

# Plan of Management

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## Northern Monaro Reserves

(Incorporating Dangelong, Wadjan, Kybeyan, Numeralla, Undoo, Coornartha, Mount Clifford and Good Good Nature Reserves, and Kybeyan and Macanally State Conservation Areas)



# **THE NORTHERN MONARO RESERVES**

**(Incorporating Dangelong, Wadjan, Kybeyan, Numeralla, Undoo,  
Coornartha, Mount Clifford and Good Good Nature Reserves,  
and Kybeyan and Macanally State Conservation Areas)**

## **PLAN OF MANAGEMENT**

**NSW National Parks and Wildlife Service**

**April 2012**

**This plan of management was adopted by the Minister for the Environment on 17<sup>th</sup> April 2012.**

## **Acknowledgments**

The NSW National Parks and Wildlife Service (NPWS) acknowledges that these nature reserves and state conservation areas are in the traditional country of the Ngarigo people.

This plan of management is based on a draft plan prepared by the staff of the Southern Ranges Region of NPWS, part of the Office of Environment and Heritage, Department of Premier and Cabinet.

Cover photo by Andrew Claridge, NPWS.

For additional information or any inquiries about the Northern Monaro Reserves or this plan of management, contact the NPWS Snowy River Area Office at the Snowy Mountains Visitor Centre, Kosciuszko Road, Jindabyne NSW 2627, or by telephone on 6450 5555

Published by:  
Office of Environment and Heritage  
59–61 Goulburn Street  
PO Box A290  
Sydney South 1232

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ISBN 978 1 74293 636 9

OEH 2012/0398

Printed on recycled paper

## FOREWORD

The ten Northern Monaro Reserves have a combined area of 10,814 hectares. They comprise eight nature reserves and two state conservation areas that are located between Bredbo and Nimmitabel in southern NSW.

The Northern Monaro Reserves contain vegetation communities which are not being well-represented elsewhere in the conservation system. These provide habitat for three threatened plant and six threatened animal species, including the koala, spotted-tailed quoll and eastern bentwing-bat.

The reserves contain a number of Aboriginal sites and are part of the traditional area of the Ngarigo people. They also contain evidence of gold mining and associated activities that took place from the 1880s to the early 1900s, including mine shafts, diggings, dams, huts sites and dry stone wall embankments.

The New South Wales *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each nature reserve and state conservation area. A draft plan of management for the Northern Monaro Reserves was placed on public exhibition from 6 November 2009 to 1 March 2010. 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 implementation of actions to assist the recovery of threatened species, rehabilitation of clearings along the Numeralla River, and control of introduced plants and animals. The plan also allows for low impact recreation, such as driving of registered motor vehicles, bushwalking, bush camping and bird watching.

This plan of management establishes the scheme of operations for Dangelong Nature Reserve, Wadjan Nature Reserve, Kybayan State Conservation Area, Kybayan Nature Reserve, Numeralla Nature Reserve, Undoo Nature Reserve, Coornartha Nature Reserve, Macanally State Conservation Area, Mount Clifford Nature Reserve and Good Good 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**

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## **1. LOCATION, GAZETAL AND REGIONAL CONTEXT OF THE NORTHERN MONARO RESERVES**

The Northern Monaro Reserves are a complex of ten reserves located east of Cooma in the southern tablelands of NSW (Map1). They are, in a general progression from south to north: Dangelong Nature Reserve, Wadjan Nature Reserve, Kybeyan State Conservation Area, Kybeyan Nature Reserve, Numeralla Nature Reserve, Undoo Nature Reserve, Coornartha Nature Reserve, Macanally State Conservation Area, Mount Clifford Nature Reserve and Good Good Nature Reserve. All ten reserves are situated east of the Monaro and Snowy Mountains Highways between Bredbo and Nimmitabel and cover a combined area of 10,814 hectares.

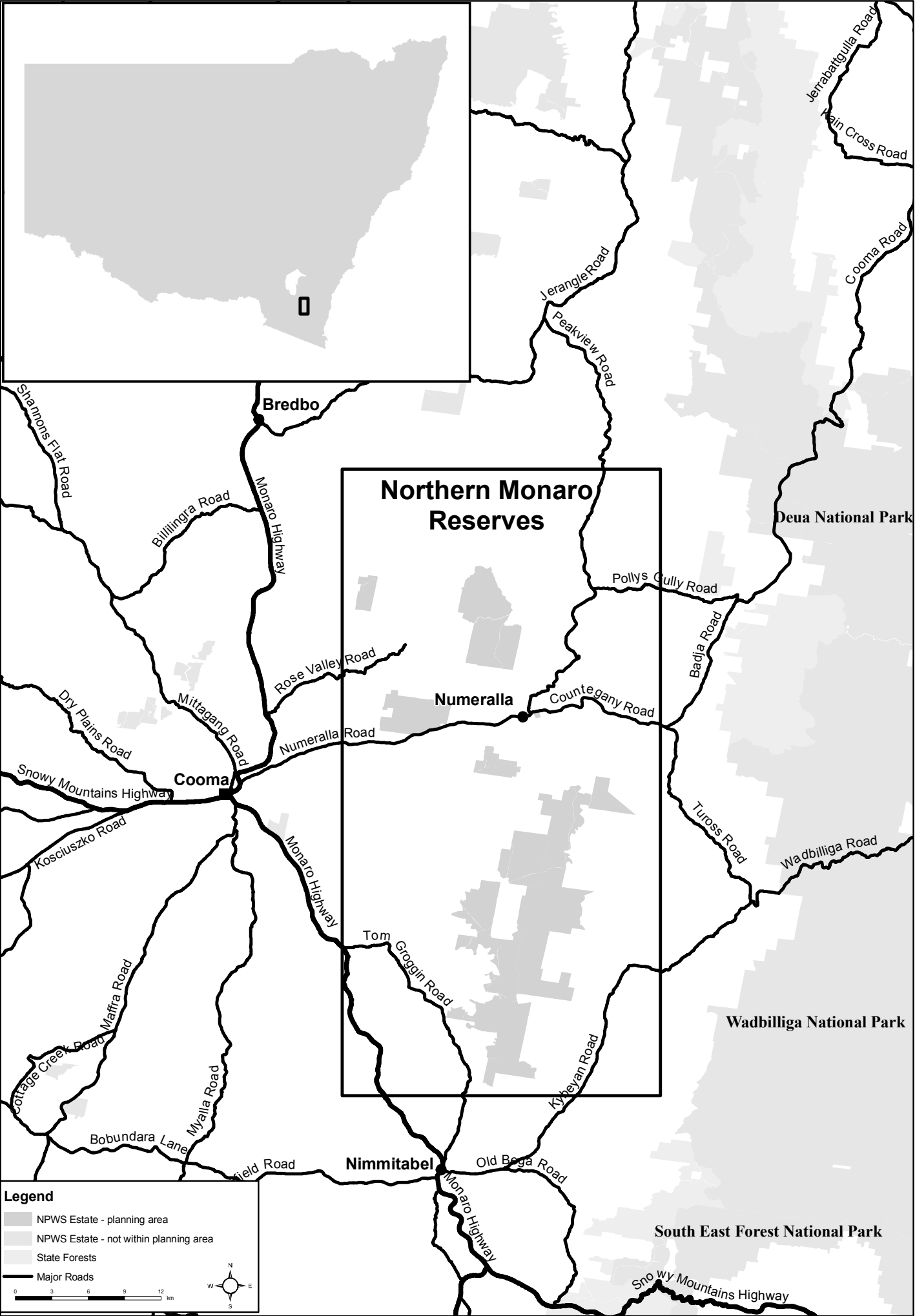
Dangelong Nature Reserve was reserved on 5<sup>th</sup> March 1999 over 2,430 hectares of Crown land and, with subsequent additions gazetted on 10<sup>th</sup> November 2006, now covers an area of 4,916 hectares. Good Good Nature Reserve (20 hectares), Mount Clifford Nature Reserve (306 hectares), Coornartha Nature Reserve (1,184 hectares), Numeralla Nature Reserve (435 hectares), Undoo Nature Reserve (19 hectares), Kybeyan Nature Reserve (432 hectares) and Wadjan Nature Reserve (92 hectares) were reserved on 1<sup>st</sup> January 2001 over areas of Crown land (and in the case of Coornartha over State Forest) as part of the Southern Regional Forest Agreement. Macanally State Conservation Area (2,290 hectares) and Kybeyan State Conservation Area (4,070 hectares) were reserved on 1<sup>st</sup> January 2003 over Crown Reserves that were established under the Southern Regional Forest Agreement. The Southern Regional Forest Agreement provided for major additions to the reserve system, including the establishment of these nature reserves, following assessment of the natural, cultural, economic and social values of forests. A small (103 hectare) addition to Kybeyan State Conservation Area was also gazetted in 2006 bringing the reserve to an area of 4,173 hectares.

