NSW NATIONAL PARKS & WILDLIFE SERVICE

# Curracabundi Parks Plan of Management

**Incorporating Bretti Nature Reserve, Camels Hump Nature Reserve, Coneac State Conservation Area, Curracabundi National Park, Curracabundi State Conservation Area, Mernot Nature Reserve, Monkeycot Nature Reserve, Woko National Park**

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**This plan of management was adopted by the Minister for the Environment on 8 August 2019.**

DPIE acknowledges that the Curracabundi Parks are part of Country for the Worimi and Biripi Aboriginal peoples.

For additional information or any inquiries about these parks or this plan of management, contact NPWS at PO Box 236, Gloucester NSW 2422 or by telephone on (02) 6538 5300. For information about the Kalungra portion of Curracabundi National Park, contact NPWS at 188W North Street, Walcha NSW 2354 or by telephone on (02) 6777 4700.

Cover photo: Barnard River in Curracabundi National Park below Lea Hurst. S Thompson

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# 1. Introduction

## 1.1 Location, reservation and regional setting

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<tr><td>Location</td><td>The Curracabundi Parks (referred to as ‘the parks’ or ‘these parks’ in this plan) are located approximately 40 kilometres to the north and north-west of Gloucester, in the hinterland of the NSW Mid North Coast.</td></tr>
<tr><td>Area, reservation and previous tenure</td><td>There are eight parks covered by this plan, listed in the following table. Together, these parks comprise a total of 32,152 hectares (see Figure 1).
<table>
<tr><th>Park</th><th>Area (ha)</th><th>Reservation date</th><th>Previous tenure(s)</th></tr>
<tr><td>Bretti Nature Reserve</td><td>2,902</td><td>1999</td><td>Giro State Forest, Crown land</td></tr>
<tr><td>Camels Hump Nature Reserve</td><td>545</td><td>1981</td><td>Crown land</td></tr>
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<tr><td>Woko National Park</td><td>8,730</td><td>1982</td><td>Crown land</td></tr>
</table>
Monkeycot, Mernot and Bretti nature reserves were reserved in 1999 as part of the original outcome of the Lower North East Regional Forest Agreement. The original part of Coneac State Conservation Area was part of the later land transfers resulting from the Regional Forest Agreement; the addition to Coneac State Conservation Area in 2008 arose from a gift of the land by the lessees with the agreement of the (then) Department of Lands.<br><br>Curracabundi National Park includes land that was formerly held as six pastoral holdings. For the purposes of management, some sections of this park still retain these names (as indicated on Figure 1). The Foundation for National Parks and Wildlife donated the land which is now the Kalungra portion of the park to NSW National Parks and Wildlife Service (NPWS). Some other parts were purchased through the Dunphy Wilderness Fund.<br><br>As well as the reserved area of park listed above, the lands covered by this plan also includes two areas of Crown land that are vested in the Minister for the Environment under Part 11 of the National Parks and Wildlife Act 1974: the corridor of Baxters Ridge Road along the northern edge of Bretti Nature Reserve; and the site of a former quarry in Coneac State Conservation Area (see Figure 1).</td></tr>
</table>

