

KANGAROO VALLEY GROUP OF NATURE RESERVES

(Kangaroo River Nature Reserve, Cambewarra Range Nature Reserve, Barrengarry Nature Reserve and Rodway Nature Reserve)

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

Part of the Department of Environment and Climate Change

April 2009

This plan of management was adopted by the Minister for Climate Change and the Environment on 18th April 2009.

Acknowledgments

This plan of management is based on a draft plan prepared by officers of the South Coast Region of the National Parks and Wildlife Service.

Valuable information and ideas were contributed to the planning process by the South Coast Region Advisory Committee and by other members of the community through letters and submissions.

Cover photograph of Cambewarra Range Nature Reserve by Juliet Dingle, NPWS.

ã **Department of Environment and Climate Change NSW 2009:** Use permitted with appropriate acknowledgment

ISBN 978 1 74232 269 8

DECC 2009/355

For additional information or enquiries about any aspect of the plan, contact the Service's South Coast Region Office at 55 Graham St Nowra or by phone on (02) 4423 2170.

FOREWORD

Kangaroo River, Cambewarra Range, Barrengarry and Rodway Nature Reserves are located in and around Kangaroo Valley, approximately 50 kilometres south west of Wollongong and 16 kilometres north west of Nowra. The four nature reserves are part of a system of conservation reserves around Kangaroo Valley that includes the nearby Barren Grounds Nature Reserve, Budderoo National Park and Morton National Park.

Kangaroo River, Barrengarry, Cambewarra Range and Rodway Nature Reserves protect samples of the natural and cultural heritage of the northern Shoalhaven. They are regionally significant for their rainforest communities, populations of threatened species such as the eastern bristlebird, brush-tailed rock-wallaby and long-nose potoroo, and play an important part in protecting the magnificent scenery of the district.

The New South Wales *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each nature reserve. A plan of management is a legal document that outlines how an area will be managed in the years ahead.

A draft plan of management for the Kangaroo Valley Group of Nature Reserves was placed on public exhibition from 10th February until 15th May 2006. The submissions received were carefully considered before adopting this plan.

This plan contains a number of actions to achieve “Better environmental outcomes for native vegetation, biodiversity, land, rivers, and coastal waterways” (Priority E4 in the State Plan) including targeted surveys for threatened and significant plant and animal species, control of introduced plants and animals, fire management strategies and the encouragement of conservation on of remnant native vegetation around the reserves.

This plan of management establishes the scheme of operations for Kangaroo River, Barrengarry, Cambewarra Range and Rodway Nature Reserves. In accordance with section 73B of the *National Parks and Wildlife Act 1974*, this plan of management is hereby adopted.

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

1. NATURE RESERVES IN NEW SOUTH WALES

1.1 LEGISLATIVE AND POLICY FRAMEWORK

The management of nature reserves in NSW is in the context of a legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act), the NPW Regulation, the *Threatened Species Conservation Act 1995* (TSC Act) and the policies of the National Parks and Wildlife Service (NPWS). The matters to be considered in the preparation of a plan of management are listed in Section 72AA of the NPW Act. NPWS policies relate to nature conservation, cultural heritage conservation, recreation, commercial use, research and information provision.

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

The plan of management is a statutory document under the NPW Act. Once the Minister has adopted a plan, the plan must be carried out and no operations may be undertaken within Kangaroo River Nature Reserve, Cambewarra Range Nature Reserve, Barrengarry Nature Reserve and Rodway Nature Reserve except in accordance with the plan. The plan will also apply to any future additions to the four nature reserves. Should management strategies or works be proposed in the future for the reserves or any additions that are not consistent with the plan, an amendment to the plan will be required.

Regional Forest Agreements

Kangaroo River, Cambewarra Range and Barrengarry Nature Reserves are covered by the Southern Regional Forest Agreement. Regional Forest Agreements (RFA) are one of the principle means of implementing the National Forest Policy Statement of 1992. Under this Statement Commonwealth, State and Territory governments agreed to work towards a shared vision for Australia's forests. Joint comprehensive regional assessments (CRA) were undertaken of the natural, cultural, economic and social values of forests and these assessments formed the basis for negotiation of RFA providing for, amongst other things, ecologically sustainable forest management.

1.2 MANAGEMENT PURPOSES AND PRINCIPLES

Nature reserves are reserved under the National Parks and Wildlife Act to protect and conserve areas containing outstanding, unique or representative ecosystems, species, communities or natural phenomena.

Under the Act, nature reserves are managed to:

- conserve biodiversity, maintain ecosystem function, 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 nature reserve's natural and cultural values; and
- provide for appropriate research and monitoring.

2. KANGAROO RIVER, CAMBEWARRA RANGE, BARRENGARRY AND RODWAY NATURE RESERVES

2.1 LOCATION, GAZETTAL AND REGIONAL SETTING

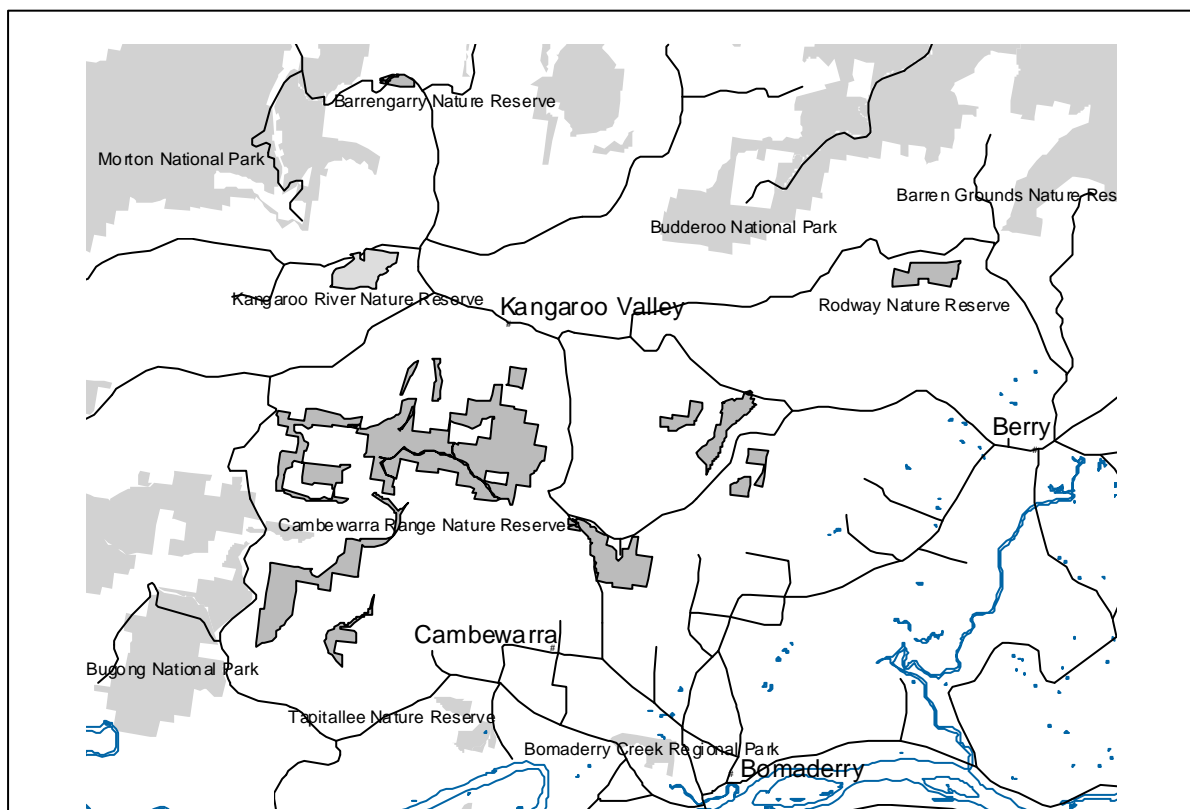
Kangaroo River, Cambewarra Range, Barrengarry and Rodway Nature Reserves are located in and around Kangaroo Valley, approximately 50 kilometres south west of Wollongong and 16 kilometres north west of Nowra (see locality map).

Kangaroo River Nature Reserve lies on the valley floor, adjacent to the river and the township of kangaroo Valley. It was gazetted in 2001 and has an area of 118 hectares.

Barrengarry Nature Reserve protects a small area of remnant forest on Barrengarry Mountain on the western side of the Valley, adjacent to the Moss Vale Road. It was gazetted in 2001 and has an area of 21 hectares.

Cambewarra Range Nature Reserve was gazetted in 2001 and is located on the Cambewarra Range (part of the Great Eastern Escarpment) that forms the south eastern boundary between Kangaroo Valley and the coastal plain. In 2003 the former Devils Glen, Red Rocks and Black Ash Nature Reserves (dedicated in 1965 and 1968) were renamed to make them part of Cambewarra Range Nature Reserve. The reserve now consists of eleven separate parcels of land with a total area of 1684 hectares.

Rodway Nature Reserve is located along the escarpment to the north of Cambewarra Range and has an area of 85 hectares. It was dedicated in 1970 and was named 'The Rodway Nature Reserve' after Dr Rodway, whose family donated money to purchase the land. Dr Rodway was the local doctor for over 40 years and was an amateur botanist of some note.



The four nature reserves are part of a system of conservation reserves around Kangaroo Valley that includes the nearby Barren Grounds Nature Reserve, Budderoo National Park and Morton National Park.

The planning area includes several roads that are vested in the Minister for the Environment on behalf of the Crown under Part 11 of the NPW Act. The roads run through Cambewarra Range Nature Reserve and along the western boundary of Kangaroo River Nature Reserve. These roads do not currently form part of the gazetted area of the reserves. They were created by the *National Park Estate (Southern Region Reservations) Act 2000* (NPE Act) to ensure that essential access arrangements which existed immediately before the reserves' creation could continue. The NPE Act provides that these roads must ultimately be either added to or excluded from the reserves.