As well as the above nature reserves and state conservation areas, the planning area includes a number of roads which are vested in the Minister for the Environment for the purposes of Part 11 of the *National Parks and Wildlife Act 1975* (NPW Act). These are dealt with in section 4.3 of this plan.

The Northern Monaro Reserves are located within a landscape that has been largely cleared for pastoral use. The 2006 additions to Dangelong Nature Reserve linked this reserve with Wadjan Nature Reserve, Kybeyan State Conservation Area and Kybeyan Nature Reserve. The other reserves are, however, separated by distances of between 3 and 10 kilometres. In a regional context, Kuma Nature Reserve and Binjura Nature Reserve lie approximately 10 kilometres to the west of the Northern Monaro Reserves, while the nearest large conservation areas are Wadbilliga National Park, which lies approximately 10 kilometres to the east of the Northern Monaro Reserves, and Kosciuszko National Park which lies approximately 45 kilometres to the west.

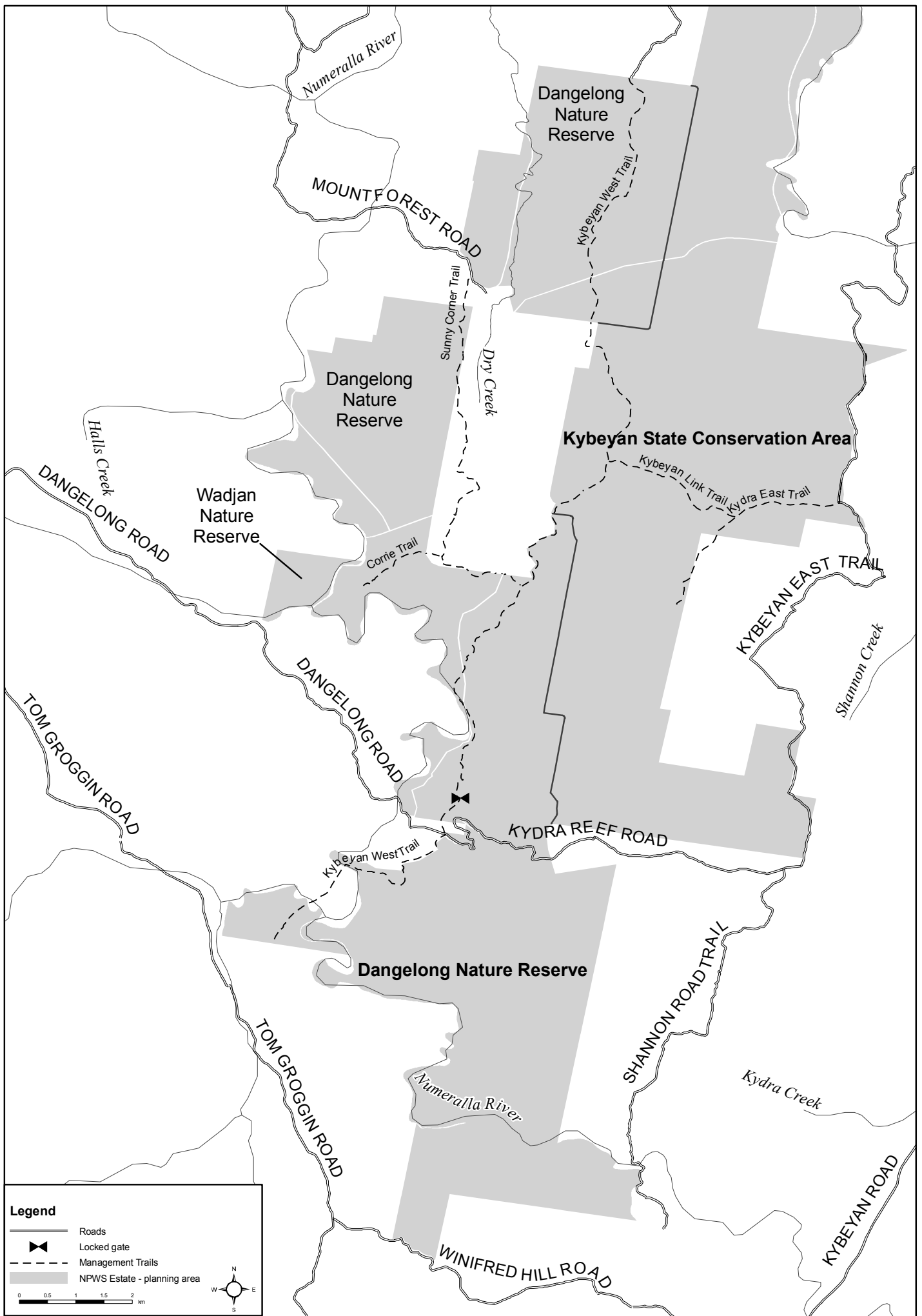
The reserves lie within the Cooma-Monaro Local Government Area. Mount Clifford and Good Good Nature Reserves lie within the boundaries of the Wagonga Local Aboriginal Land Council while the other reserves are within boundaries of the Merrimans Local Aboriginal Land Council. Mount Clifford and Wadjan Nature Reserves are within the area of the Murrumbidgee Catchment Management Authority, while the other reserves straddle the boundary of the Murrumbidgee and Southern Rivers Catchment Management Authorities.