| Features | Description |
|---|---|
| | The name 'Curracabundi' is the name of one of the parishes in the vicinity of these parks. It is believed to have been the name used by the Biripi People for the area at the confluence of the Barnard and Curricabark rivers, which was adopted as the name of a pastoral run in the district. Mayers (cited in DECCW 2010a) stated that this name was derived from two Aboriginal words in the Kattang language: *currica* meaning 'ironwood' and *bundi* meaning 'fighting stick'. Lissarrague (2010), however, writes the name as *Garrgabandi* with *garrga* (*currica*) meaning 'mouth' and *bandi* meaning 'narrow gully'. |
| **Regional context** | |
| Biogeographic region | Most of these parks lie in the Mummel Escarpment and Tomalla subregions of the NSW North Coast Bioregion, with part of the north-west section of Curracabundi National Park being in the Walcha Plateau subregion of the New England Tablelands Bioregion (ERIN 2012).<br><br>These parks form part of a larger chain of conservation lands that extend to the north and west along the Great Eastern Escarpment. |
| Surrounding land use | Land use in the area surrounding these parks includes agriculture, timber production and conservation.<br><br>State forest (much of it held under lease) and grazing properties lie to the west, east and south of these parks.<br><br>Nowendoc National Park adjoins part of the northern boundary of Curracabundi National Park and Watchimbark Nature Reserve adjoins part of the southern boundary of Curracabundi National Park. The management of these neighbouring parks is subject to separate plans of management (NPWS 2012, 2013). |
| Other authorities | The parks covered by this plan are located within the administrative areas of:<br>• the Nungaroo, Purfleet-Taree and Forster local Aboriginal land councils<br>• Hunter Local Land Services (LLS) and North West LLS<br>• Mid-Coast, Tamworth Regional and Upper Hunter local government areas. |

## 1.2 Statement of significance

These parks represent a largely contiguous and scenically spectacular natural landscape of high regional conservation significance for the following values:

**Landscape and wilderness**

- A large proportion (62.5%) of these parks form part of the Curracabundi Wilderness Area; a declared wilderness which also includes parts of adjoining Watchimbark Nature Reserve and Nowendoc National Park.
- These parks are part of a network of wilderness and other protected areas situated along the Great Eastern Escarpment which, combined, contributes significantly to the aim of the Great Eastern Ranges Initiative to connect and conserve mountain ecosystems running the length of eastern Australia.

**Biological**

- These parks support a variety of forests and woodlands, including three threatened ecological communities.
- They form part of several regional corridors for wildlife movement, with parts of Woko National Park and Bretti Nature Reserve predicted to be key habitat for native animals (Scotts 2003).
- These parks provide extensive areas of habitat for 44 threatened species, including *Grevillea granulifera* (an endangered shrub), the brush-tailed rock-wallaby (*Petrogale penicillata*), large forest owls and a diversity of microchiropteran bat species.

**Cultural**

- These parks contain extensive evidence of a long history of use by Aboriginal communities. Recorded sites in the area include modified trees, artefact scatters and shelters.
- Curracabundi National Park conserves European heritage values of local significance which illustrate the early history of settlement and grazing along the Barnard River.

# 2. Management context

## 2.1 Legislative and policy framework

The management of nature reserves, national parks and state conservation areas in New South Wales is in the context of the legislative and policy framework of NPWS, primarily the National Parks and Wildlife Act and Regulation, the *Biodiversity Conservation Act 2016,* the *Wilderness Act 1987* and the policies of 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. The NSW *Heritage Act 1977* may apply to excavation in known archaeological sites or in sites with potential to contain historical archaeological relics. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* also applies in relation to actions that may impact matters of national environmental significance such as migratory and threatened species listed under that Act.

A plan of management is a statutory document under the National Parks and Wildlife Act. Once the Minister has adopted the plan, no operations may be undertaken within these parks except in accordance with this plan. This plan will also apply to any future additions to these parks. Should management strategies or works be proposed for these parks or any additions that are not consistent with this plan, an amendment to this plan will be required.

## 2.2 Management purposes and principles

The parks covered by this plan include three different types of reserve categories: national park, nature reserve and state conservation area. Each of these has specific management objectives under the National Parks and Wildlife Act that must be considered in the planning process.

### National parks

National parks are reserved under the National Parks and Wildlife Act to protect and conserve areas containing outstanding or representative ecosystems, natural or cultural features or landscapes or phenomena that provide opportunities for public appreciation and inspiration and sustainable visitor use. Under section 30E of the Act, national parks are managed to:

- conserve biodiversity, maintain ecosystem functions, protect geological and geomorphological features and natural phenomena and maintain natural landscapes
- conserve places, objects, features and landscapes of cultural value
- protect the ecological integrity of one or more ecosystems for present and future generations
- promote public appreciation and understanding of the park's natural and cultural values
- provide for sustainable visitor use and enjoyment that is compatible with conservation of natural and cultural values
- provide for sustainable use (including adaptive re-use) of any buildings or structures or modified natural areas having regard to conservation of natural and cultural values
- provide for appropriate research and monitoring.