2.2 NATURAL AND CULTURAL HERITAGE

Kangaroo River, Barrengarry, Cambewarra Range and Rodway Nature Reserves protect samples of the natural and cultural heritage of the northern Shoalhaven. They are regionally significant for their rainforest communities, populations of threatened species such as the eastern bristlebird, brush-tailed rock-wallaby and long-nose potoroo, and play an important part in protecting the magnificent scenery of the district.

Landform, Geology and Soils

Kangaroo River Nature Reserve lies on the Kangaroo Valley floor while Barrengarry, Cambewarra Range and Rodway Nature Reserves each occupy steep slopes and ridge country around the edges of the valley. Their geology is similar but there are significant landform variations within each area. Elevation ranges from 80m ASL in Kangaroo River Nature Reserve to more than 600m ASL in the highest parts of Cambewarra Range Nature Reserve.

Kangaroo River Nature Reserve is an area of gently undulating land adjacent to the Kangaroo River gorge. Its southern boundary is formed by the upper edge of the gorge and a small gorge also extends up Nelsons Creek within the reserve. It lies primarily on Nowra sandstone, with small areas of Berry Siltstone.

Barrengarry is a very small reserve and comprises part of a spur ridge running eastwards from Barrengarry Mountain plus the steep southerly slope below the ridge. The geology consists of Triassic Hawkesbury Sandstone on the ridge top, with layers of sandstone and mudrock of the Narrabeen Group and the Illawarra Coal Measures below.

Rodway Nature Reserve covers a mesa-like formation called Broughton Head. It incorporates most of the flat top of the mesa, the surrounding cliffline and part of the benches and slopes below the cliff. The top and cliffs are formed of Hawkesbury Sandstone while the slopes below consist of Tertiary Kangaroo Mountain Basanite (a basalt formation) or the Illawarra Coal measures. Robertson Basalt is reported to be present above the Hawkesbury Sandstone in a few areas.

Cambewarra Range Nature Reserve includes the Red Rocks plateau (formerly Red Rocks NR), several areas of steep slope, ridge and cliffline and a mesa-like formation called Bellowongarah Mountain (formerly Black Ash Nature Reserve). There are small areas of upland swamp on Bellowongarah Mountain and at the western end of the Red Rocks section. The geology consists of Hawkesbury Sandstone surrounded by Kangaroo Mountain Basanite on Bellowongarah Mountain, Hawkesbury Sandstone on the Red Rocks plateau and a mixture of the Illawarra Coal Measures, Permian Berry Formation (sandstone and siltstone), Gerringong Volcanics, Nowra Sandstone, Wandrawandian Siltstone and Conjola Formation (conglomerate and sandstone) on the slopes. This is the most southerly occurrence of Hawkesbury Sandstone and also of the Gerringong Volcanics.

Soils within the four reserves vary greatly according to the geology and are quite fertile on volcanic areas. Soils on areas of sandstone, mudstone and siltstone are highly erodible if

disturbed. The north western section of Kangaroo Valley Nature Reserve has been subject to soil removal and gravel extraction (see Historic Heritage below).

Catchment

All of the reserves contribute to catchment protection for a number of creeks, several of which flow into the Kangaroo River and hence to Lake Yarrunga (Tallowa Dam), part of the Shoalhaven Water Scheme. Kangaroo River Nature Reserve lies adjacent to part of the Shoalhaven Special Area declared to protect the stored water of Lake Yarrunga.

A dam supplying water to nearby residences is located immediately downstream from one of the Berry Mountain sections of Cambewarra Range Nature Reserve. The dam is a small concrete pipehead structure, built in 1915. The reserve comprises most of the catchment for the dam and its protection ensures continued provision of clean water.

Landscape

Each of the reserves is a significant part of the local landscape and contributes to the district's high scenic value. Cambewarra Range Nature Reserve protects the upper slopes of the prominent Cambewarra Mountain. Broughton Head (in Rodway Nature Reserve) is an important feature of the Berry district, known locally as 'Wedding Cake Mountain' because of its layering. Within the reserves there are numerous scenic features such as rainforest, deep gullies, cliffs and waterfalls.

Kangaroo Valley, including Barrengarry, Kangaroo River and parts of Rodway and Cambewarra Range Nature Reserves, has been listed by the National Trust as a Scenic Protection Area.

Spectacular views of Kangaroo Valley or the coastal plain are available from within the reserves. In particular, there are easily accessible views from the western end of the Red Rocks Plateau (in Cambewarra Range Nature Reserve) into Kangaroo Valley. Close-up views of the Kangaroo River are available from a walking track in Kangaroo River Nature Reserve.

Native Vegetation

The Comprehensive Regional Assessment (CRA) conducted for the Southern Forest Agreement identified five vegetation communities within the four reserves. The communities comprise tall moist forest, open forest, rainforest and heathland.

Northern Foothills Moist Shrub Forest is the main community in Barrengarry Nature Reserve and occurs extensively in the other reserves, mainly on steep sheltered slopes. It is a tall forest dominated by Sydney blue gum-bangalay *Eucalyptus saligna*- *E. botryoides* and turpentine *Syncarpia glomulifera*, with spotted gum *Corymbia maculata* and blackbutt *E. pilularis*. There is often a rainforest understorey. Significant areas of this community are old growth.

Coastal Hinterland Subtropical Warm Temperate Rainforest is common in Cambewarra Range and Rodway Nature Reserves and is found in small areas in the other two reserves. It occurs in gullies and on protected slopes and has a large number and variety of species. The most common are coachwood *Ceratopetalum apetalum*, sassafras *Doryphora sassafras*, lilly pilly *Acmena smithii* and native laurel *Cryptocarya glaucescens*.

Lowland Dry Shrub Forest is found on the plateau tops and upper slopes in Rodway Nature Reserve and in the Red Rocks and Black Ash sections of Cambewarra Range Nature Reserve. The dominant trees are red bloodwood *Corymbia gummifera*, Sydney peppermint, *E. piperita*, silvertop ash *E. sieberi* and turpentine *Syncarpia glomulifera*. There is a rich shrub understorey. Small patches of Southern Escarpment Shrub/Fern/Herb

Moist Forest also occur in these areas, dominated by brown barrel *E. fastigata*, white-topped box *E. quadrangulata* and river peppermint *E. elata*.

Northern Coast and Hinterland Moist Heath also occurs on the plateau tops in the Black Ash and Red Rocks sections, in poorly drained areas. It is a tall shrubland dominated by *Melaleuca linariifolia*, together with *Leptospermum polygalifolium* and *Leptomeria acida*. The community is significant because of its restricted distribution.

Northern Coastal Hinterland Heath Shrub Dry Forest covers most of Kangaroo River Nature Reserve and small areas of the Red Rocks Plateau. It is mainly medium to low forest dominated by scribbly gum *Eucalyptus sclerophylla* with red bloodwood usually present as a subdominant. It has a moderately dense heathy shrub layer.

These communities were mapped at a regional scale and a closer look reveals a more complex pattern. A survey of part of Kangaroo River Nature Reserve (Leonard, 1999) found several additional communities – grey gum *E. punctata*/stringybark forest, two types of warm temperate rainforest, an area of subtropical rainforest and blue gum tall forest.

A survey carried out in the former Red Rocks Nature Reserve (Mills, 1992) found a total of seven communities, classified as coachwood rainforest, brown barrel *E. fastigata*/Sydney blue gum tall open forest, Sydney peppermint open forest, silvertop ash woodland, open woodland-heathland (scribbly gum/silvertop ash/mallee *E. dendromorpha*), heathland-sedgeland (*Melaleuca squarrosa*/*Empodisma minus*) and open heathland (*Leptospermum squarrosum*/*Dillwynia ramosissima*).

A close look at the rainforest in the Berry Mountain section of Cambewarra Range Nature Reserve (Floyd, 1983) showed three separate groupings:

- mixed subtropical/warm temperate rainforest on boulder and scree slope, with silver quandong *Elaeocarpus kirtonii*, maidens blush *Sloanea australis* and brush cherry *Syzygium australe* on deeper soil;
- warm temperate rainforest of coachwood, crabapple *Schizomeria ovata*, sassafras, jackwood *Cryptocarya glaucescens*, bolly gum *Litsea reticulata* and lilly pilly on shallower soils; and
- dry rainforest of whalebone tree *Streblus brunonianus*, deciduous fig *Ficus superba*, red olive-berry *Elaeodendron australe*, grey myrtle *Backhousia myrtifolia* and water gum *Tristaniaopsis laurina* on shallowest soils subject to water stress.

The same study stated that the Cambewarra Mountain area has one of the largest areas of subtropical rainforest remaining in the Illawarra-Shoalhaven (Floyd 1983). Species include silver quandong, soapy box *Citronella moorei*, brown beech *Pennantia cunninghamii* and giant stinging tree *Dendrocnide excelsa*.

It is probable that other rainforest areas in the reserves consist of several types.

Much of the vegetation of the reserves is old growth or mature forest but significant areas have been disturbed and there are small areas of regrowth. The disturbances are a result of fires, selective logging in parts of Cambewarra Range Nature Reserve in the early 1900s, gravel extraction and grazing in Kangaroo River Nature Reserve, and grazing from unfenced adjacent properties in parts of Rodway and Cambewarra Range Nature Reserves.

Two threatened plant species have been recorded in Cambewarra Range Nature Reserve. The endangered *Solanum celatum* was observed on Cambewarra Mountain early in the 20th century but it is not known if it still occurs there. The vulnerable orchid *Cryptostylis hunteriana* is found on the Red Rocks plateau.

The Illawarra stinking arum *Typhonium eliosurum*, listed as a Rare or Threatened Australian Plant (ROTAP) (Briggs and Leigh, 1995) occurs adjacent to Kangaroo River Nature Reserve and may occur within the reserve. It is also probable that other ROTAP

species occur. Several species found in the reserves are regionally rare or are at or near the southern limit of their distribution (Mills 1996 referred to in Leonard, 1999).