MAP 1 LOCATION AND REGIONAL SETTING

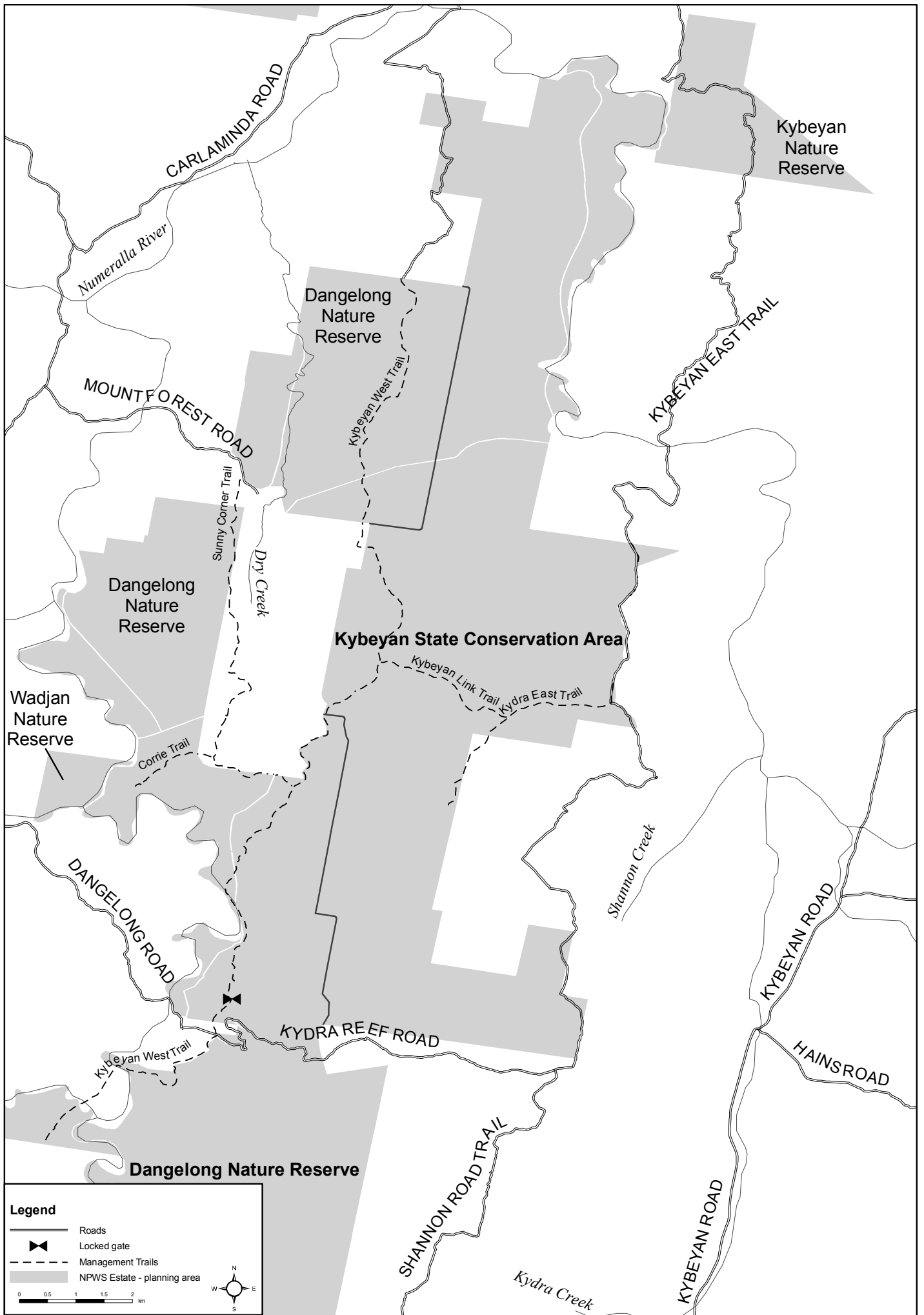




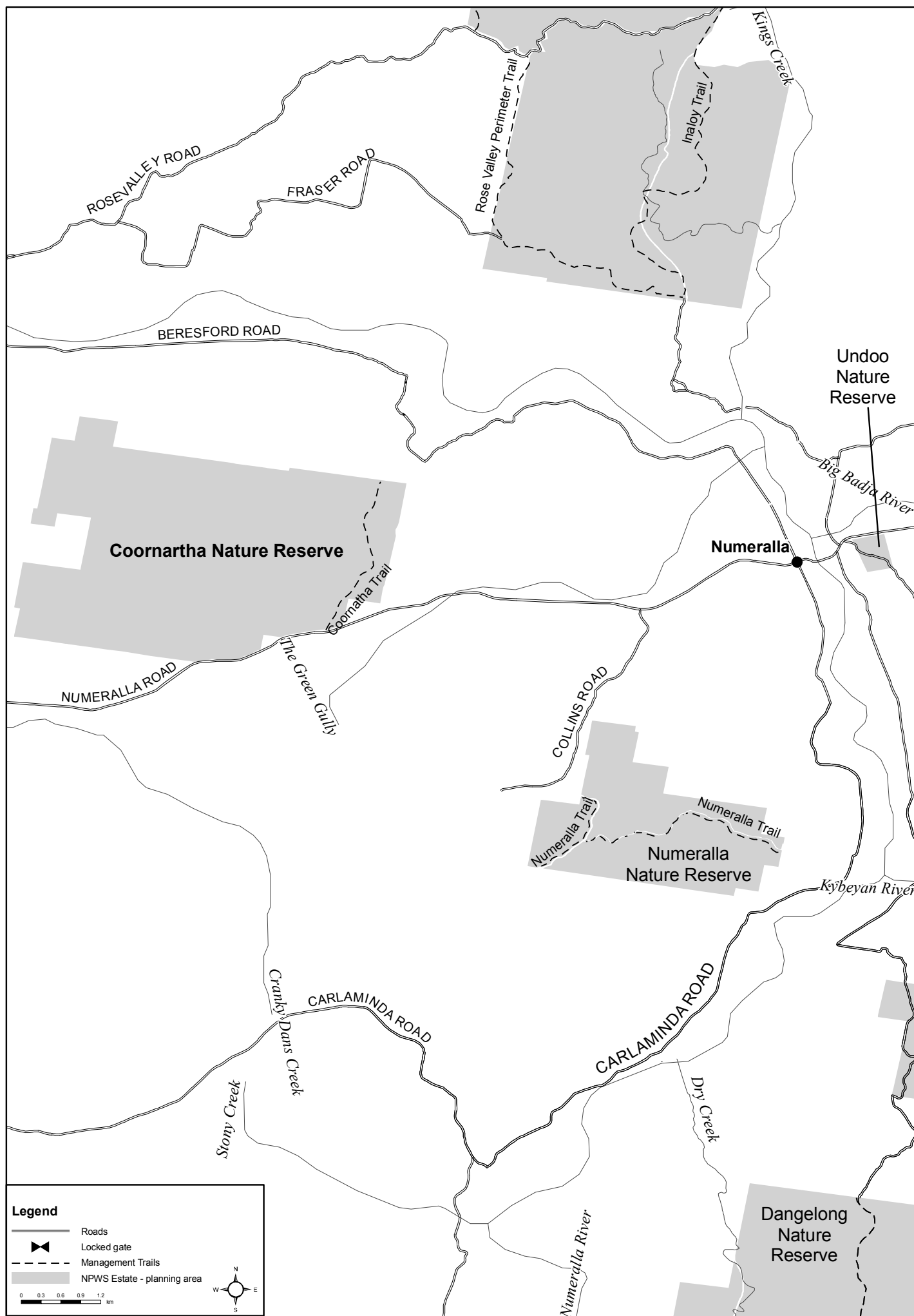
## MAP 2 DANGELONG AND WADJAN NATURE RESERVES



