11 of the NPW Act for the purpose of control around the boundary with agricultural lands. The continued survival of the dingo is endangered by cross breeding with feral dogs (refer to Section 5.2 Introduced Animals).

Under the TSC Act, the Threatened Species Priorities Action Statement has been endorsed which identifies actions and strategies to promote the recovery of threatened species, populations and ecological communities. Priority actions and recovery plans will be used to guide management of threatened species in the area. A recovery plan has been prepared for the yellow-bellied glider, brush-tailed rock wallaby, large forest owls including the powerful, sooty and masked owls, peppered frog and red goshawk. Draft recovery plans have been prepared for the rufous bettong and eastern cave bat.

4.2 CULTURAL HERITAGE

Cultural resources are important components of the environment that may have aesthetic, historic, scientific and social significance to present and future generations. Cultural heritage includes both Aboriginal and non-Aboriginal history.

4.2.1 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.

The reserve falls within the Glen Innes and Ngerrie Local Aboriginal Land Council areas of responsibility. Ngarabul people from the Northern Tablelands would have traditionally visited the area, as would the Gumbaingirr people to the east and south-east.

As the reserve is located at the bottom of the range leading onto the coast, the area would have been popular for many tribal communities not only because it was a beautiful meeting place but it also provided large amounts of fish, eels, turtles, kangaroos and bird life. During gatherings with other tribal communities, trading of materials such as quality stone, axes and shell material from the coast would have taken place (Longdin, 2000).

It is believed that the Ngarabul people travelled over the mountains through the reserve, along the river to the coast, which would have been one of the easier routes. This route is more commonly known today as the Old Grafton Road (refer to Reserve and Locality Map).

The imposing rocky knob within the reserve known as Tommys Rock was named after the Aboriginal bushranger “Black Tommy” McPherson (refer to 4.2.2 Historic Heritage). Tommy was also a respected stockman and rider who found alluvial gold.

No Aboriginal heritage studies have been undertaken in the reserve, however a few sites have been recorded within a short distance off the reserve boundary. These include artefacts and a number of scarred trees further east along the Old Grafton Road.

4.2.2 Historic Heritage

There are a number of historic places within and adjacent to the reserve. The Mann River is said to be named after John Furnessy Mann or his brother Samual Furneaux Mann, who took up land in the Beardy Plain area below “Blair Hill”. The property was later taken over by Sir Frances Forbes. The first settlement in the vicinity of the reserve was by Archibald Boyd and his party at ‘Boyds Plain’ in 1838.

The Old Grafton Road, which now borders the eastern side of the reserve, was originally a track constructed by timber getters seeking the valuable red cedar in the 1840s before being used by loggers and bullock teams. The road was widened and improved during the 1860s and was gazetted in 1871. It became the main vehicular route between Grafton and Glen Innes, and the Cobb and Co. coaches ran a weekly mail service along this road. Soon after the opening of the Gwydir Highway in 1960s, use of the Old Grafton Road declined dramatically due to the improved grade and quicker travel times on the new highway.

With the regular mail run and the discovery of gold in the late 1800s, bushrangers such as “Captain Thunderbolt” and “Black Tommy” McPherson favoured the area around the reserve. “Captain Thunderbolt” was a local horseman named Frederick Ward, who made frequent visits to the Glen Innes district in the late 1860s. Local history suggests that “Captain Thunderbolt” committed numerous crimes, including the theft of horses, provisions and money.

Tommys Rock is a prominent feature within the reserve and was named after the Aboriginal bushranger “Black Tommy”. Local legend suggests that ”Black Tommy” was a fugitive and was wanted for murder. It was thought he used the rock as a lookout to watch out for police.

The area in which the reserve is located also has a rich history of convicts, farmers and miners. In August 1871, the “Town of Mitchell” was gazetted creating 21 quarter-acre residential blocks to be developed and sold partly in the area that is now the reserve’s camping area. The development never occurred. The reserve’s camping area takes its name from the proposed town.