Native Animals

The reserves protect diverse environments that provide high quality habitat for a range of native animal species. Few fauna surveys have been undertaken but a total of 61 species have been observed in the Red Rocks section of Cambewarra Range Nature Reserve, 52 in the southern sections of the reserve, 28 in Barrengarry Nature Reserve and 43 in Kangaroo River Nature Reserve. There is a particularly high bird species diversity because of the juxtaposition of varied natural habitats and semi-cleared rural land (Gaia Research, 2003). The reserves also have high herpetofauna diversity because of the range of microhabitats provided by creeks, rocky areas and different vegetation communities (Murphy and Daly, 1998). The area is also located in the overlap between the habitats of the tablelands to the west and the coastal areas to the east (Murphy and Daly, 1998).

Several threatened native animal species have been recorded. The endangered eastern bristlebird *Dasyornis brachypterus* and brush-tailed rock-wallaby *Petrogale penicillata* have been observed in Cambewarra Range Nature Reserve, along with the vulnerable giant burrowing frog *Heleioporus australiacus*, powerful owl *Ninox strenua*, sooty owl *Tyto tenebricosa*, olive whistler *Pachycephala olivacea*, yellow-bellied glider *Petaurus australis*, spotted-tailed quoll *Dasyurus maculatus*, long-nosed potoroo *Potorous tridactylus* and eastern bent-wing bat *Miniopterus schreibersii*. The long-nosed potoroo has also been recorded in Rodway Nature Reserve and the glossy black-cockatoo *Calyptorhynchus lathami*, grey-headed flying-fox *Pteropus poliocephalus* and yellow-bellied glider are found in Kangaroo River Nature Reserve. Gaia Research, 2003 suggested that grey gum woodland along the Shoalhaven (and Kangaroo) River provides a corridor for the yellow-bellied glider in the region. It is probable that the endangered broad-headed snake *Hoplocephalus bungaroides* and the vulnerable heath monitor *Varanus rosenbergi* occur in Kangaroo River Nature Reserve as they have been recorded nearby.

The Kangaroo Valley area is particularly significant for the eastern bristlebird and brush-tailed rock-wallaby. The eastern bristlebird utilises the ecotone between tall dense heath and adjacent woodland and populations are found only in limited areas in far northern NSW, the northern Shoalhaven and the far South Coast. Eastern bristlebirds are very vulnerable to predators and to inappropriate fire regimes and need protective management to conserve remaining populations. The Red Rocks plateau area is significant because of its provision of bristlebird habitat and it is possible that bristlebirds also occur in Rodway Nature Reserve, where there is similar habitat.

NSW populations of brush-tailed rock-wallabies are concentrated around Kangaroo Valley and the Hunter Valley. Brush-tailed rock-wallabies have specific landform and vegetation needs and are very vulnerable to predators, particularly foxes. Rock-wallaby numbers are declining and there is currently only one known rock-wallaby colony remaining in the reserves – in the western part of Cambewarra Range Nature Reserve. Suitable habitat exists, however, in other parts of this reserve and also in Rodway and Kangaroo River Nature Reserves. Rock-wallabies were previously recorded in the eastern part of Kangaroo River Nature Reserve along the Kangaroo River and its tributaries. There is a remaining colony on private land nearby and it is possible that the reserve could be recolonised if adverse impacts such as fox predation can be significantly reduced.

The reserves have been modelled as having suitable habitat for a large number of other threatened species. They contain significant habitat for the smoky mouse *Pseudomys fumeus*, greater broad-nosed bat *Scoteanax rueppellii*, regent honeyeater *Xanthomyza phrygia*, turquoise parrot *Neophema pulchella*, swift parrot *Lathamus discolor* and masked owl *Tyto novaehollandiae* and habitat for several other threatened species.

An eastern forest bat *Vespadelus pumilus* was recorded adjacent to Barrengarry Nature Reserve in 2003 and this was a significant southward range extension for the species (Gaia Research, 2003).

Aboriginal Heritage

Aboriginal people have utilised the resources of the South Coast and adjacent escarpment areas for at least 20,000 years and this long association continues today. Kangaroo Valley is within the territory of the coastal Dharawal language group but there was an overlap with the highlands Gundungurra people. The Valley was a meeting place for several different groups and was kept for this purpose (pers comm Wellington, 2005). Cambewarra, Kangaroo and Barrengarry are all Aboriginal names.

The landscape and the plants, animals and physical features within the landscape are an integral part of Aboriginal cultural heritage. Within the reserves there are places that have been utilised as camp sites or to obtain resources, and others that may be significant to Aboriginal people as ceremonial or mythological sites. There would have been a number of pathways and stories linking the different landscape features. Some sites may not contain any physical evidence of past use or occupation.

No comprehensive survey has been undertaken for Aboriginal sites and places in the reserves but several sites have been recorded within Cambewarra Range Nature Reserve. These are three axe grinding groove sites on the Red Rocks plateau and two rock shelters with art at the western end of the plateau. One of the grinding groove sites is adjacent to a road and vulnerable to damage (see section 3). Other site types, found in the surrounding area, are shelters with occupation deposits, a rock engraving and open camp sites.

It is likely that other Aboriginal sites and places are present within the reserves, particularly along Cambewarra Range and the Kangaroo River, given the availability of numerous rock overhangs, permanent water and diverse environments. It is also possible that there were travel routes across Cambewarra Range Nature Reserve between the coastal plain and Kangaroo Valley.

The reserves fall within the area of the Nowra and Illawarra Local Aboriginal Land Councils and the Nowra, Shoalhaven and Wodi Wodi Elders groups. There are Aboriginal land claims and native title claims over crown land on Browns Mountain and Cambewarra Mountain adjacent to sections of Cambewarra Range Nature Reserve.

Historic Heritage

It is probable that the rainforests of the Barrengarry, Rodway and Cambewarra Range areas were subject to red cedar cutting in the early 1800s. It is reported that all accessible cedar trees in the district were removed by 1850 and that many rainforest patches were further degraded through logging, burning and trampling by stock (Mills & Jakeman, 1995). European settlers first arrived in the district in the 1820s but numbers increased after the Robertson Land Act of 1861. Land was progressively cleared but most steep areas and those of lower fertility were left naturally vegetated.

Immediately prior to their reservation, Kangaroo Valley Nature Reserve and the bulk of Cambewarra Range Nature Reserve were Crown land. Kangaroo Valley Nature Reserve was a Crown reserve for Future Public Requirements, notified in 1974 to enable future development as a state recreation area. It was also, at various times, proposed for a pine plantation, small acreages and a caravan park. The reserve was grazed under a special lease from 1962 until 1987 and part of the north western area was subject to gravel extraction by Shoalhaven City Council. The gravel was used primarily to construct the Bendeela and Tallowa Dam roads during the 1970s. A walking track was established in the eastern part of the reserve in 1989 by the Trust of the adjacent Crown Reserve for Public Recreation and Museum (Pioneer Farm).

The Red Rocks section of Cambewarra Range Nature Reserve has for many years received low levels of use for driving and walking, particularly to an informal lookout over Kangaroo Valley at the western end (Red Rocks Trig). Shoalhaven Council undertook gravel extraction from a small area of the plateau in the late 1960s. There was a small clearing and associated track at the western end of the plateau prior to 1985, with some scattered household refuse, but its use is not known.

Barrengarry Nature Reserve and several sections of Cambewarra Range Nature Reserve were timber reserves prior to their dedication as nature reserves and may have been subject to selective logging and possibly grazing during the 20th century.

A sawmill was located on private land on Red Rocks plateau until the early 1970s. Logging was probably undertaken mainly on the private inholdings but there are indications that some also occurred on the Crown land. Some selective logging is also reported to have occurred in the Cambewarra Mountain section of the nature reserve, which was formerly Crown land.

Rodway Nature Reserve was originally private land. It is unlikely that the plateau top received any use because of the difficult access but the slopes may have been subject to some logging and grazing. The reserve was named after Dr Rodway whose daughters donated the money to purchase the land. Several members of Dr Rodway's family have an on-going connection with the reserve and the profession of botany, continuing Dr Rodway's interest in this field. It is appropriate that this connection continue to be recognised through the reserve name.

There appear to be some old road formations beside the Moss Vale Road in Barrengarry Nature Reserve that are possibly former locations of the road. There are also two disused vehicle trails that may formerly have provided access to adjacent private property.

Educational and Visitor Values

The four reserves have limited public access and few facilities. Some areas, however, provide opportunities for activities such as walking, bird watching, scenery viewing, educational use and horse riding (but only on public roads within the reserves).

The primary visitor feature is the walking track from Pioneer Farm Museum through the eastern part of Kangaroo River Nature Reserve. Pioneer Farm is a historical museum and a local tourist destination and the walking track is promoted as part of the site's visitor attractions. The track forms a loop, running along the upper edge of the Kangaroo River gorge, into part of Nelsons Creek gorge and back across the plateau. There are some public safety and environmental concerns with the track (see section 3).

Unsealed roads running across the Red Rocks plateau, both within and outside the nature reserve, provide access to the Red Rocks Trigonometric Station from where there are views over Kangaroo Valley. There are safety and environmental concerns with the lookout area and the western end of Red Rocks Trig Trail (see section 3). Walkers can also access a gated vehicle trail (Browns Mountain Trig Trail), from the Red Rocks plateau to Browns Mountain, across Shoalhaven City Council land. Leobold Hill Road, which lies mainly on Crown land, and connecting trails to Bugong Gap are occasionally used for horse riding.

Other parts of Cambewarra Range Nature Reserve receive only small amounts of use. The Black Ash section adjoins Kangaroo Valley Road but is bounded by a cliff, making access difficult. Crown road reserves provide access to several other sections but the roads are mostly unformed or deviate onto private property. These areas are used by neighbours and other locals for walking.