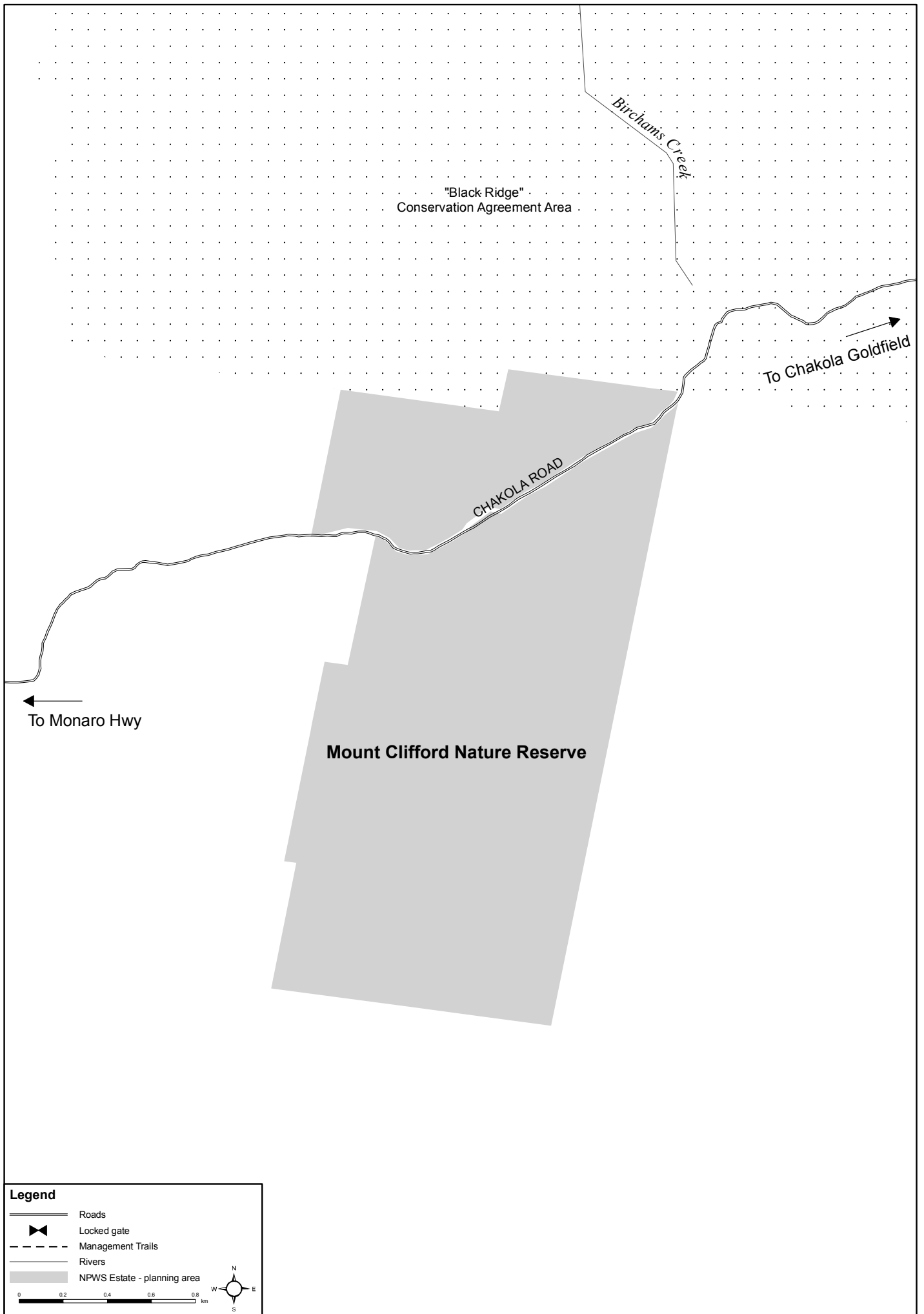
# MAP 3 KYBEYAN NATURE RESERVE AND STATE CONSERVATION AREA



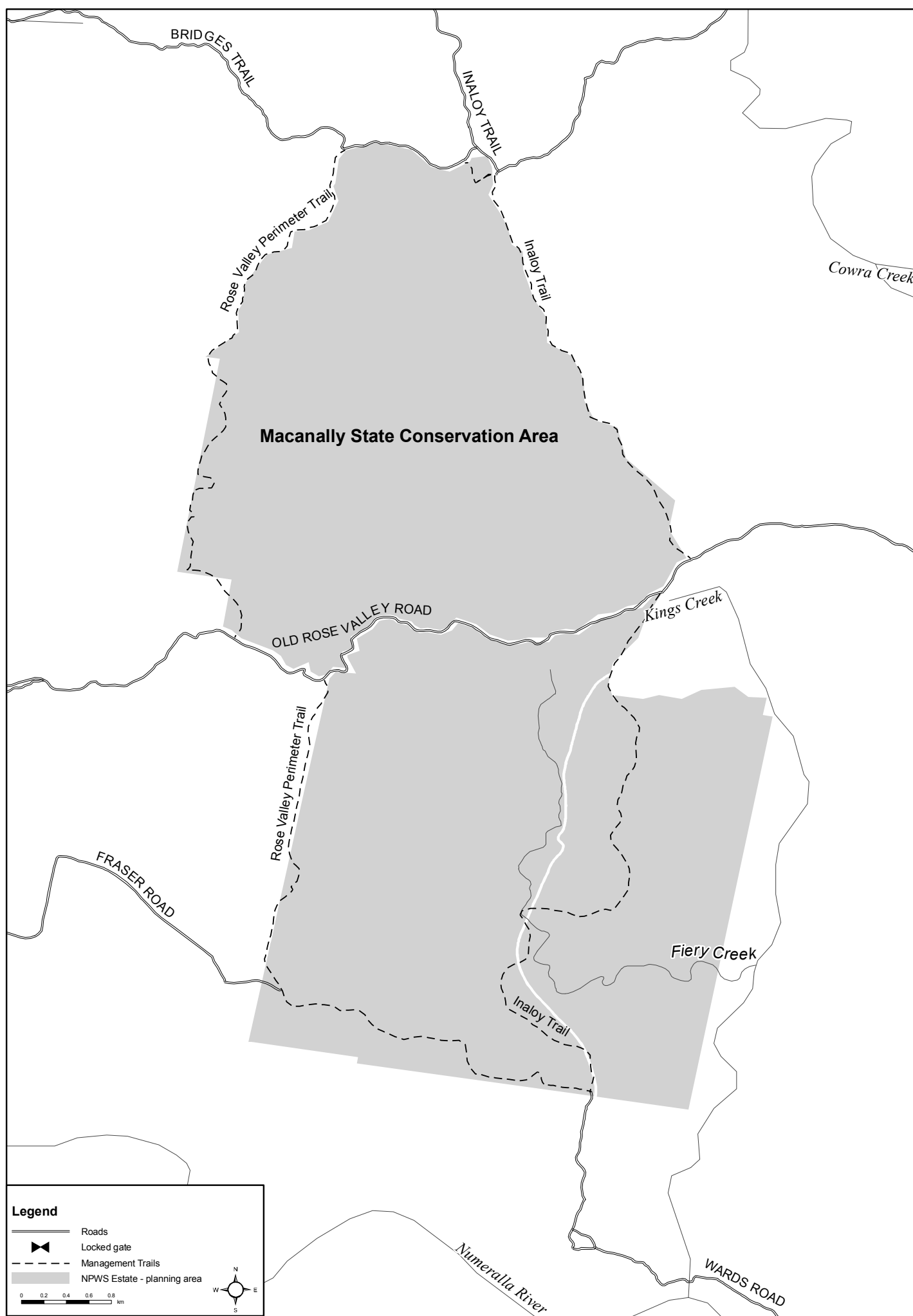
## MAP 4 COORNARTHA, NUMERALLA AND UNDOO NATURE RESERVES



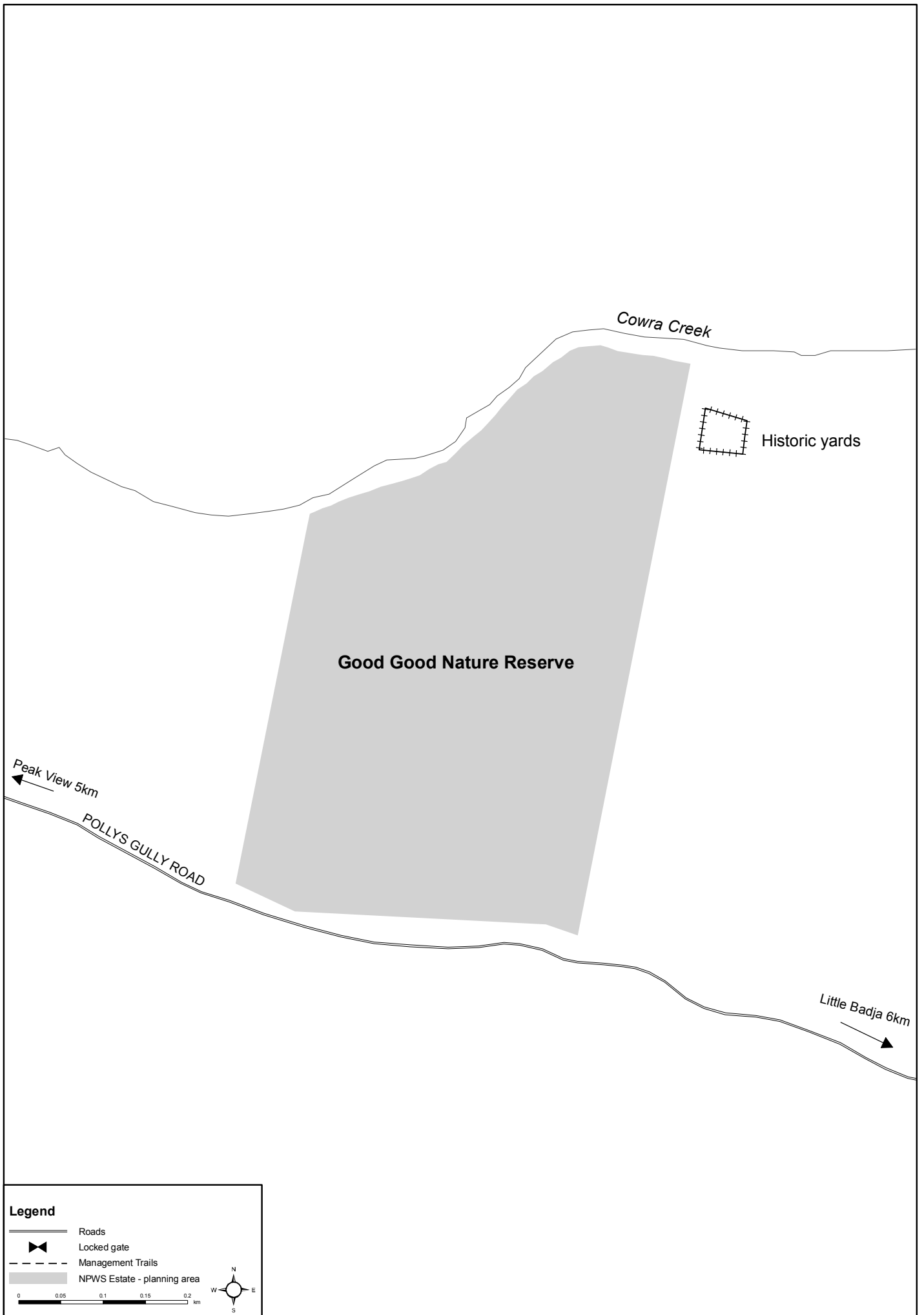
## MAP 5 MOUNT CLIFFORD NATURE RESERVE



## MAP 6 MACANALLY STATE CONSERVATION AREA



## MAP 7 GOOD GOOD NATURE RESERVE



## **2. MANAGEMENT CONTEXT**

### **2.1 LEGISLATIVE AND POLICY FRAMEWORK**

The management of nature reserves and state conservation areas in NSW is in the context of a legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act) and Regulation, the *Threatened Species Conservation Act 1995* 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* 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 the plan, no operations may be undertaken within the Northern Monaro Reserves except in accordance with the plan. This plan will also apply to any future additions to these reserves. Should management strategies or works be proposed for these reserves or any additions that are not consistent with the plan, an amendment to the plan or a new plan will be prepared and exhibited for public comment.

### **2.2 MANAGEMENT PURPOSES AND PRINCIPLES**

#### **2.2.1 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.

Nature reserves differ from national parks in that they do not have the provision of recreation as a management principle.

#### **2.2.2 State Conservation Areas**

State conservation areas are reserved under the NPW Act to protect and conserve areas that contain significant or representative ecosystems, landforms or natural phenomena or places of cultural significance; that are capable of providing opportunities for sustainable visitor use and enjoyment, the sustainable use of buildings and structures, or research; and that are capable of providing opportunities for uses permitted under other provisions of the Act.