### Nature reserves

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 section 30J of the Act, 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
- 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.

### State conservation areas

State conservation areas are reserved under the National Parks and Wildlife Act to protect and conserve areas that:

- contain significant or representative ecosystems, landforms or natural phenomena or places of cultural significance
- are capable of providing opportunities for sustainable visitor use and enjoyment, the sustainable use of buildings and structures, or research
- are capable of providing opportunities for uses permitted under other provisions of the Act.

Under section 30G of the Act, 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 National Parks and Wildlife 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 re-use) 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
- provide for appropriate research and monitoring.

Land is reserved as a state conservation area primarily where mineral values preclude reservation as another category. The National Parks and Wildlife Act requires a review of the classification of state conservation areas every 5 years in consultation with the Minister administering the *Mining Act 1992*. Reviews were undertaken in 2008 and 2013 (DECC 2008c, NPWS 2014).

Subject to the outcomes of future 5-yearly reviews, Curracabundi State Conservation Area may become part of Curracabundi National Park and Coneac State Conservation Area may become

a nature reserve. Therefore, management of these areas will also be guided by the management principles for national parks and nature reserves respectively.

**Wilderness**

Under section 9 of the Wilderness Act, wilderness areas are managed to:

- restore (if applicable) and to protect the unmodified state of the area and its plant and animal communities
- preserve the capacity of the area to evolve in the absence of significant human interference
- permit opportunities for solitude and appropriate self-reliant recreation, including commercial recreation.

Management of natural and cultural heritage, introduced species and fire is carried out in wilderness areas in the same manner as other parks, with special attention to minimising impacts on wilderness values.

## 2.3 Specific management directions

In addition to the general principles for the management of nature reserves, national parks and state conservation areas (see Section 2.2 above), the following specific management directions apply to the management of the parks covered by this plan:

- identification and protection of threatened ecological communities
- fire management to protect life and property and maintain appropriate burn frequencies within ecological thresholds, including exclusion of fire from important rainforest areas
- maintenance and protection of wilderness, and natural and cultural heritage values
- maintenance of the network of vehicular roads and trails
- maintenance of the existing camping area in Woko National Park
- provision of overnight and short-term recreational opportunities in the Karamea section of Curracabundi National Park
- implementation of a monitored 2-year horse riding trial within the Curracabundi Wilderness along a designated route
- implementation of the heritage action statements for the homestead precincts in Curracabundi National Park.

# 3. Values

This plan aims to conserve both natural and cultural values of the parks it covers. The location, landforms and plant and animal communities of an area have determined how it has been used and valued by both Aboriginal and non-Aboriginal people. 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. To make this plan clear and easy to use, various aspects of natural heritage, cultural heritage, threats and ongoing use are dealt with individually, but their interrelationships are recognised.

## 3.1 Wilderness

The term 'wilderness' is used to describe large, natural areas of land that, together with their native plant and animal communities, remain essentially unchanged by recent human activity. Many wilderness areas have been occupied by Aboriginal peoples for thousands of years and they maintain an ongoing connection to these areas. Wilderness areas can have great cultural significance as they often contain significant Aboriginal sites, and their landscapes can be a reminder of the Australian environment as it was before colonisation.

Almost two-thirds (19,368 hectares) of the Curracabundi Parks is dedicated wilderness (see Figure 1). The Curracabundi Wilderness includes large areas of Curracabundi and Woko national parks and Monkeycot Nature Reserve, and all of Mernot Nature Reserve. It also extends into the neighbouring Nowendoc National Park and Watchimbark Nature Reserve (see Figure 1).