Barrengarry Nature Reserve is traversed by Moss Vale Road but there are few opportunities to stop because of the steep topography. A short disused vehicle trail runs along the main ridgeline through the reserve but would not be suitable for promotion as a walking track because of the risky approach, minimal parking space and lack of features of interest.

Rodway Nature Reserve has legal access to the eastern end via Council-owned land and an unformed Crown road reserve. The route is not marked and walkers must navigate precisely to avoid entering private land. Access to the plateau top is difficult because of the surrounding cliffs and the reserve is only visited occasionally.

The proposed Illawarra Escarpment Walking Track could result in a significant increase in use of both Rodway and Cambewarra Range Nature Reserves. The proposed route passes adjacent to the eastern boundary of Rodway Nature Reserve, via the road reserve mentioned above, and through several sections of Cambewarra Range Nature Reserve. This is of concern for environmental protection reasons as detailed in section 3.

2.3 EXISTING CONDITION AND ISSUES

Overall all four reserves are in good condition. There are, however, weed infestations, introduced species threats and other impacts, some of which are mentioned above.

Barrengarry, Rodway and Kangaroo River are all small reserves. Cambewarra Range is larger in total area but most of the individual sections are small and in some cases very narrow. These characteristics make the reserves very vulnerable to edge effects such as exposure from adjacent clearing and incursion of weeds, predators and stock. It also greatly complicates management, particularly of fire and visitor use.

As the reserves are largely surrounded by private land, cooperative management arrangements with neighbours are vital with regard to access, weed and pest control and fire management. Sustainable management of adjacent land is also essential if the vegetation and habitat values of the reserves are to be viable in the long term.

Significant management issues include protection of threatened plant and animal populations from fox predation and other threats, fire management, private land access and recreational use, particularly of the Cambewarra Range and Kangaroo River reserves. Weed control, feral goats, erosion prevention and Aboriginal site protection are also important. Each of these issues is considered in section 3.

INDIVIDUAL RESERVE MAPS (5 pages)

3. MANAGEMENT ISSUES AND STRATEGIES

Current Situation	Desired Outcomes	Strategies	Priority
<p>Soil and water conservation</p> <p>The reserves are generally well vegetated and no significant erosion is occurring. Motorcycle activity on a former gravel extraction area at the western end of Kangaroo River NR, however, has resulted in numerous tracks and soil loss and is hindering revegetation. Access to this area is from an adjacent block of Crown land and access control would be easier if the Crown land was added to the reserve.</p> <p>Water quality is generally good as most parts of the reserves are near the head of creek catchments. A proposed wastewater treatment works for Kangaroo Valley could potentially affect water quality in Kangaroo River NR if located within its catchment and NPWS would need to work with Shoalhaven City Council to minimise any impacts.</p> <p>Rubbish dumping and littering occur along the Moss Vale Road adjacent to parts of Barrengarry NR, with potential for pollution, weed invasion and an increase in pest animals.</p> <p>A Crown land road crosses the Red Rocks plateau (Leobold Hill Road) and branch trails within the reserve provide access to the informal Red Rocks lookout and private property. Some sections of the trails are poorly drained and vehicle use causes damage to adjacent areas in wet weather when drivers deviate from the trails.</p>	<p>Soil erosion is minimised.</p> <p>Water quality and health of reserve streams are maintained or where necessary improved.</p>	<p>Undertake all works in a manner that minimises erosion and water pollution.</p> <p>Liaise with relevant authorities as needed to maintain water quality in the reserves' catchments.</p> <p>Seek addition to Kangaroo River NR of the Crown land adjacent to the north western boundary. If this is successful, fence the land to prevent vehicle access and undertake ripping, planting or other work where needed to promote revegetation. If not successful, liaise with the Department of Lands to control unauthorised motorcycle use.</p> <p>Liaise with Shoalhaven City Council regarding the location of the proposed Kangaroo Valley sewerage treatment works and potential environmental impacts.</p> <p>Work with the Roads and Traffic Authority to remove rubbish from the Nowra-Moss Vale road reserve adjacent to Barrengarry NR.</p> <p>Where needed, undertake maintenance work on the Red Rocks Trig Trail in order to avoid deviation from the trail. Encourage adequate maintenance of the Crown and private access roads.</p>	<p>As required</p> <p>As required</p> <p>Medium</p> <p>High</p> <p>Medium</p> <p>High</p>

Native plant and animal conservation			
<p>The reserves contain rainforest and heath communities that are highly sensitive to changes in drainage, nutrients and fire regime. Rainforest is also highly sensitive to exposure and weed introduction.</p>	<p>All native plant and animal species and communities are conserved.</p>	<p>Avoid detrimental impacts on native plant communities, particularly rainforest and significant heathland areas, during road maintenance and other management activities.</p>	<p>As required</p>
<p>Several threatened plant and animal species have been recorded in the reserves and it is probable that others occur. Some plant and animal surveys have been undertaken but further work is needed to check for significant species including the ROTAP plant Illawarra stinking arum.</p>	<p>Significant vegetation communities such as heathland and rainforest are protected.</p>	<p>Undertake targeted surveys for threatened and significant plant and animal species.</p>	<p>Medium</p>
<p>The two threatened plant species recorded in Cambewarra Range NR (see section 2.2) are both located close to roads and hence may be vulnerable to road works. A check is needed, however, to determine whether <i>Solanum celatum</i> still occurs in the area given the long time since it was recorded.</p>	<p>Habitat for the endangered eastern bristlebird, brush-tailed rock-wallaby and other threatened species is maintained or restored.</p>	<p>Implement relevant measures included in the Priority Action Statement to be prepared for NSW threatened species and in recovery plans if prepared. Ensure that road works do not affect threatened plant species in Cambewarra Range NR or elsewhere. Manage areas of eastern bristlebird habitat to avoid additional habitat fragmentation and inappropriate fire regimes.</p>	<p>High</p>
<p>Relocation of the walking track through Kangaroo Valley NR may be needed to minimise its impact on significant plant communities and potential brush-tail rock-wallaby habitat. There are also safety concerns with parts of the track (see Visitor Use below).</p>		<p>Encourage conservation of remnant native vegetation around the reserves through establishment of voluntary conservation agreements or similar mechanisms. In particular, pursue protection of lands connecting the separate parcels of Cambewarra Range Nature Reserve and connecting Rodway and Barrengarry Nature Reserves to other reserves.</p>	<p>Medium</p>
<p>Rainforest areas and the eastern bristlebird population in Cambewarra Range NR (and possibly Rodway NR) could be affected by any creation of additional tracks as part of the proposed Illawarra Escarpment Walk (see below).</p>		<p>Discuss with the Sydney Catchment Authority and the Pioneer Farm Trust the desirability of removing fencing wire from boundaries with Kangaroo River Nature Reserve. Ensure, however, that signs are in place where tracks or trails cross the boundaries, to ensure that users are aware that they are entering the nature reserve.</p>	<p>Low</p>
<p>Some areas of public and private land adjacent to the reserves contain rainforest, tall moist eucalypt forest and significant fauna habitat. In addition, each of the reserves and reserve sections is connected to larger reserved areas by naturally vegetated public and private land. Maintenance of significant adjacent vegetation and habitat connections is vital to the long term viability of the reserves. Two existing wildlife refuges adjacent to Cambewarra Range NR play an important conservation role and it would be</p>			

<p>desirable for other voluntary conservation agreements to be established.</p> <p>Fences on the south western and eastern boundaries of Kangaroo River NR divide the reserve from naturally vegetated land managed by public authorities. Removal of these fences would facilitate movement of wildlife across the three areas.</p>			
<p>Cultural heritage</p> <p>There is minimal information about Aboriginal sites and places in the reserves and it is probable that additional sites occur apart from those recorded. All works in the reserves should be preceded by a check for cultural features.</p> <p>Known Aboriginal sites are not currently under threat, although a group of axe grinding grooves located close to a road on the Red Rocks plateau could be at risk. This road section runs parallel to a short alternative section and can therefore be closed to protect the grooves.</p> <p>There are no known historic features within the reserve apart from tracks, the occasional evidence of logging such as notches on trees, and former gravel extraction sites. These are considered to be only of local interest.</p>	<p>Cultural features are conserved and managed in accordance with their significance.</p>	<p>Precede all ground disturbance work by a check for cultural features. Avoid disturbance of Aboriginal sites as far as possible. Assess the significance of any historic features found and determine appropriate management strategies.</p> <p>Consult and involve the Nowra and Illawarra Local Aboriginal Land Councils, relevant Elders groups and representatives of traditional Aboriginal custodial families in all aspects of management of Aboriginal sites, places and values. Consult relevant community members with regard to management of any historic places found.</p> <p>Close and rehabilitate the section of road adjacent to the axe grinding grooves at the western end of the Red Rocks plateau.</p>	<p>As required</p> <p>As required</p> <p>High</p>
<p>Introduced species</p> <p>Lantana is common in wet forest margins of Cambewarra Range NR and probably also Barrengarry and Rodway reserves. Blackberry occurs in a number of locations in all the reserves. Weeds such as lantana, privet, madeira vine, Japanese honeysuckle, cape ivy and moth vine are found along the Kangaroo River and may occur in or spread to the adjacent nature reserve. Pasture and other weeds are likely to occur on boundaries with grazing lands but are generally not a significant issue.</p>	<p>The impact of introduced species on native species and neighbouring land is minimised.</p> <p>Fox numbers are reduced in order to protect brush-tailed rock-wallaby</p>	<p>Monitor, control and where possible eradicate introduced plant and animal species. Undertake on-going control programs for blackberry and continue to carry out fox control for threatened species protection as required.</p> <p>Undertake surveys for weeds where needed in the reserves and prepare weed management strategies based on the findings of the surveys. Monitor the occurrence of weeds on boundaries</p>	<p>High</p> <p>Medium</p>