Still visible within the reserve, adjacent to the Town of Mitchell Camping Area on exposed riverside rock platforms, are the anchor points for the old timber bridge that once spanned the Mann River. Built in the early 1877, the bridge would have been an important link for travellers along the Old Grafton Road until it was either dismantled or washed away in the 1960s.

Adjacent to Leather Jacket Creek and close to the Old Grafton Road is the remains of a farm owned by the Miller family. The site can be recognised by the old remains from the stockyards, cabin piers, fences and exotic trees. The property was originally purchased by the NPWS in December 1982 and was conditionally leased back to the Millers for 5 years. The lease was not renewed and the property is now managed as a ruin.

4.3. VISITOR ACCESS AND USE

Public access to the reserve is via the Old Grafton Road (refer to Section 2 Reserve and Locality Map). The Town of Mitchell Day Use and Camping Area is located adjacent to the Old Grafton Road and is accessible in all weather. Tommys Rock Lookout is accessible by 4WD vehicles via Narrow Pass Trail. The trail beyond the lookout is a management trail and is not available for public use. Public vehicle access is also permitted along Lands End Trail through the southern part of the reserve.

Public use is mainly centred on the Town of Mitchell Day Use and Camping Area. This area provides basic facilities such as tables, wood barbecues and toilets. Camping is generally not encouraged in most nature reserves; however the area has a long-standing history of use and is located within a highly modified area with a clear boundary formed by the Mann River. On the edge of the reserve, opportunities abound for swimming and fishing in the many rock pools and gently flowing cascades. Bushwalking and bird watching groups also regularly use the reserve.

In March 2001 and August 2009, there were significant flood events on the Mann River and Diehard Creek, which affected the camping area in the reserve. Extensive erosion occurred resulting in the loss of camping sites. Since these events, NPWS has rehabilitated some of these areas, however there is still pressure during peak holiday periods such as Christmas and Easter for more camping sites.

The Bicentennial National Trail (BNT) passes just outside the reserve following the Old Grafton Road (refer to Reserve and Locality Map). Camping with horses is permitted on the Travelling Stock Route (TSR) approximately 300 metres downstream of the Town of Mitchell Day Use and Camping Area, which can be organised through the New England Livestock Health and Pest Authority.

5. THREATS TO RESERVE VALUES

5.1 Isolation and Fragmentation

Clearing of vegetation in the Bioregion has resulted in a high loss of biodiversity and fragmentation of habitat. Long term conservation of biodiversity depends upon the protection, enhancement and connection of remaining habitat across the landscape, involving vegetation remnants on both public and private lands. The large size of the reserve and the adjoining crown areas consolidates the habitat values of the reserve and provides connectivity with other surrounding forested areas.

5.2 Introduced Animals

The Northern Tablelands Regional Pest Management Strategy (NPWS, 2007) broadly identifies the weed and feral animal priorities and control options for the region. The most significant pest animal species known to occur in the reserve are listed below and will be managed in accordance with their priority rating (Table 3).

Table 3. Pest Animal Species known to occur within Mann River Nature Reserve

Common Name	Scientific Name	NPWS Priority
Feral Pigs	*Sus scrofa*	1
Feral Goats	*Capra hircus*	1
Wild Dogs	*Canis familiaris*	1
Fox	*Vulpes vulpes*	2
Feral Deer	*Dama and Cervus spp.*	2
Feral Cats	*Felis catus*	3
Rabbits	*Oryctolagus cuniculus*	3
European Honeybee	*Apis mellifera*	3

Source: NPWS (2007) Regional Pest Management Strategy.
Key to table priorities: 1 = high, 2 = medium, 3 = low.

Wild dogs, including feral dogs, dingoes and their hybrids, are declared pest animals under the *Rural Lands Protection Act 1998* (RLP Act) throughout NSW. Hence the NPWS has a statutory obligation to control wild dogs on its estate "to the extent necessary to minimise the risk of the pest causing damage on any land". Under the RLP Act, public lands which are identified as significant habitat for dingoes in Schedule 2 of the Wild Dog Control Order will be managed with the dual objectives of managing wild dogs, while at the same time conserving dingoes in core areas.