Under the Act (section 30G), state conservation areas are managed to:

- conserve biodiversity, maintain ecosystem functions, protect natural phenomena and maintain natural landscapes;
- conserve places, objects and features of cultural value;
- provide for the undertaking of uses permitted under other provisions of the NPW Act (including uses permitted under section 47J such as mineral exploration and mining), having regard to the conservation of the natural and cultural values of the state conservation area;
- provide for sustainable visitor use and enjoyment that is compatible with conservation of the area's natural and cultural values and with uses permitted in the area;
- provide for sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to conservation of the area's natural and cultural values and with other uses permitted in the area; and
- provide for appropriate research and monitoring.

The NPW Act requires a review of the classification of state conservation areas every 5 years in consultation with the Minister administering the *Mining Act 1992*. In the long term it is intended for Kybeyan and Macanally State Conservation Areas to become nature reserves, subject to the Department of Industry and Investment relinquishing their interest, and therefore management of these areas will also be guided by the management principles for nature reserves where possible.

## **2.3 STATEMENT OF SIGNIFICANCE**

The Northern Monaro Reserves are considered to be of significance for:

- Biological Values: Three plant and six animal species listed under the Threatened Species Conservation Act have been recorded in the reserves. The reserves also contain a number of rare and significant plants, and vegetation communities which were identified during the assessment process for the Southern Regional Forest Agreement as not being well-represented elsewhere in the conservation system.
- Landscape/Catchment Values: Most of the reserves form part of a chain of timbered lands across the Monaro. The higher areas in the reserves provide expansive views across the Monaro.
- Historic Heritage Values: Some of the reserves contain evidence of gold mining and associated activities that took place from the 1880s to the early 1900s.
- Aboriginal Heritage Values: A number of Aboriginal sites have been recorded in the reserves, and the reserves may have other Aboriginal heritage values.

## **2.4 SPECIFIC MANAGEMENT DIRECTIONS**

Management of the Northern Monaro Reserves will focus on the protection of the threatened, rare and significant plants and communities present in the reserves; conservation of the habitat of threatened animals; protection of the remaining artefacts from the gold mining era and Aboriginal heritage values; and encouragement of appropriate use of the reserves.



### **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, 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 Northern Monaro Reserves are located in the Monaro Region of NSW, on the southern part of the Lachlan Fold Belt.

All the Northern Monaro Reserves except for Good Good Nature Reserve are located on the Macanally-Numeralla Ranges which are east of the Monaro tableland and west of the South Coast escarpment ranges. The area is formed predominantly of late Ordovician undifferentiated sediments of low metamorphic grade belonging to the Adaminaby Group, including shale, sandstone, mudstone, chert and schist. Shale gravels from this formation are the main surface feature, with quartz veins in places.

In some areas volcanic deposits have intruded and overlay the earlier sedimentary deposits (Dealing 2004). The northern section of Kybayan Nature Reserve is located on one of these granite outcrops (Glenbog Granodiorite). The exposed high altitude rocky peaks in Kybayan are on Bredbo Group volcanics and sediments, while most of Dangelong Nature Reserve south and east of the Kydra Reefs is on granite of the Bega Batholith. There is a pocket of Tertiary basalt in the south-east corner of Coornartha, while along some of the eastern ridges in Kybayan State Conservation Area are outcrops of limestone. Quaternary alluvium occurs on the floodplains of the Numeralla River.

Good Good Nature Reserve is located in the Countegany Hills region on a gently sloping hill formed on intrusive granite of the Bega Batholith.

The reserves are generally located on steeply sloping north-south ridges and range in altitude from approximately 800 metres above sea level along the Kybayan and Numeralla Rivers to 1233 metres at Throsby Trig in Dangelong Nature Reserve. Exceptions to the generally steep ridges are the low ridges of Good Good Nature Reserve to the east of the Great Dividing Range, and Undoo Nature Reserve on the outskirts of the township of Numeralla which slopes gently to the north.

Most of the reserves form part of a chain of timbered lands across the Monaro. The higher areas in the reserves provide expansive views across the Monaro.

The Numeralla River forms part of the boundary of Dangelong Nature Reserve, the Numeralla River and Dangelong Creek form part of the boundary of Wadjan Nature

Reserve, and the Kybeyan River forms part of the boundary of Kybeyan Nature Reserve and State Conservation Area. The other reserves contain no permanent water.

### 3.2 NATIVE PLANTS

Most of the reserves are covered with a dry sclerophyll forest which has been classified by NGH Environmental (2004) as Tablelands Shale Rises Dry Shrub Forest. This community is dominated by red stringybark (*Eucalyptus macrorhyncha*) and scribbly gum (*E. rossii*). Forests of ribbon gum (*E. viminalis*) and candlebark (*E. rubida*) are found in the lower areas and along creek lines, while snow gum/white sallee (*E. pauciflora*) is found on the higher slopes.

Macanally SCA and Mount Clifford Nature Reserve, in the north-west of the complex, tend towards a woodland of snow gum and candlebark with a grassy understorey of snow grass (*Poa sieberiana*). A small area of the dry tussock grasslands of the Monaro Tableland occurs in the south-western corner of Mount Clifford Nature Reserve.

Kybeyan Nature Reserve, Kybeyan State Conservation Area and Dangelong Nature Reserve, although dominated by Tablelands Shale Rises Dry Shrub Forest, also contain small areas of Tablelands Ribbon Gum-Candlebark-Snow Gum Forest, as well as areas of Silvertop Ash (*E. sieberi*), Dry Ridge Forest and of Nana Heath (stunted she-oak *Allocasuarina nana*) on the exposed peaks. The heath areas increase in size in Dangelong Nature Reserve, including a large area near the Kydra Reefs.

The low gradient slopes and granite soils of Good Good Nature Reserve support Eastern Tablelands Moist Snow Gum Forest, dominated by snow gum/white sallee and mountain gum (*E. dalrympleana*) with a shrub and tussock grass understorey, including areas of Montane Wet Heath/Bog in the lower areas along creeks in the north-east and south-east of the reserve. The reserve contains one of the few pockets of this community in the local area that has not been disturbed by fire and grazing.

Threatened plants recorded in the Northern Monaro Reserves are the vulnerable silver-leaved gum (*Eucalyptus pulverulenta*), *Acacia lucasii*, and kydra westringia (*Westringia kydrensis*) which only occurs in heath on rocky areas at Kydra Reefs. In addition, rare plants listed by Briggs and Leigh (2005) identified in the reserves are *Acacia kydrensis* (the Kydra Reefs area is the type locality for this species), and *Discaria pubescens* which was found along the Numeralla River in Dangelong Nature Reserve (Hall 2002). Other significant plants found in the area include *Banksia canei*, *Acacia kybeanensis* and *Eucalyptus kybeanensis*, all of which are found along the Kybeyan Range.

### 3.3 NATIVE ANIMALS

Native mammals commonly seen in the reserves include the eastern grey kangaroo (*Macropus giganteus*), swamp wallaby (*Wallabia bicolor*) and ring-tailed possum (*Pseudocheirus peregrinus*). Wallaroo (*Macropus robustus*) have been sighted in Dangelong NR.

Recent surveys have revealed a significant population of koalas (*Phascolarctos cinereus*) occurring on and around these reserves, which appears to be robust contrary

to the trend of other natural populations in South Eastern Australia. Anecdotal reports from neighbours suggest an increasing population, and the surveys have identified a number of areas supporting breeding females. The unusual behaviour of “bark chewing”, despite the presence of healthy foliage and other feed trees, has been confirmed to occur here. Koalas, which are listed as vulnerable under the Threatened Species Conservation Act, have been recorded in Dangelong Nature Reserve, Numeralla Nature Reserve, Kybayan Nature Reserve and State Conservation Area, Macanally State Conservation Area and Mount Clifford Nature Reserve. The “Black Ridge” property adjoining Mount Clifford Nature Reserve is subject to a Voluntary Conservation Agreement to protect koala habitat.

There have been two fauna surveys undertaken in the Northern Monaro Reserves. One survey, undertaken over winter in the southern section of Dangelong Nature Reserve (Schultz 2002), recorded 9 mammal species, 2 frogs, 4 reptiles and over 60 bird species. Another survey, undertaken in Coornatha Nature Reserve, Dangelong Nature Reserve, Kybayan State Conservation Area and Macanally State Conservation Area during spring (Rhind 2008), recorded 15 mammal species, 4 frogs, 15 reptiles, and 60 bird species. Seven species listed as vulnerable under the Threatened Species Conservation Act have been recorded in the reserves in addition to the koala: the spotted-tailed quoll (*Dasyurus maculatus*), eastern bentwing-bat (*Miniopterus shreibersii oceanensis*), gang-gang cockatoo (*Callocephalon fimbriatum*), turquoise parrot (*Neophema pulchella*), brown tree creeper (*Climacteris picumnus*), speckled warbler (*Pyrrholaemus sagittatus*) and hooded robin (*Melanodryas cucullata*). The 2008 study recommended that further survey work be undertaken focussing on habitat types not yet well sampled, including riparian and low-lying areas.