<p>Foxes are a significant threat to populations of threatened species in the reserves such as the brush-tailed rock-wallaby, eastern bristlebird and long-nosed potoroo. Fox control has been undertaken in Cambewarra Range and Kangaroo River NR to protect these species.</p> <p>There is evidence of goat camps along the Kangaroo River near the reserve and goats may occur in other rocky areas, such as Rodway NR. Goats damage habitat and compete with species such as the brush-tailed rock-wallaby.</p> <p>Stock can enter parts of the reserves from unfenced or poorly fenced neighbouring properties.</p>	<p>colonies and other threatened species.</p>	<p>with grazing land and weed infested areas.</p> <p>Seek the cooperation of other authorities and neighbours in implementing weed and pest animal control programs. Control goats if found to occur in the reserves.</p> <p>Undertake an audit of boundary fencing where the reserves adjoin grazing properties. Seek provision of adequate fencing where there is a risk of stock entering the reserves.</p>	<p>As required</p> <p>Low</p>
<p>Fire management</p> <p>Fire is a natural feature of the environment of the reserves and is essential to the survival of some plant communities. The rainforest and tall open forest communities that have rainforest elements in the understorey are vulnerable to fire, however, and too frequent or regular fire in other areas could cause loss of particular plant and animal species and communities.</p> <p>Most areas of the reserves have been burnt infrequently and are in good condition. Kangaroo River NR experienced an intense wild fire in 1983 and a prescribed burn was undertaken in the western half in 2002. The Red Rocks plateau burnt in 1979 and 1983 and most of the plateau was hazard reduced over the late 1990s. In the Black Ash and Devils Glen sections of Cambewarra Range NR the last recorded fire was in 1968.</p> <p>As the reserves are relatively small, it is important to avoid burning a significant proportion during a single fire in order to maintain habitat. Retention of areas of dense understorey or heathland is essential for conservation of the long-nosed potoroo, other small mammals and the eastern-bristlebird. Fire should be excluded if possible from areas known to have populations of the threatened bush-tailed rock-wallaby or broad-headed snake.</p>	<p>Bushfire mitigation measures contribute to the cooperative protection of persons and property on or immediately adjacent to the reserves.</p> <p>Fire regimes are appropriate for conservation of plant and animal communities.</p> <p>Cultural features are afforded protection from damage by bushfires and fire suppression activities.</p>	<p>Initiate containment of all wild fires occurring within the reserves and as far as possible exclude fire from rainforest, tall open forest, riparian communities, brush-tailed rock-wallaby colonies and broad-headed snake habitat.</p> <p>Use prescribed fire to achieve a variety of fire regimes in appropriate vegetation types and maintain habitat suitable for plant and animal species with specific requirements, particularly the eastern bristlebird.</p> <p>Assess and, where required, implement asset protection zones for existing dwellings within prescribed distances of reserve boundaries along the north eastern boundary of Kangaroo River NR and elsewhere in the reserves if needed. This may include slashing and fuel management burning. Work with the Pioneer Farm Museum Trust to encourage appropriate fire management on the Crown land adjacent to Kangaroo River NR.</p> <p>Use existing trails or features for containment</p>	<p>High</p> <p>Medium</p> <p>High</p> <p>High</p>

<p>Previous fire frequencies are considered appropriate for the reserve vegetation communities, although it is possible that some of the open forests and heathland on Bellawongarah Mountain and the top of Rodway NR need to be burnt for ecological reasons.</p> <p>Much of the Red Rocks Plateau and Kangaroo River NR include fire prone vegetation and are surrounded by private property. Fire may move from and onto properties adjoining the reserves. Fire management in these areas therefore needs to be designed to assist property and reserve protection through such strategies as trail maintenance and fuel management along boundaries.</p> <p>Draft fire management strategies have been prepared for Kangaroo River and Barrengarry Nature Reserves and will be prepared for the other two reserves. A strategic fire advantage zone has been delineated in the eastern part of Kangaroo River NR for property protection and a fire exclusion area designated over the moist forests along Nelsons Creek.</p>		<p>lines and where possible avoid use of heavy machinery for fire suppression, especially in areas of rare plants, wet heath and Aboriginal sites.</p> <p>Rehabilitate areas disturbed by fire suppression operations as soon as practical after a fire.</p> <p>Maintain existing management trails in the reserves.</p> <p>Research fire regime requirements for vegetation communities within the reserves.</p> <p>Prepare or finalise fire management strategies for the reserves that set out life, property and natural and cultural resource protection strategies in accordance with the above.</p> <p>Continue to participate in the Shoalhaven District Bush Fire Management Committee. Maintain coordination and cooperation with Rural Fire Service brigades and neighbours with regard to bushfire fuel management and fire suppression.</p>	<p>High</p> <p>High</p> <p>Medium</p> <p>High</p> <p>High</p>
<p>Visitor use</p> <p>The objective of nature reserves is to conserve nature. They are managed to conserve biodiversity, maintain ecosystem function and protect natural and cultural features. Public appreciation, enjoyment and understanding are provided for if appropriate and sustainable but are secondary to conservation.</p> <p>Use of the reserves must be carefully managed since they are significant areas of native vegetation and fauna habitat and their small size makes them vulnerable to a range of impacts and disturbances.</p> <p>Within the wider district around Kangaroo Valley there is a range of visitor facilities provided in Morton, Budderoo, Seven Mile Beach and Bugong National Parks, Barren Grounds Nature</p>	<p>The community is aware of the significance of the reserves and of management programs.</p> <p>Visitor use is ecologically sustainable.</p>	<p>Keep boundary signage under review and erect additional signs where needed to delineate the reserve boundaries.</p> <p>Allow public vehicle access on the Red Rocks Trig Trail as far as its intersection with the branch trail leading to private property. Provide a small parking space and warning signs about the unfenced cliff.</p> <p>Undertake improvement works on the walking track through Kangaroo River NR, including construction of a fenced lookout above the Kangaroo River Gorge, upgrading the track to this</p>	<p>Ongoing</p> <p>High</p> <p>Medium</p>

<p>Reserve and Bomaderry Creek Regional Park. It is therefore not proposed to provide additional visitor opportunities within the four Kangaroo Valley nature reserves but some existing facilities will need to be re-designed.</p> <p>There are several points of public access to the reserves along public roads (see section 2.2 and maps) but some sections can only be reached by foot via road reserves or are surrounded by private property. Because the reserves consist of small areas of land largely surrounded by private property it can be difficult for neighbours and visitors to determine their boundaries. Some boundary signs are in place but additional signs may be needed in some locations.</p> <p>Only Cambewarra Range NR has publicly available vehicle access within the reserve. Roads across Red Rocks Plateau (Leobold Hill Road and Red Rocks Trig Trail) provide vehicle access to an unfenced cliff line at the western end of the plateau where there are views across Kangaroo Valley. Visitors can currently drive almost to the cliff edge, with potential safety risks and significant damage to the trail where it crosses a poorly drained area. Providing a car park back from the cliffline would address these issues.</p> <p>As previously stated, part of the walking track in Kangaroo Valley NR passes through moist forest along Nelsons Creek and potential brush-tailed rock-wallaby habitat. There are safety concerns where the track passes close to the edge of the Kangaroo River Gorge and the sections descending into Nelsons Creek are potentially slippery. In addition, the track is rough and difficult to find in places and access is via the adjacent Pioneer Farm Museum, which is only open at certain times. While these are significant issues, it is recognised that the track is an important feature of the Pioneer Farm Museum, a popular walk for the Kangaroo Valley community and has educational potential. Upgrading, interpretation and some relocation of the track are needed. It would be desirable to provide an alternate entry point that is not through the museum and an area of Crown land immediately to the west of Nelson Creek (a former quarry site) may be suitable, subject to</p>		<p>point and where necessary deviating it away from the gorge edge. Beyond the lookout, consider ways to ameliorate safety and environmental concerns in Nelsons Creek Gorge and relocate the track to create a larger loop to the north of the gorge. Provide track-head interpretation for the walk in conjunction with the Pioneer Farm Trust.</p> <p>Seek addition to the reserve of the Crown land west of Nelson Creek. If successful, construct a car park, small picnic area and track-head information on this land and a walking track linking it to the track system east of the creek.</p> <p>Permit, but don't encourage, walking access into Rodway NR, Barrengarry NR and the northern sections of Cambewarra Range NR.</p> <p>Require environmental impact assessment for any proposals to locate the Illawarra Escarpment Track through Cambewarra Range NR, with consideration of significant vegetation communities, threatened fauna habitat, Aboriginal sites, predator access, fire risk, erosion potential and alternative routes. Location of the track in the reserve would be subject to impacts being acceptable.</p> <p>Permit cycling on the roads and trails in Cambewarra Range NR. Signpost trails to indicate that cycling is permitted.</p> <p>Prohibit camping within the reserves.</p> <p>Permit horse riding within Cambewarra Range Nature Reserve on roads open to public vehicle use but not on management trails. Prohibit horse riding in the other reserves.</p>	<p>Low</p> <p>Ongoing</p> <p>Low</p> <p>Ongoing</p> <p>Ongoing</p> <p>Ongoing</p> <p>Low</p>
--	--	---	--