Mann River Nature Reserve is a Schedule 2 area, requiring public land managers, such as the NPWS to assist in the preparation and implementation of a local wild dog management plan in accordance with the RLP Act. The wild dog management plan was adopted in 2003 and identifies methods for the control of wild dogs especially those leaving the reserve and attacking livestock, it also identifies the conservation of dingos in core areas of the reserve. Before adoption and implementation, the plans require the approval of all parties, including the NPWS. Management strategies are coordinated between the local Bald Knob / Skeleton Creek Wild Dog Association and NPWS at Glen Innes.

Feral pigs have increased in distribution and density on a statewide basis, but have never become fully established in the reserve. Only a few have been recorded passing through, however numbers need to be continually monitored and appropriate control programs maintained or instigated.

Foxes, cats, goats and deer occur in the reserve at low density. Domestic cattle occasionally enter the reserve from neighbouring properties. The numbers of these species are monitored and appropriate control is undertaken.

Sightings of Gold Fish (*Carassius auratus auratus*) have been reported in the Mann River and nearby Boyd, Nymboida and Clarence Rivers since the 2001 flood. It is also believed that the Plague Minnow (*Gambusia holbrooki*) is present in the Mann River, however this is yet to be confirmed. Aquatic pests have not been identified as priority pests for this reserve under the Northern Tablelands Regional Pest Management Strategy, although these species will continue to be monitored and NPWS will work closely with the Industry and Investment NSW if control is required.

5.3 Introduced Plants

The Northern Tablelands Regional Pest Management Strategy (NPWS, 2007) broadly identifies the weed priorities and control options for the region. The most significant weed species known to occur in the reserve are listed in Table 4 and will be managed in accordance with their priority rating and the control strategies identified in the Regional Pest Management Strategy.

Table 4. Weed Species in Mann River Nature Reserve.

Weed Species	Scientific Name	NPWS Priority
Honey Locust	*Gleditsia triacanthos*	1
Blackberry	*Rubus fruticosus*	1
African Love Grass	*Eragrostis curvula*	1
Coolatai Grass	*Hyparrhenia hirta*	1
Giant Parramatta Grass	*Sporobolus indicus var. major*	1
Noogoora Burr	*Xanthium occidentale*	2
Bathurst Burr	*Xanthium spinosum*	2

Source: NPWS (2007) Regional Pest Management Strategy.
Key to table priorities: 1 = high, 2 = medium

Giant Parramatta, Coolatai and African love grasses are all serious perennial weeds, with the ability to persist and invade native grasslands. These plants produce a large number of seeds that are easily spread by vehicles and machinery, and remain viable in the soil for several years. Giant Parramatta and African love grasses tend to be located along the management trails, and are being managed accordingly. Coolatai grass is invading the reserve from the Travelling Stock Route located along the Old Grafton Road, and penetrating areas away from trails, making control extremely difficult due to access. Where access allows, control is occurring on an annual basis.

Honey locust is a thorny woody weed that poses a serious threat to catchment areas and riparian communities. It is currently located in small numbers just below the reserve boundary along the Mann River. Cooperative control measures with the neighbouring landowners are currently in place, which is proving successful in controlling this weed.

Blackberry can be a significant weed, and is mainly located along the edges of the Mann and Yarrow Rivers as well as on former cleared grazing land. Blackberries can be difficult to eradicate from an area and, once established, may harbour feral animals. Control is minimal at present due to its limited distribution in the reserve.

5.4 Fire

Fire is a natural phenomenon and one of the continuing physical factors of the Australian environment. It is essential for the survival of some native flora, and for habitat diversity. Inappropriate fire regimes are a key threatening process affecting the biological diversity of NSW. A variety of fire regimes is needed to maintain natural diversity. Accordingly, the management of fire should aim to provide a pattern of fire intensity, frequency and extent that matches the ecological requirements of the flora and fauna of the reserve. Many small mammals, reptiles and birds breed in spring and summer and are vulnerable to fire during this crucial period.