The reserves are of value as part of bushland corridors, providing some ability for native animals to migrate in the face of climate change.

### **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 Northern Monaro Reserves are located in an area that was occupied by the Ngarigo Aboriginal people (Tindale, 1974). Traditional use, such as hunting, gathering and ceremony, would have taken place over the entire landscape of which the reserves are only a small part. The reserves are now within the area of the Merrimans and Wagonga Local Aboriginal Land Councils.

A preliminary Aboriginal cultural heritage study of the Northern Monaro Reserves was undertaken by Dearling (2004). A number of Aboriginal sites were recorded within the reserves, mainly open artefact scatters of quartz, but in relatively low numbers compared to other areas in the region. The highest density of sites are within Good Good and Dangelong Nature Reserves and are associated with riverine corridors. A

possible scarred tree was recorded in Good Good Nature Reserve. The reserves may also contain other sites and have other Aboriginal heritage values.

### **3.5 HISTORIC HERITAGE**

All the Northern Monaro Reserves were either leased or used for grazing. Most of the reserves are located in rugged country and were at best marginal areas for pastoral and agricultural activities (Dearling 2004).

A Water and Camping Reserve (W&CR 987) was established on the western edge of what is now Macanally State Conservation Area in 1884, Undoo Nature Reserve occupies part of an area that was declared a Travelling Stock and Camping Reserve (TS&CR 14735) in 1891, and Good Good Nature Reserve was declared a Travelling Stock and Camping Reserve (TS&CR 54338) in 1920. Good Good contains evidence of early logging, gold mining and a stockyard. Numeralla Nature Reserve was reserved from sale in 1953 for soil conservation purposes and contains some evidence of past logging (Dearling 2004).

The western part of the area that is now Coornartha Nature Reserve was declared a Forest Reserve in 1883 and this, plus land to the east, became Glen Fergus State Forest in 1917 (Dearling 2004). Glen Fergus State Forest continued to be subject to grazing leases as well as minor logging until its reservation as a nature reserve.

A Trig Reserve was established on Macanally Mountain in 1896, and Dearling (2004) assumes that the trig on the mountain dates from then.

Gold mining claims were being worked in the Macanally area in 1888, and in 1900 the whole area of what is now Macanally State Conservation Area was notified as a Reserve for Mining. Gold leases were clustered in the north (called the Macanally Gold Field) and the centre (a more extensive field called the Fiery Creek Gold Field that stretched both north and south of Macanally Mountain) of what is now the state conservation area, with a single gold lease in the south-east corner. By 1910 the main period of operation of the Macanally Gold Field was over and only four leases remained in the Fiery Creek Gold Field (Dearling 2004). A large stone dam (breached), the remains of several huts and other buildings, the remains of a battery complex and several deep shafts remain in the Fiery Creek area, and shafts and hut sites remain in the Macanally Field area (McGowan n.d.). The Fiery Creek and Macanally Gold Fields are listed on the Register of the National Estate. The Old Rose Valley Road, which passes through the reserve and dates from the 1860s (Dearling 2004), has dry stone wall embankments in places, and there are the remains of an old hut on the western edge of the reserve (Zylstra 2001).

In the middle of Dangelong Nature Reserve is an area called the Kydra Reefs, which was a gold mining area in the 1880s with 12 individual gold leases taken up in the area. In 1913 the area was officially reserved for mining purposes but it appears that mining was slowing by then, although there was occasional reworking of the reefs up until the 1950s (Dearling 2004). Sites associated with the reefs and gold mining that remain include dry stone walls (located along the edges of the Kydra East Trail and the Kydra Reefs Road which are excluded from the nature reserve), and mineshafts, a battery site including an earthen dam, hut sites and a possible sluice/drain within the reserve.

### 3.6 VISITOR USE

Dangelong Nature Reserve is the most southerly of the Northern Monaro Reserves and is located approximately 10 kilometres north-east of Nimmitabel and 22 kilometres south-east of Cooma. Access to Dangelong Nature Reserve is via Tom Groggin Road and Dangelong Road. Kydra Reefs Road, which passes through the reserve generally between the original section of the reserve and the more recent additions, is excluded from the reserve. The Numeralla River forms the south-east boundary and much of the western boundary of the reserve and passes through the reserve in two places. There is some limited bushwalking based visitation to the reserve associated with the Numeralla River and the Kydra Reefs area.

Wadjan Nature Reserve is about 15 kilometres south-east of Cooma, just outside the village of Dangelong. The Numeralla River forms the eastern boundary of the reserve and Dangelong Creek forms the southern boundary. There are no roads or trails within the reserve and it receives little use.

Kybeyan Nature Reserve and State Conservation Area are approximately 20 kilometres east of Cooma and contain a number of trails including the Kybeyan East and Kybeyan West Trails. The eastern boundary of much of the state conservation area is the Kybeyan River while the southern section of the nature reserve includes the upper reaches of The Dry River, both of which later join the Numeralla River. There is some use of these reserves for bushwalking, trail bike riding, four wheel driving, and for research and education related to koalas. A rogaining event was held in Kybeyan Crown Reserve (previous tenure) in 2003, however under NPWS policy orienteering and rogaining are not permitted in nature reserves except under exceptional circumstances.

Numeralla Nature Reserve is approximately 20 kilometres east of Cooma and 4 kilometres south-west of Numeralla. It is hilly country with little legitimate recreational use. There is no public road access to this reserve.

Undoo Nature Reserve is on the outskirts of the village of Numeralla, approximately 20 kilometres east-north-east of Cooma. It bounds the Numeralla-Countegany Road to the north and contains a short section of the northern end of the Kybeyan West Trail. Prior to gazettal the area was managed by the Undoo Recreation Reserve Trust but it had little public use. Some trail bike and off road vehicle activity has resulted in erosion of the trail through the reserve and created new tracks.

Coornartha Nature Reserve is located approximately 15 kilometres east-north-east of Cooma and 5 kilometres west of Numeralla. The Numeralla Road forms the south-east boundary of the reserve. The Coornartha Trail passes through the reserve, just inside the eastern boundary. There is no permanent water within the reserve and it receives little use.

Macanally State Conservation Area is located approximately 25 kilometres north-east of Cooma and 4 kilometres north of Numeralla on very hilly country. It contains a number of trails in the Fiery Creek area, and is bisected from east to west by the Old Rose Valley Road which is excluded from the reserve. Bridges Trail forms the northern boundary of the reserve, Rose Valley Perimeter Trail forms the western boundary, and

Inaloy Trail forms the eastern boundary of the northern section of the reserve. Use of the reserve is mainly by locals for bushwalking, trail bike riding and four wheel driving.

Mount Clifford Nature Reserve is located approximately 15 kilometres north-north-east of Cooma. Chakola Road cuts through the northern part of the reserve, generally following a south-east to north-west road reserve. The reserve has no permanent water and receives little use.

Good Good Nature Reserve is approximately 35 kilometres north-east of Cooma and 15 kilometres north-east of Numeralla. Pollys Gully Road forms the southern boundary of the reserve and Cowra Creek forms the northern boundary. There are no internal roads within the reserve and it receives little use.

## 4. ISSUES

### 4.1 FIRE

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 *Threatened Species Conservation Act 1995*.

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 (NPWS, 2005). The NPWS uses a zoning system for bushfire management that is compatible with the zoning used by the Cooma-Monaro Bush Fire Management Committee in its bushfire risk management plans.

A combination of low rainfall (generally less than 600 millimetres a year), dry forest types, open woodlands and grasslands means that fire can occur in the Monaro region throughout much of the year, although the main fire season is generally between December and March. The majority of fire ignitions are caused by lightning and accidental fire escapes and most fires are small in scale.

The NPWS has assessed all the Northern Monaro Reserves for fire management planning and prepared separate map-style fire management strategies (NPWS 2004a, NPWS 2004b, NPWS 2004c, NPWS 2004d, NPWS 2004e) for all the reserves except Good Good Nature Reserve. All of Dangelong, Wadjan, Kybeyan, Mt Clifford and Undoo Nature Reserves and Kybeyan State Conservation Area, most of Coornartha Nature Reserve, and around half of Macanally State Conservation Area have been designated as Heritage Management Zone. All of Good Good Nature Reserve is also being designated as a Heritage Management Zone in this plan of management. These reserves have been designated as a Heritage Management Zone because they are not adjacent to built assets which would be exposed to a high level of bushfire risk and do not have the history of bushfire ignitions or known areas of high bushfire potential. Apart from the over-riding legislative objective of protecting life and property, the primary fire management objectives for Heritage Management Zones are to conserve biodiversity and protect cultural heritage.