<p>Department of Lands approval.</p> <p>The proposed route of the Illawarra Escarpment Track (a long distance walking track) passes along the eastern boundary of Rodway NR and through several sections of Cambewarra Range NR. The location of the proposed track adjacent to Rodway NR is a concern as it may encourage walkers to climb onto the plateau top, with consequent increased risk of weed and pathogen introduction, predator access, fire ignition, effects on threatened fauna and safety issues. The proposed route through the Berry Mountain and Cambewarra Range sections of Cambewarra Range Nature Reserve would require construction of new tracks across steep country, with potential impacts on rainforest and other significant communities and habitats. The proposed track could only proceed if the environmental impacts were acceptable.</p> <p>Horse riding is not normally permitted in nature reserves because of their emphasis on nature conservation but may be allowed on roads open to public vehicle access. A small amount of horse riding occurs along Leobold Hill Road and other roads running through Cambewarra Range NR. Much of Leobold Hill Road is on Crown land excluded from the nature reserve while some of the other roads are currently Part 11 (Ministerial) roads (see section 2.1). Leobold Hill Road is recognised as a main route for horse riding through to Bugong and its use has minimal environmental impact. The future of the Part 11 (Ministerial) roads is uncertain but horse riding may continue to be available on roads in the Red Rock section of Cambewarra Range NR subject to decisions about whether to add or exclude these roads from the nature reserve and permission to use linking road sections that are on private property.</p> <p>Camping is generally not permitted in nature reserves and is not appropriate in the small reserves that are covered by this plan of management.</p> <p>Promotion of community understanding and appreciation of the conservation values of the reserves will be important for minimising damaging activities and maximising visitor</p>		<p>Monitor levels and impacts of use and take action to ameliorate impacts where necessary.</p> <p>Organise media releases and contact with neighbours and community organisations as needed.</p>	<p>As required</p>
--	--	---	--------------------

<p>enjoyment. This should focus on locations where there are visitor facilities, at Kangaroo River and Cambewarra Range Nature Reserves.</p>			
<p>Private property access</p> <p>As explained in section 2.1 a road along the western boundary of Kangaroo River NR and several roads through Cambewarra Range NR are vested in the Minister for the Environment under Part 11 of the NPW Act (see Map). The NPE Act states that the roads may be added to or excluded from the reserves but that the Minister cannot close any roads that provide the only means of practical access to a private land holding. NPWS is not under any obligation to maintain these roads but may enter into maintenance agreements with the users.</p> <p>In addition to Part 11 (Ministerial) roads, the Red Rocks section of Cambewarra Range NR contains several vehicle trails dedicated as nature reserve that provide access to private property. Their use for existing private property access will continue to be permitted where the private property is adjacent to the reserve and the trails are the only practical means of access.</p>	<p>Private property access continues to be provided for where appropriate.</p>	<p>Consult with neighbours to determine the existing use of Part 11 (Ministerial) roads through Cambewarra Range and Kangaroo River NRs and determine whether to add or exclude them from the reserves. Enter into agreements for continued access and future maintenance where appropriate.</p> <p>Arrange licences for existing private property access through the Red Rocks section of Cambewarra Range NR, including maintenance agreements where appropriate.</p>	<p>High</p> <p>Medium</p>
<p>Research and monitoring</p> <p>Scientific study is important for improving understanding of the reserves' natural and cultural heritage, the processes that affect them and the requirements for management of particular species. Some specific research topics have been mentioned above but there will be other areas of research that could provide useful information.</p> <p>Under the Southern RFA all forest managers must demonstrate ecologically sustainable forest management (ESFM). ESFM is a management principle that is applied to all ecosystem types, not just forests. Monitoring will be conducted in the reserves as part of regional measurement of ESFM performance indicators, to provide feedback on management programs and directions for</p>	<p>Research enhances the management information base and has minimal environmental impact.</p> <p>Monitoring shows the level of success in managing the reserves on an ecologically sustainable basis.</p>	<p>Undertake and encourage research to improve knowledge for management of natural and cultural heritage.</p> <p>Use the principles of Ecologically Sustainable Forest Management to guide management operations.</p> <p>Undertake ESFM monitoring in accordance with regional programs.</p> <p>Encourage bird watchers and similar groups to pass on information gathered in the reserves.</p>	<p>Low</p> <p>Ongoing</p> <p>As required</p> <p>Ongoing</p>

future adaptive management.			
<p>Management operations</p> <p>There are no vehicle trails in Rodway Nature Reserve.</p> <p>Disused vehicle tracks cross Barrengarry Nature Reserve to the north and south of the Moss Vale Road. Physical closure of these may be needed to ensure that they are not used to gain access for firewood gathering or rubbish dumping.</p> <p>As explained above, several trails pass through Cambewarra Range NR, providing management access, access to private property and limited access for recreational use. The trail on the western boundary of Kangaroo River NR provides NPWS management and private property access.</p>	<p>Management facilities adequately serve management needs and have acceptable impact.</p>	<p>Block vehicle access along the disused roads in Barrengarry Nature Reserve if needed.</p> <p>Maintain trails in Cambewarra Range NR and Kangaroo River NR that provide a useful management function, in conjunction with neighbours where relevant.</p>	<p>Medium</p> <p>High</p>

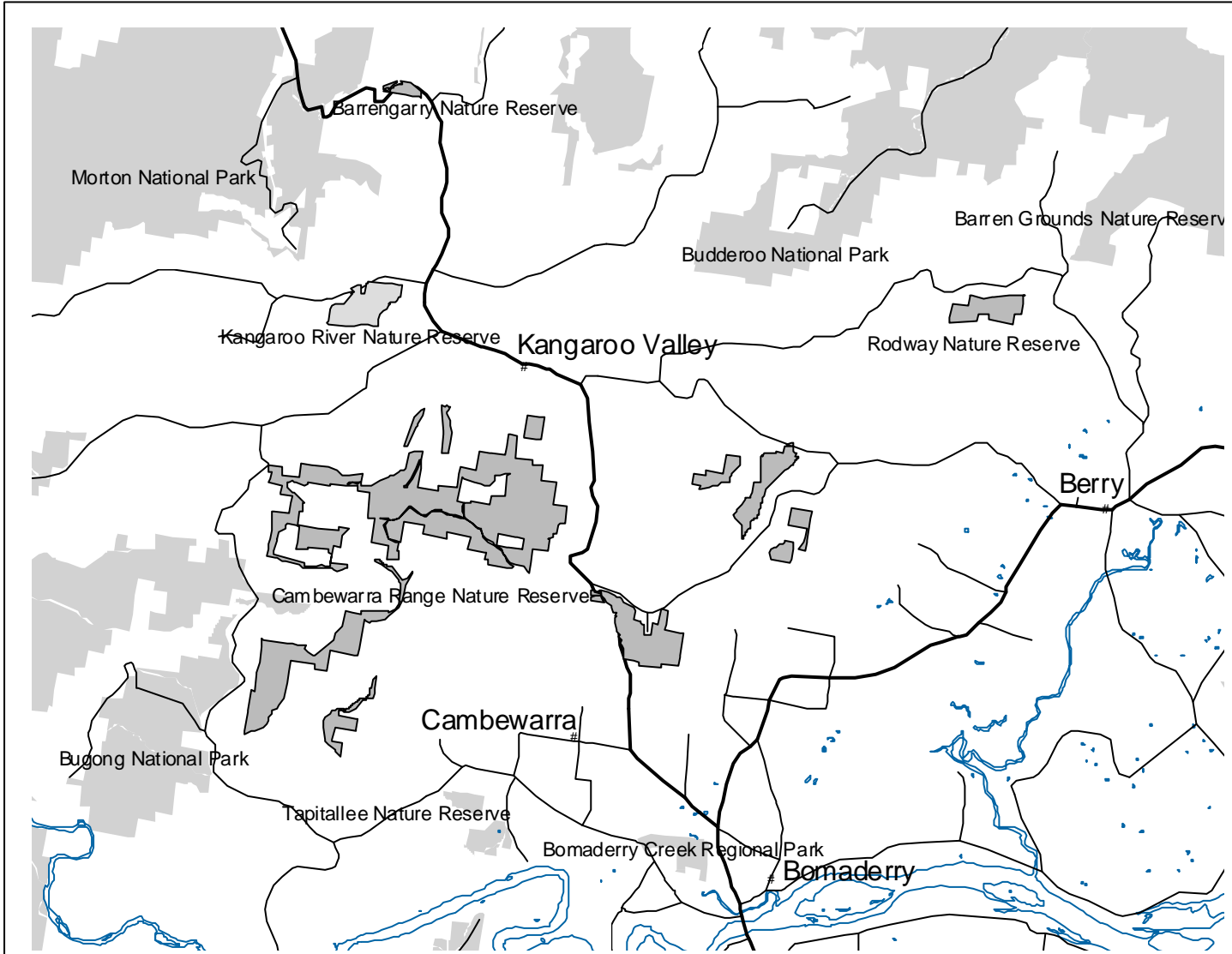
High priority activities are those imperative to achievement of the objectives and desired outcomes. They must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources.

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.

REFERENCES

- Briggs J.D and Leigh J.H (1995) *Rare or Threatened Australian Plants*. CSIRO.
- Capararo, S & Beynon, F 1996 *Survey of the Long-nosed Potoroo (Potorous tridactylus) in Red Rocks Nature Reserve*. Report for NPWS.
- Floyd, A. 1983 *Report on Red Cedar Regrowth in the Shoalhaven Shire*. NPWS internal report.
- Gaia Research 2003 *Survey of Fauna in Kangaroo Valley including Barrengarry Nature Reserve, Morton National Park and Kangaroo River Nature Reserve on the South Coast of New South Wales*. Report for NPWS.
- Leonard, G. 1999 *Survey and Description of the Vascular Plant Species and Assemblages Brush-tailed Rock-wallaby sites, Kangaroo Valley Colony*. Report for NPWS.
- Mills 1992 *Vegetation Mapping Project Red Rocks Nature Reserve*. Report for NPWS.
- Mills K & Jakeman J 1995 *Rainforests of the Illawarra District*. Coachwood Publishing, Jamberoo.
- Murphy M. and Daly G 1998 *Survey of the Reptiles and Amphibians of the Escarpment and Riverine Forests North West of Nowra, NSW*. Herpetofauna 28(2).
- Kangaroo Valley Historical Society and Hampden Bridge Museum Park Trust (undated) *Pioneer Farm and Historical Settlement*.
- Wellington, R. (2005) Department of Environment and Conservation Aboriginal employee.