Cooperative fire management is essential for the protection of life and surrounding property, as well as for protection of the natural and cultural heritage of the reserve. NPWS maintains cooperative arrangements with surrounding landowners and Rural Fire Service brigades and is actively involved in the Glen Innes Severn, Inverell and Tenterfield District Bush Fire Management Committees (DBFMC). Cooperative arrangements include approaches to fuel management, support for neighbours' fire management efforts, information sharing and preparation of District Bushfire Management Plans for the area covered by this committee.

A fire management strategy has been adopted for the reserve (NPWS, 2005). This strategy provides detailed information and management guidelines for the protection of habitats and species within the reserve. The plan focuses on protection of life and property, utilising fire protection along park boundaries; cooperative management with neighbours; prevention, detection and control of wildfire; as well as the conservation of biodiversity, cultural and catchment values.

5.5 Inappropriate Use

There has been a history of illegal crop growing in the reserve and beyond the reserve, generally relying on the Narrow Pass Trail for access. Significant use by trail bikes occurs in the reserve, mainly on the Narrow Pass Trail, some of which is believed to be associated with illegal drug crops.

Many of these trail bikes are unregistered, and trail bike use can lead to increased erosion on fire trails.

6. MANAGEMENT OPERATIONS

The reserve has a limited road network (refer to Reserve and Locality Map). Narrow Pass Trail is available for public access to Tommys Rock Lookout and then the remainder of the road is a management trail. In accordance with NPWS policy, management trails are only available for NPWS management vehicle use and are not available to public vehicles.

The other management trail in the reserve is Swamp Trail. Springs Road within the Brother State Forest is located adjacent to the south eastern boundary of the nature reserve. This road is maintained by Forests NSW to a standard required to meet its management objectives only, and accordingly may not be suitable or available for public access.

As well as the gazetted reserve, the planning area includes 1 kilometre of Lands End Trail as a ministerial road, which is vested in the Minister for Climate Change and the Environment on behalf of the Crown for the purposes of Part 11 of the NPW Act. It was created under the *Forestry and National Parks Estate Act 1998* to ensure that the access arrangements that existed immediately before the reserve's creation, primarily for timber hauling and private property access could continue. The management of this road is subject to the provisions of this plan, the NPW Regulations and the requirements of the EPA Act.

A small crown water reserve of approximately 8 hectares at the head of Teapot Creek is proposed to be dedicated as part of the reserve. If added, no facilities or other developments will be constructed on this land.

7. MANAGEMENT ISSUES AND STRATEGIES

Current Situation	Desired Outcomes	Strategies	Priority
Soil Conservation Soils in the reserve are highly erodible and are affected by high seasonal rainfall. Trail maintenance is an ongoing activity	• Erosion on trails is significantly reduced.	• Undertake all works, such as trail maintenance and fire management, to minimise erosion. Monitor erosion on management trails and in gullies that are influenced by human intervention or from natural occurrences and instigate control measures, if necessary.	High
Native Plant and Animal Conservation Mann River Nature Reserve forms part of a major vegetation corridor important for the movement of native species. A comprehensive vegetation survey has been undertaken in the park. Limited fauna survey work has been undertaken in the reserve, and limited records are available. Some significant threatened plant communities such as *Acacia blakei* and the montane peatland and swamps have been recorded. An important population of brush-tailed rock wallabies have also been recorded in the reserve Dingoes are regarded as a native animal that is part of the reserve's natural system. The species' survival is threatened by cross breeding (refer to Introduced Animals 5.2). A recovery plan has been prepared for the yellow-bellied glider, brush-tailed rock wallaby,	• No reduction in native plant and animal species or communities found in the reserve or reduction in habitat diversity. • Increased knowledge of fauna in the reserve and their ecological requirements.	• Undertake or encourage appropriate fauna surveys, particularly for threatened species, and other appropriate ecological research. • Implement systematic monitoring of threatened flora species and communities, also encouraging appropriate ecological research projects. • Identify core conservation areas for dingoes whilst managing potential impacts from wild dogs on neighbouring agricultural lands. • Implement relevant strategies in recovery plans and priorities action statement for threatened species.	Medium Medium High High