Numeralla Nature Reserve has been designated as a Strategic Fire Advantage Zone, as has the area east of the Coornartha Trail in Coornartha Nature Reserve. The eastern half of the northern section of Macanally State Conservation Area and an area through the centre of the southern section of Macanally State Conservation Area have also been designated Strategic Fire Advantage Zones. Strategic Fire Advantage Zones are managed to give strategic advantage to fire fighters by reducing fire intensity. Management may include prescribed burning and/or other forms of vegetation management.

Annual hazard reduction programs, which may include mechanical fuel reduction techniques, prescribed burning and fire trail works, are submitted to the Cooma-Monaro Bush Fire Management Committee.

The adaptability of plant species to fire can be grouped on the basis of vegetation communities, and thresholds for fire frequency established as a guide to maintaining species diversity. It has been estimated that the dry sclerophyll forest community represented in the reserves should not generally be burnt less frequently than every 50 years or more frequently than every 22 years, while the woodland communities should not be burnt more frequently than every 16 years or less frequently than every 50 years. The Nana Heath should not be intentionally burnt. However, these thresholds are based on life cycles of a limited number of species, and given the lack of knowledge on ecosystem functioning without fire, the upper limits are untested.

## **4.2 WEEDS AND PEST ANIMALS**

There are not a lot of weeds in the reserves. The main weeds are St Johns wort (*Hypericum perforatum*), serrated tussock (*Nassella trichotoma*), African lovegrass (*Eragrostis curvula*), Pattersons curse (*Echium plantagineum*) and vipers bugloss (*Echium vulgare*), all of which are listed as noxious in the Cooma-Monaro area.

A previously cleared area in the south-east corner of Coornartha Nature Reserve contained serrated tussock and St Johns wort, but these have been subject to an ongoing control program since 2001. Small areas of serrated tussock in Kybeyan Nature Reserve, Kybeyan State Conservation Area, and Undoo Nature Reserve have also been treated, as has a small area in Mt Clifford Nature Reserve and along the river at the edge of Wadjan and in Dangelong Nature Reserves.

Spraying of St Johns wort and African lovegrass has also been undertaken in Undoo Nature Reserve, as has control of vipers bugloss in Coornartha Nature Reserve and Pattersons curse in Dangelong Nature Reserve.

The main species of pest animals in the Northern Monaro Reserves are the european red fox (*Vulpes vulpes*). Kybeyan and Dangelong Nature Reserves are known to be infrequently visited by wild dogs (*Canis familiaris*). Both these species are believed to move through and hunt within the reserves. Baiting for dogs and foxes is undertaken in Kybeyan Nature Reserve and State Conservation Area in accordance with the Wadbilliga Wild Dog Control Plan, and other areas are baited as necessary.

A fauna survey in Dangelong Nature Reserve also found cats (*Felis catus*), rabbits (*Oryctolagus cuniculus*), pigs (*Sus scrofa*), deer (various species) and goats (*Capra hircus*). These species have also been observed in a number of the other reserves. Pigs are a particular problem along the Numeralla River in Wadjan and Kybeyan Nature Reserves and Kybeyan State Conservation Area. Goats and deer have been reported in the south-east corner of Macanally, Kybeyan and Dangelong Nature Reserves.

## **4.3 EROSION AND OTHER IMPACTS**

There is disturbance from mining in the Kydra Reefs area of Dangelong Nature Reserve, and in the old gold mining areas in Macanally State Conservation Area (especially the Fiery Creek area) which includes tracks, mine holes, construction materials and dams. Moderate gully erosion has occurred along the main drainage lines in Macanally and is cutting into the edge of the historic road.



There has been some clearing and impacts from previous grazing along major streams, including Mowles Creek, in Dangelong Nature Reserve and in the south-east corner of Coornartha Nature Reserve. There is evidence of removal of timber for firewood and fence posts in Numeralla Nature Reserve, and gully erosion is evident in some of the major drainage lines in this reserve.

There are many tracks through Kybeyan Nature Reserve and State Conservation Area, which are deeply incised on the steeper sections, and the power line track in Mount Clifford Nature Reserve is also deeply incised in places.

In addition to erosion, roads through reserves provide barriers to native wildlife, provide access for non-native animals, and are often used for inappropriate uses such as unregistered trail bikes, rubbish dumping and firewood collection. Apart from the roads excluded from the reserves, such as the Kydra Reef Road, Chakola Road and Old Rose Valley Road, a number of roads within the Northern Monaro Reserves are vested in the Minister for the Environment and not yet gazetted as part of the reserves. These roads include the Kybeyan West, Kybeyan East, Kybeyan Link and Sunny Corner Trails in Dangelong and the Kybeyan Reserves; the Kybeyan West Trail in Undoo Nature Reserve; the Coornatha Trail and another trail off this in Coornartha Nature Reserve; the Fiery Creek Trail, Macanally Trail and Rose Valley Perimeter Trail in Macanally SCA; and two trails in Numeralla Nature Reserve (refer to the reserve maps).

It is intended to classify Fiery Creek Trail as a dormant fire trail.

Where these roads do not create issues with illegal access to private property and resources permit, these roads will be maintained for existing public access. Sections of trails which are deemed to have an unacceptable level of public risk and/or environmental risk will be closed where existing resources preclude suitable upgrade and maintenance.

#### **4.4 ISOLATION AND FRAGMENTATION**

A number of the reserves provide a connected link along the Kybean Range, however, much of the area surrounding the Northern Monaro Reserves as well as the area between the reserves, has been extensively cleared. This 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 reserves and provide ecological corridors to other forested areas. Maintaining the integrity of the remaining habitat within the reserves, and where possible linking this to adjacent areas of bushland to facilitate wildlife corridors, is important in ensuring long term viability of the reserves' biological values.

## 4.5 CLIMATE CHANGE

Climate change has been listed as a key threatening process under the *Threatened Species Conservation Act 1995*. Projections of future changes in climate for NSW include higher temperatures, elevated CO<sub>2</sub>, more intense but possible reduced annual rainfall, increased temperature extremes and higher evaporative demand. These changes are likely to lead to greater intensity and frequency of fires, more severe droughts, reduced river runoff and water availability, regional flooding, and increased erosion.

Climate change may significantly affect biodiversity by changing population size and distribution of species, modifying species composition, and altering the geographical extent of habitats and ecosystems. The potential impact of climate change is difficult to assess since it depends on the compounding effects of other pressures, particularly barriers to migration and pressure from feral animals. Species most at risk are those unable to migrate or adapt, particularly those with small population sizes or with slow growth rates.

Adjusting reserve management through programs to reduce the pressures arising from other threats such as habitat fragmentation, invasive species and bushfires will help reduce the severity of the effect of climate change.

The ongoing management of these reserves, with minimal disturbance to natural heritage values, will also result in the maintenance of valuable refuge areas within the local pattern of land use and provide links between larger areas of reserved land. The presence of a variety of habitats, which includes some altitudinal variation, may increase the long-term viability of resident populations of native species, and will help to permit landscape scale migrations that may be required due to climate change.