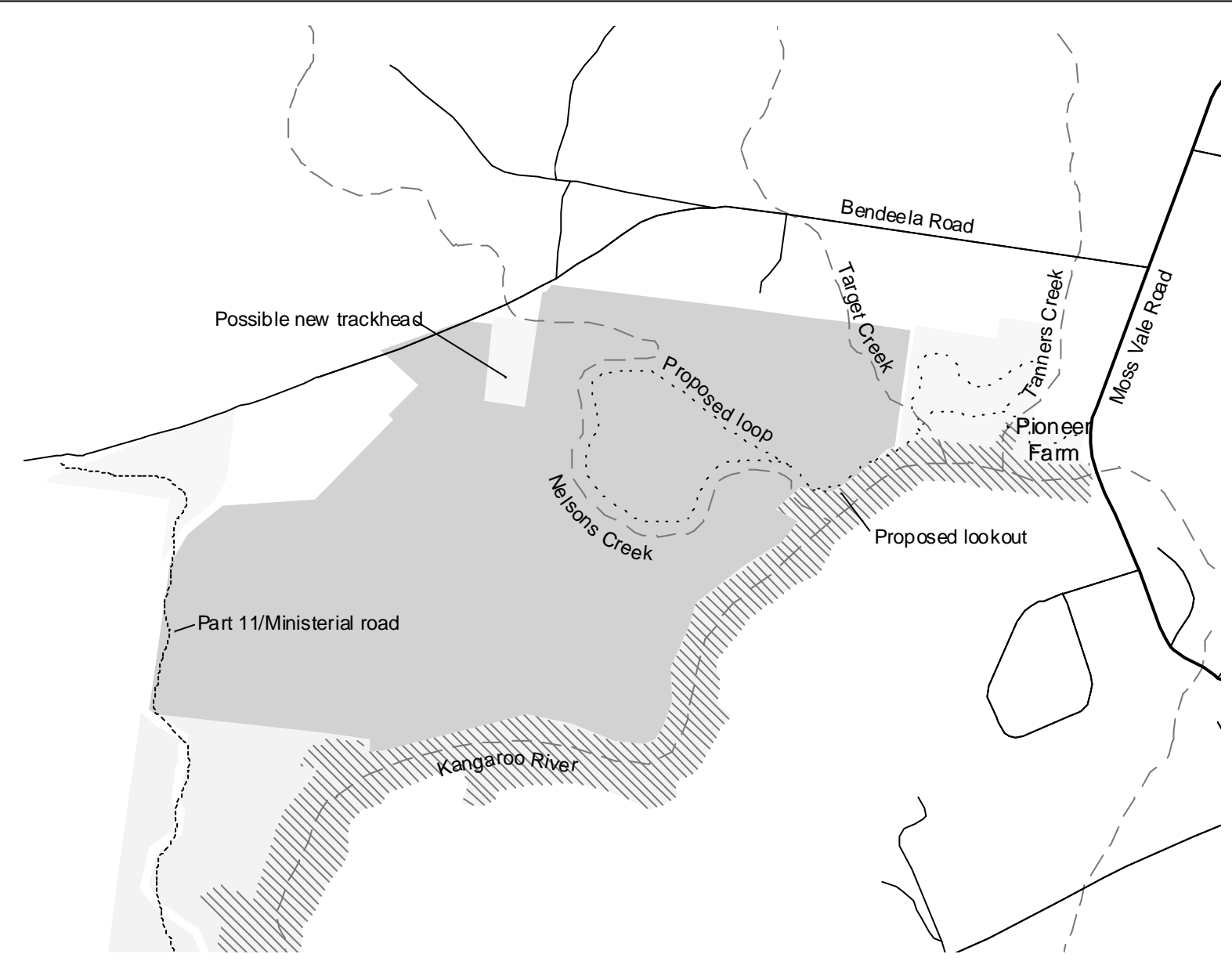


Location

-  Barrengarry Nature Reserve
-  Cambewarra Range Nature Reserve
-  Kangaroo River Nature Reserve
-  Rodway Nature Reserve
-  Other NPWS areas
-  Highway / Major Road
-  Minor Road
-  River