large forest owls including the powerful, sooty and masked owls, peppered frog and red goshawk. Draft recovery plans have been prepared for the rufous bettong and eastern cave bat.			
Cultural Heritage The reserve is located within the boundary of the Glen Innes and Ngerrie Local Aboriginal Land Council areas, and is within the traditional lands of the Ngarabul and Gumbaingirr tribes. There is little information about traditional Aboriginal uses and values within the reserve. No formal surveys have been undertaken in the reserve for sites of Aboriginal significance and no sites have yet been recorded in the reserve, although a number of sites have been recorded nearby. There are a number of historic places and values within and adjacent to the reserve including the old bridge crossings and Millers Hut (refer to Section 4.2 Cultural Heritage). The region including the reserve is thought to have been used in the late 1800s by bushrangers, ”Captain Thunderbolt” and ”Black Tommy”. Tommys Rock Lookout is named after ”Black Tommy”, who is thought to have used the rock as a lookout.	• Aboriginal and historic cultural features are identified, recorded, conserved and managed in accordance with their significance. • Aboriginal heritage values are protected in partnership with the local Aboriginal community.	• Precede any new ground disturbance work by a check for cultural features as part of the environmental assessment process. • Undertake or encourage appropriate studies into Aboriginal and non-Aboriginal cultural heritage in the reserve, including archaeological survey, formal documentation of cultural resources, values and locations (refer to Research). • Consult and involve the local Aboriginal Land Councils and other relevant Aboriginal community organisations and knowledge holders in all aspects of management of Aboriginal sites, places and values, including interpretation of places or values if recorded within or adjacent to the reserve. • Manage historic heritage sites such as Millers Hut and associated items and the old bridge crossing as ruins. • Ensure all of the potential heritage items or sites identified within the reserve are accurately recorded into the Historical Heritage Information Management Systems (HHIMS) database.	High High High Low High

Introduced Species Weed and pest animals are subject to ongoing control programs in accordance with the Regional Pest Management Strategy and individual pest management control programs. A systematic survey of introduced weed species has been undertaken throughout the reserve. The main pest plant species of concern are blackberry, African love grass, Coolatai grass and giant Parramatta grass. Feral pigs, deer, wild dogs, cats, foxes, and rabbits are all known to occur within the reserve. Wild dogs have been recorded. The reserve is considered to also contain high quality dingo habitat and has been listed as a dingo management area (refer to Section 5.2 Introduced Animals). Domestic cattle occasionally enter the reserve from neighbouring properties. The impact is minimal, however the spread of significant weed species and direct damage to threatened plant species and or communities may occur.	• Introduced species are controlled and, where possible, eradicated. • Where eradication is not feasible, population and distribution of introduced species should not expand beyond their current extent. • Control of introduced species has minimal impact on native species.	• Continue ongoing pest species control programs. • Monitor, control and where possible, eradicate introduced plant and animal species within the reserve, in accordance with the Regional Pest Management Strategy. Priority will be given to those listed in Tables 3 and 4. • Seek the cooperation of other authorities and neighbours in implementing weed and pest animal control programs. • Assist in the review and implementation of wild dog management plan covering the reserve, in consultation with relevant stakeholders including the New England Livestock Health and Pest Authority. • Prevent cattle movements in the reserve through maintaining boundary fencing. • Implement systematic monitoring points for the spread of Coolatai grass, recording its impacts to the ecology of the areas affected. Also encourage research on the management and suppression of Coolatai grass. • Liaise with Industry and Investment NSW to encourage investigation of whether introduced fish are present in the rivers and creeks, and work with them if control is required.	High High High High Medium Medium Medium