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## 5. IMPLEMENTATION

Current Situation	Desired Outcomes	Management Response	Priority
<p><b>1. On-Park ecological conservation</b></p> <p>The vegetation of the reserves consists mainly of dry sclerophyll forest. Two threatened plants and a number of rare or significant plants have been recorded in the reserves. Impacts of previous use include clearings, particularly along the river flats</p> <p>The reserves provide valuable habitat for fauna occurring in the area, particularly bird species and the threatened koala, spotted-tailed quoll and eastern bentwing-bat. A recent fauna survey (Rhind 2008) recommends that further survey work needs to be undertaken, particularly within Macanally and reserves neighbouring Coonarthra NR.</p> <p>Recovery plans and the priorities action statement contain actions to conserve threatened species.</p> <p>Most of the reserves are isolated from each other, and they exist within a largely cleared landscape that provides barriers to wildlife.</p> <p>The soils of the reserves are highly erodible if disturbed. There has been some disturbance in Dangelong NR and Macanally SCA in the old gold mining areas. These will be allowed to naturally revegetate.</p> <p>Tracks in the reserves are in places deeply incised, especially on the steeper slopes.</p>	<p>All native plant and animal species and communities are conserved.</p> <p>Negative impacts on threatened taxa are stable or diminishing.</p> <p>Soil erosion is minimised.</p> <p>Water quality is not compromised.</p>	<p>1.1 Maintain appropriate fire regimes to retain plant communities, and food and habitat for native fauna (particularly threatened and rare species).</p> <p>1.2 Ensure any fencing of old mine shafts provides for continued access for bats.</p> <p>1.3 Implement priority actions and recovery plans for threatened species found in the reserves. These include feral animal control, taking care during wild dog and fox control programs that other species are not harmed, and only low intensity fires.</p> <p>1.4 Encourage surveys for likely threatened fauna.</p> <p>1.5 Undertake rehabilitation of clearings along the Numeralla River with native species in conjunction with the Catchment Management Authorities and Landcare groups.</p> <p>1.6 Liaise with neighbours to encourage the retention and appropriate management of key habitat and wildlife corridors near the reserves.</p> <p>1.7 Undertake all works in a manner that minimises erosion and water pollution.</p> <p>1.8 Any earthworks carried out during a bushfire will be rehabilitated as soon as possible.</p> <p>1.9 Gate trails not required for public access (refer to maps for trails to be retained).</p>	<p>High</p> <p>High</p> <p>High</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p><b>2. Cultural heritage</b></p> <p>Aboriginal sites recorded in the reserves include open artefact scatters of quartz and a possible scarred tree. The reserves may contain other sites and values.</p> <p>Dangelong NR, Macanally SCA and Good Good NR contain shafts, diggings, dams, huts sites and a possible sluice/drain from previous mining activities. Signs have been erected in Macanally SCA warning visitors that old vertical mine shafts are present.</p> <p>The Kydra East Trail, Kydra Reef Road and Old Rose Valley Road have historic dry stone wall embankments in places.</p>	<p>Cultural features are conserved and managed in accordance with their significance.</p> <p>Aboriginal people are involved in management of the Aboriginal cultural value of the park.</p> <p>Negative impacts on Aboriginal and historic heritage values are stable or diminishing.</p>	<p>2.1 Precede all ground disturbance work by a check for cultural features.</p> <p>2.2 Any works undertaken will incorporate appropriate conservation measures to mitigate impacts on cultural heritage.</p> <p>2.3 Ensure the dry stone embankments are protected when any work is done on the Kydra East Trail, Kydra Reef Road and Old Rose Valley Road.</p> <p>2.4 Consult and involve the Merrimans and Wagonga Local Aboriginal Land Councils and other Aboriginal community members to improve knowledge of and to manage Aboriginal sites, places and values relating to the reserves.</p> <p>2.5 Protect scarred trees from fire as far as practicable.</p> <p>2.6 Assess the public risk of the old mining shafts and gate any assessed as being a high risk.</p> <p>2.7 Leave the relics of past mining activities in situ.</p>	<p>High</p> <p>High</p> <p>High</p> <p>Medium</p> <p>Medium</p> <p>High</p> <p>Low</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p><b>3. Visitor Use and Services</b></p> <p>Due to their remoteness from towns and location amongst rural holdings, most of the reserves have little public use.</p> <p>The reserves are used occasionally by bushwalkers and by bird watching groups. Some trail bike and 4WD activity has resulted in erosion of tracks and trails in the reserves. A rogaining event was held in Kybayan SCA in 2003 but is not permitted in nature reserves under NPWS policy.</p> <p>Other than roads, no facilities for visitors are currently provided and none are proposed for the Northern Monaro Reserves.</p>	<p>The local community is aware of the significance of the area and of management programs.</p> <p>Visitor use is ecologically sustainable.</p> <p>Negative impacts of visitors to the park are stable or diminishing.</p>	<p>3.1 Permit public vehicular access by registered vehicles only on the public access roads shown on the maps in this plan.</p> <p>3.2 Prohibit car-based camping, fires and horse riding. Permit bush camping more than 200 metres from roads.</p> <p>3.3 Undertake law enforcement activities to control unregistered trail bikes and other illegal activities.</p> <p>3.4 Liaise with the orienteering / rogaining organisers so they are aware of the restrictions in nature reserves. Consider any future applications for orienteering in the SCA in accordance with NPWS policy and having consideration to its proposed future designation as a nature reserve.</p> <p>3.5 Permit educational visits, subject to limits on numbers and other conditions if necessary to minimise impacts.</p> <p>3.6 Sections of trails which are deemed to have an unacceptable level of public risk and/or environmental risk will be closed where existing resources preclude suitable upgrade and maintenance.</p>	<p>High</p> <p>High</p> <p>High</p> <p>High</p> <p>Medium</p> <p>High</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p><b>4. Weeds and Pest Animals</b></p> <p>Weeds generally only occur in disturbed areas within the reserves.</p> <p>Foxes, dogs, cats, pigs and rabbits use the reserves as part of the broader landscape. Goats have been sighted in Coornartha NR. Kybeyan NR and SCA are included under the Wadbilliga Wild Dog Control Plan.</p>	<p>Introduced plants and animals are controlled and where possible eliminated.</p> <p>Negative impacts of weeds and pests on park values are stable or diminishing.</p>	<p>4.1 Control introduced plant and animal species. Priority will be given to the control of serrated tussock, St Johns wort and Pattersons curse.</p> <p>4.2 Undertake fox and dog baiting within Kybeyan NR and SCA in accordance with the Wild Dog Control Plan, and elsewhere in the reserves as required.</p> <p>4.3 Undertake annual goat control in Coornartha NR.</p> <p>4.4 Control pigs cooperatively with neighbours.</p> <p>4.5 Monitor occurrence of deer and implement control measures if necessary.</p>	<p>High</p> <p>High</p> <p>Medium</p> <p>Medium</p> <p>Medium</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p><b>5. Fire Management</b></p> <p>The reserves form part of a continuous band of timber along the ranges east of Cooma.</p> <p>Widespread, high intensity fires have the potential to destroy rare plants and food and habitat for native animals using the reserves. They can also damage cultural heritage.</p> <p>There are currently separate map-based fire management strategies for all the reserves except Good Good NR. Fire management strategies for Good Good NR are included in this plan of management.</p>	<p>Persons and property are protected from bushfire.</p> <p>Cultural features are protected from damage by fire.</p> <p>Fire regimes are appropriate for conservation of plant and animal communities.</p> <p>Negative impacts of fire on natural and cultural heritage values are stable or diminishing.</p>	<p>5.1 Implement the adopted fire management strategies for the reserves.</p> <p>5.2 Manage fire in Good Good NR as a Heritage Management Zone in accordance with this plan.</p> <p>5.3 Participate on the Cooma-Monaro Bush Fire Management Committee. Cooperate with Rural Fire Service brigades and neighbours with regard to fuel management and fire suppression.</p> <p>5.4 Undertake any fuel management activities in conjunction with the Cooma-Monaro Bush Fire Management Committee.</p> <p>5.5 Fire management guidelines for maintaining the biodiversity and cultural values of the reserves include:</p> <ul style="list-style-type: none"> <li>• Contain wild fires to as small an area as possible, and mitigate fire intensity where possible.</li> <li>• Maintain as much of the reserves as possible in as old a fire age class as possible.</li> <li>• Protect known scarred trees and the old mining relics from fire as far as practicable</li> </ul> <p>5.6 Regularly revise the fire management strategies for the reserves and fire operations plans.</p>	<p>High</p> <p>High</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</p>



Current Situation	Desired Outcomes	Management Response	Priority
<p><b>6. Infrastructure and Maintenance</b></p> <p>The reserves are serviced by a number of vehicle routes, some of which are available for public access and some of which are management trails (see reserve maps).</p> <p>Many boundaries of the reserves are not fenced and in places the boundary fences are not on the reserve boundaries.</p> <p>There is a need to formalise access for neighbours who have a traditional right of access through some reserves and have no alternative practical means of access.</p> <p>A track and power line traverse a saddle in Mount Clifford NR. In places the track is deeply incised.</p> <p>There is an unfenced road reserve in the northern part of Kybeyan SCA and two unfenced road reserves in Numeralla NR which form no useful purpose.</p>	<p>Management facilities adequately serve management needs and have acceptable impact.</p>	<p>6.1 Use of management trails in the reserves will be restricted to authorised management purposes only.</p> <p>6.2 Erect gates where necessary to prevent access to management trails.</p> <p>6.3 Formalise access arrangements for the neighbours requiring access along the east-west trail through Numeralla NR and along the Coornartha Trail in Coornartha NR.</p> <p>6.4 Maintain fences or construct new fences in cooperation with neighbours where appropriate and realign fences onto cadastral boundaries if possible when replaced.</p> <p>6.5 Liaise with Energy Australia to ensure that the power line and access track are managed to minimise environmental impacts in accordance with the MOU with NPWS.</p> <p>6.6 Liaise with the Land and Property Information Authority to include the unfenced road reserves within the Northern Monaro Reserves.</p>	<p>High</p> <p>High</p> <p>High</p> <p>Medium</p> <p>Medium</p> <p>Low</p>

**High** priority activities are those imperative to achievement of the objectives and desired outcomes. They must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources.

**Medium** priority activities are those that are necessary to achieve the objectives and desired outcomes but are not urgent.

**Low** priority activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.