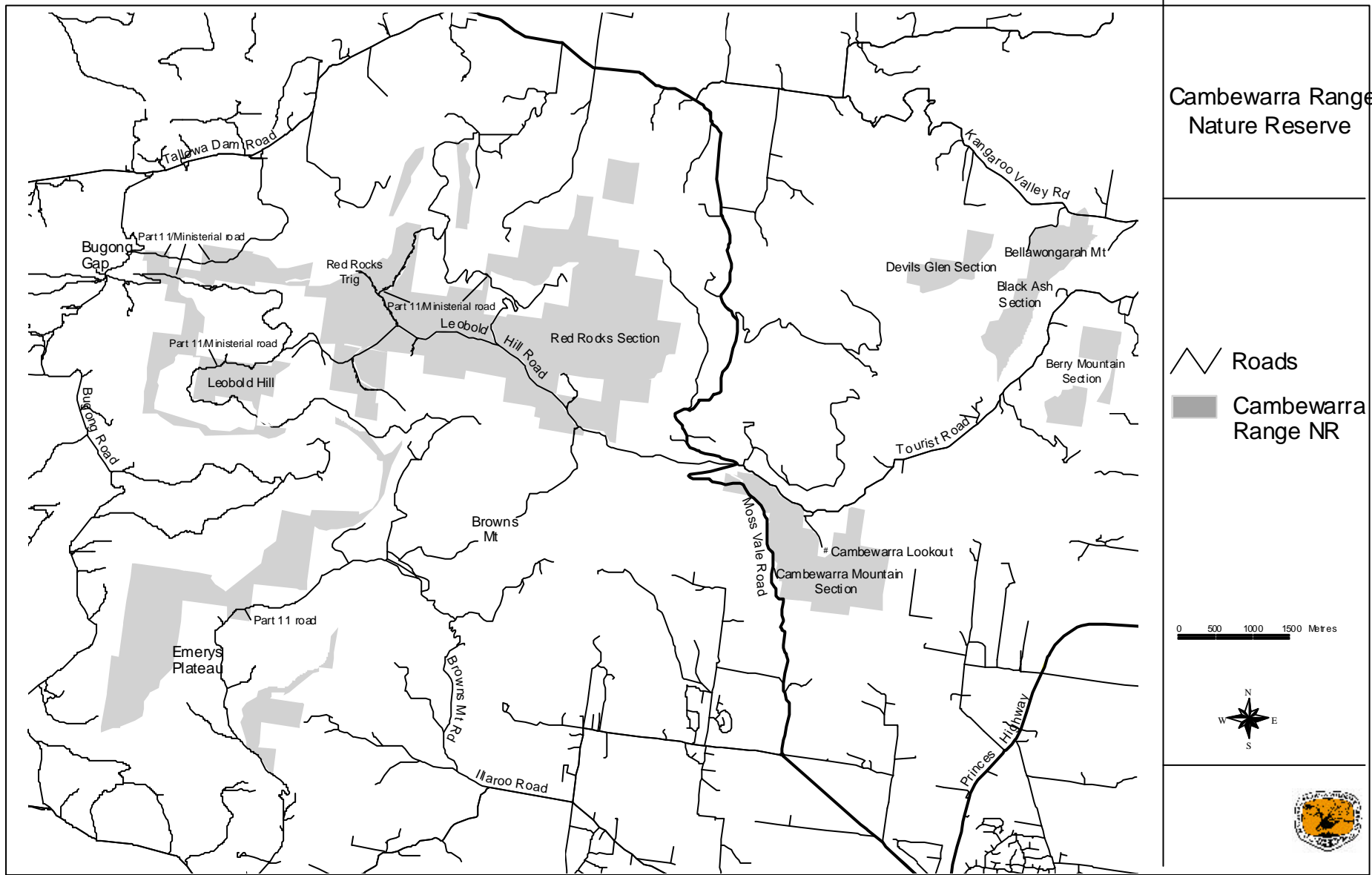


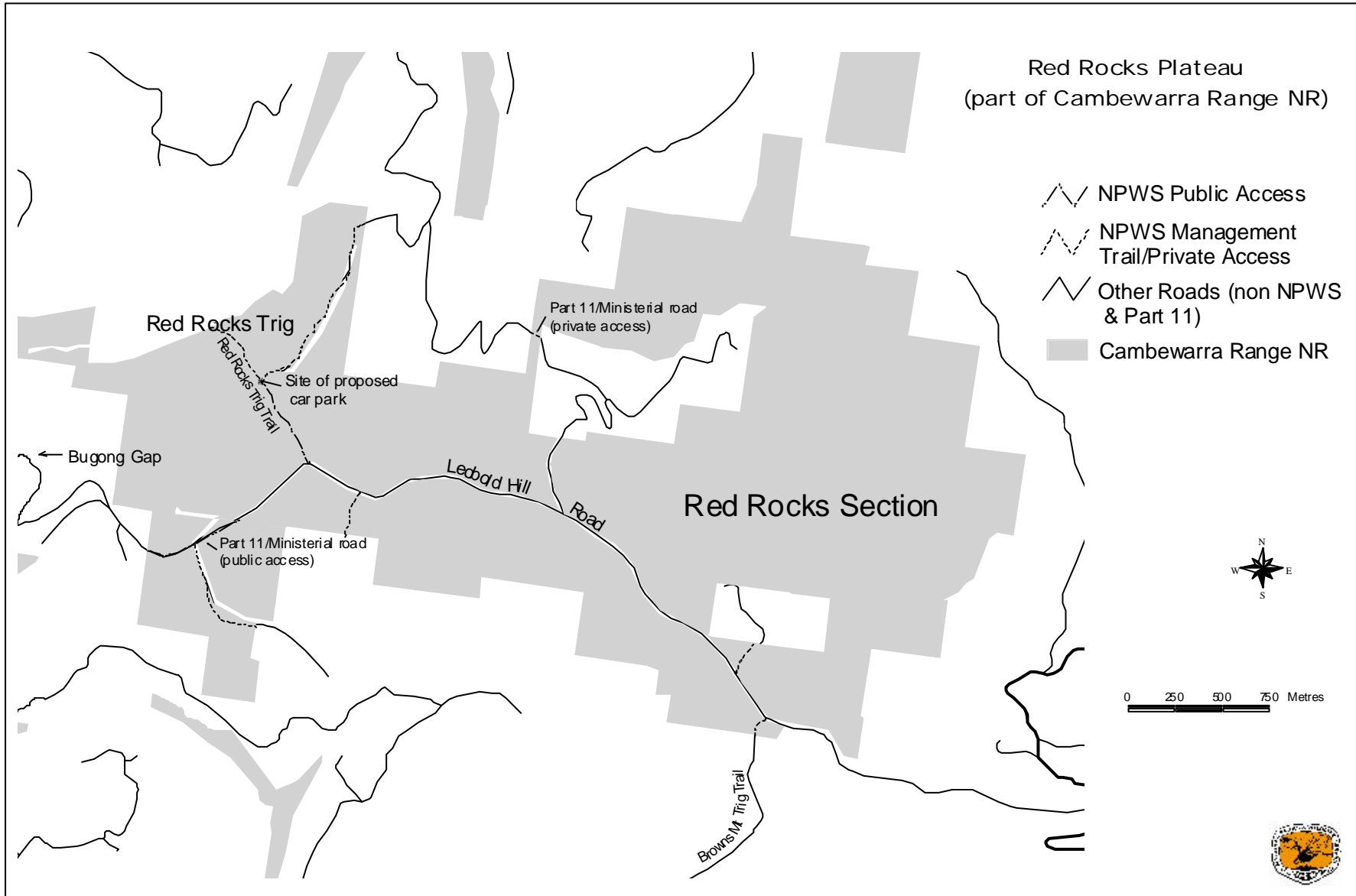
Kangaroo River Nature Reserve

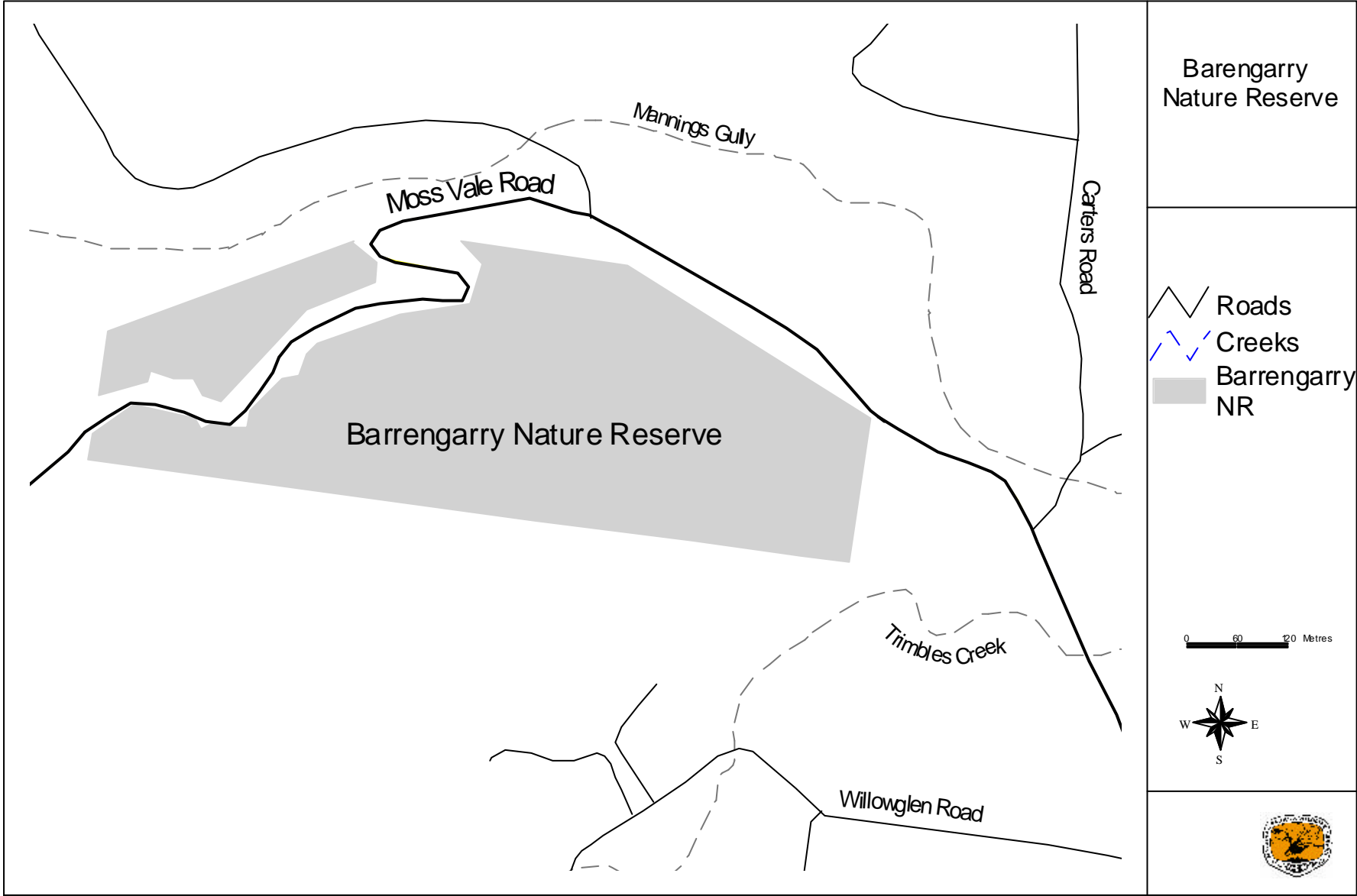


- Walking tracks
- Roads
- Kangaroo River NR
- Crown reserve
- Shoalhaven Special Area (SCA)
- SCA Land







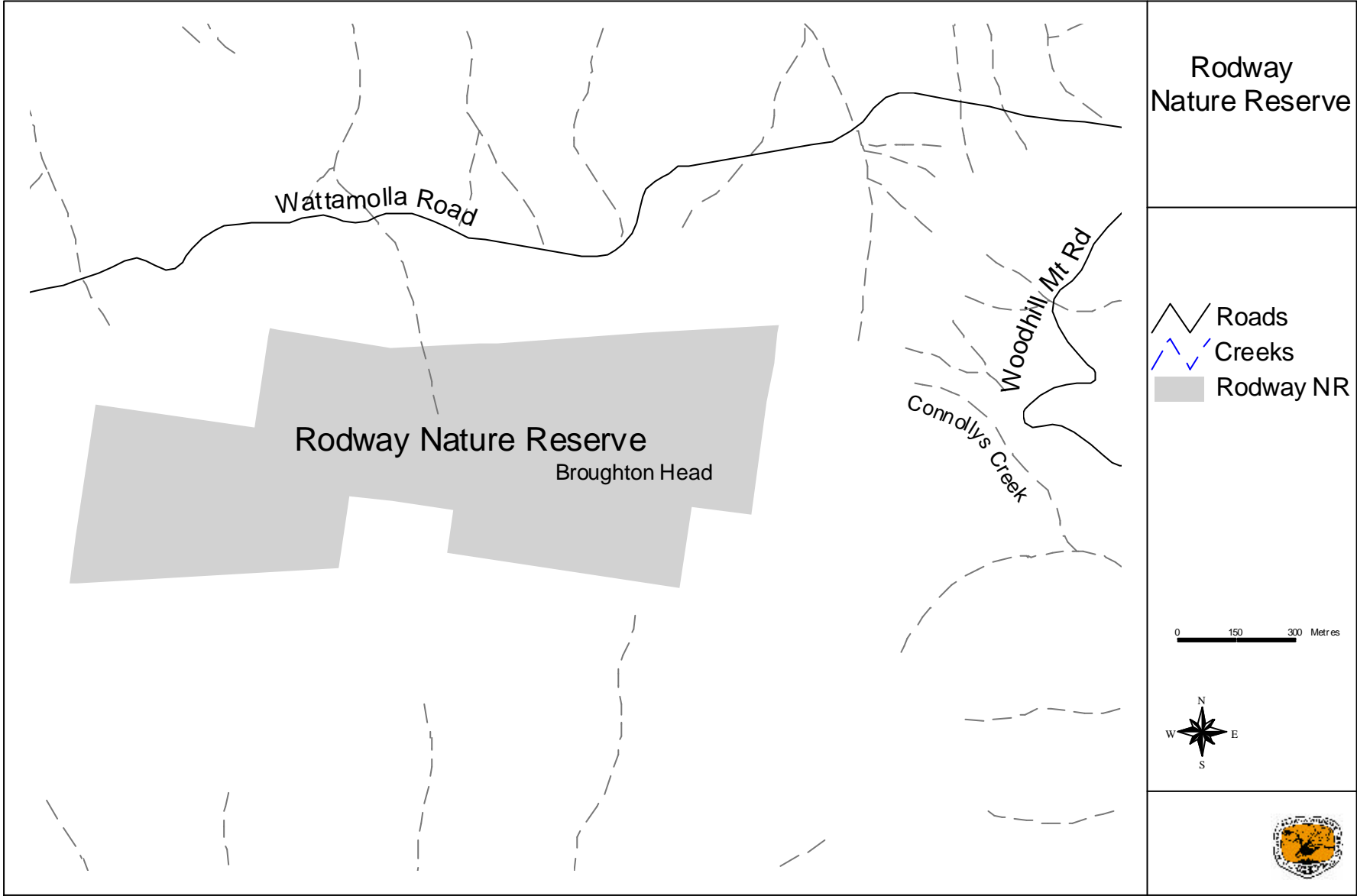


Barengarry Nature Reserve

- Roads
- Creeks
- Barengarry NR

0 60 120 Metres





Rodway Nature Reserve

- Roads
- Creeks
- Rodway NR

0 150 300 Metres