Fire Management Fire is a natural feature of the environment and is essential to the survival of some plant communities. Infrequent or regular fire can cause loss of particular plant and animal species and communities. Fire could also damage cultural features and fences, and threaten neighbouring land. A reserve fire management strategy has been adopted for the reserve and provides fire management guidelines for the reserve and detail on fire sensitive vegetation.	• Life, property and natural and cultural values within and adjacent to the reserve are protected from unplanned fire. • Fire regimes are appropriate for conservation of plant and animal communities, particularly threatened species.	• Implement and regularly review the reserve fire management strategy. • Continue to participate in the Glen Innes Severn, Inverell and Tenterfield District Bush Fire Management Committees. Maintain coordination and cooperation with the Rural Fire Service and neighbours with regard to fuel management and fire suppression. • Encourage further research into the ecological effects of fire in the reserve (refer to Native Plants and Animals and Research).	High High Medium
Visitor Use The Old Grafton Road provides the main access to the reserve. Public vehicle access is limited to the Town of Mitchell Day Use and Camping Area, Lands End Trail and along Narrow Pass Trail to Tommys Rock Lookout. Narrow Pass Trail is suitable for four wheel drives only. There is a steep drop off at Tommys Rock Lookout which is a safety concern for visitors. Current visitor use includes bushwalking, bird watching, swimming, fishing, picnicking, camping, cycling and scenic driving.	• Inappropriate activities are significantly reduced. • The local community is aware of the significance of the area and of management programs.	• Maintain the Town of Mitchell Day Use Area and Camping Area and Tommys Rock Lookout as the main visitor areas in the reserve. • Install a guardrail or other safety device at Tommys Rock Lookout. • Organised group recreational or educational visits may be permitted under authorisation from the NPWS. Limits may be placed on the size of groups walking in the reserve or using the camping area. • Monitor levels and impacts of use and undertake measures to reduce impacts where they are found to be unacceptable.	High High High Medium

The Town of Mitchell Day Use and Camping Area has barbecues, picnic tables and toilet facilities. Major floods in 2001 and 2009 on the Diehard Creek resulted in the loss of areas previously used for camping. There is pressure for more camping sites in the reserve during peak periods. There is an area available for the future expansion of the camp ground to the west of the current camp ground along Diehard Creek. This area would be required to be a walk-in site only as it crosses a small section of the creek. The land in this area is flat, cleared and unlikely to be impacted by floodwaters. Interpretation of the reserve's values will be important in minimising inappropriate visitor behaviour while also maximising visitor enjoyment and education. The Bicentennial National Trail (BNT) follows the Old Grafton Road which adjoins the reserve. Horse riding (including camping with horses) is not permitted in the reserve. Horse riders may camp on the neighbouring Travelling Stock Route (TSR), managed by the New England Livestock Health and Pest Authority. There has been a history of illegal crop growing and the use of unregistered motor bikes in the reserve.	• Visitor use is ecologically sustainable and consistent with the management principles (refer to Section 1.2).	• Maintain regulatory and trail identification signage where appropriate. • If visitor numbers substantially increase, consider developing a camping area on the cleared flat along Diehard Creek. Limit to a maximum of 10 camp sites with a few picnic tables and barbecues. Access to this camp ground would be walk-in only and the construction of a small pedestrian bridge over the creek may be required. • Consider introducing fees for camping in the reserve. • Advise horse riders using the BNT to camp in the TSR approximately 300 metres downstream of the Town of Mitchell Camping Area. • Undertake law enforcement for inappropriate use such as illegal crop growing and unregistered motor bikes through patrols and close liaison with the local Police.	Medium High Medium High High

Research A comprehensive vegetation survey has occurred. However little is known of the native animals of the reserve. No formal cultural heritage surveys have been undertaken in the reserve. More knowledge is also required of appropriate fire regimes to maintain the ecological integrity of the flora and fauna within the reserve.	• Encourage research that enhances knowledge, and assists management of the reserves values and has minimal environmental impact.	• Undertake or encourage appropriate fauna surveys, cultural assessment, fire research and threatened flora monitoring through liaison with local universities.	High
Management Operations The only management facilities in the reserve are the roads and management trails. The small crown land water reserve (8 hectares) managed by the Livestock Health and Pest Authority at the head of Teapot creek is proposed to be dedicated as a part of the reserve.	• Manage facilities to a high standard with minimal impacts.	• Maintain all roads and management trails as shown on the map. Trails not required for management purposes will be closed, and allowed to revegetate naturally. • Manage any new acquisitions in accordance with this plan of management.	Medium Medium

PRIORITIES:

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.

8. REFERENCES

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