Wilderness areas represent the largest, most pristine areas in the state's reserve system. The Wilderness Act affords declared wilderness the most secure level of protection, requiring it to be managed in a way that will maintain its wilderness values and pristine condition by limiting activities likely to damage flora, fauna and cultural heritage.

Wilderness is important because it provides a range of ecological, cultural and human benefits to society. These areas allow the natural processes of evolution to continue with minimal interference.

Wilderness areas have high environmental quality and an absence of the sounds, smells and sights of modern society. They comprise less-modified natural landscapes that scientists can use to compare with those areas that have been changed by recent human activity. Wilderness areas provide a sense of naturalness and remoteness from urban or rural development, and opportunities for inspiration which offer solitude as well as opportunities for self-reliance, adventure, challenge and exploration. Wilderness areas allow for self-reliant visitation but do not provide the usual park recreation facilities.

The need to retain wilderness in a substantially unmodified state, while also providing opportunities for solitude, directs the management approaches that can be applied. Self-reliant bushwalking in the Curracabundi Wilderness should only be undertaken by those who are adequately prepared and experienced in remote country navigation. Cycling is allowed in the Curracabundi Wilderness on the management trails adjacent to the Bicentennial National Trail (see Figure 1) but is not permitted in Watchimbark Nature Reserve (see Section 3.6).

Facilities, signposting and other management devices are generally avoided in wilderness unless essential for public safety, management operations or environmental protection.

A number of wilderness proposals have been made in the past for the Giro area including Bretti Nature Reserve. The area was assessed in 2001 but found to be too disturbed to be identified as wilderness (NPWS 2001).

**Issues**

- Threats to wilderness values include inappropriate fire regimes, weeds and climate change (see Sections 4.1, 4.2 and 4.3).
- The statewide trial of horse riding in wilderness includes a designated route in the Curracabundi Wilderness, initially only for a trial period of 2 years (see Section 3.6).

**Desired outcome**

- Key wilderness values and attributes are preserved and recognised.

**Management response**

3.1.1 Preserve the capacity of the wilderness area to evolve in the absence of significant human interference by avoiding the creation of management and/or visitor facilities unless considered essential for public safety, environmental protection or management of wilderness values (including monitoring and research).

3.1.2 Allow appropriate self-reliant recreation in the wilderness area, including cycling on the Bicentennial National Trail and adjoining management trails.

## 3.2 Geology, landscape and hydrology

The parks covered by this plan occur entirely within the New England Fold Belt, which is typified by highly metamorphosed Paleozoic sedimentary rocks, intruded by granites of the Devonian age, as well as partially covered by Cenozoic (Tertiary) basalt flows. The boundaries between the underlying bedrock types coincide with elements of the Bohena fault, part of the Peel-Manning Fault System, resulting in the spectacular rocky outcrops, ridge lines and river valleys which characterise these parks.

Most of these parks generally feature the underlying sedimentary and metasedimentary rocks of the Silurian and Lower Devonian period (440 to 400 million years ago), referred to as the Myra Beds. The Myra Beds consist of chert, jasper and argillite which erode to create the steeply dissected topography that is evident throughout much of Woko and Curracabundi national parks. Two areas of volcanoclastic rocks are present: one in the vicinity of Mount Myra in Woko National Park; the other near the confluence of Mernot Creek and the Curricabark River in Curracabundi National Park. Soils derived from the Myra Beds are generally shallow silty loams or clays, are well drained and stony, and have a low erodibility rating (Veness & Associates 1995).

Coneac State Conservation Area is underlain by undifferentiated mudstone, sandstone, argillite, conglomerate and limestone of the Parry Group, dating from the Late Devonian period (~360 million years ago). This bedrock erodes to produce well-structured red and brown earths.

The underlying geology of Bretti Nature Reserve, the easternmost sections of Curracabundi National Park, the southernmost parts of Woko National Park and Camels Hump Nature Reserve is part of the relatively younger Giro Beds, which date from the Permian period (300 to 250 million years ago). These are clastic sediments, mainly diamictite, conglomerate, sandstone, siltstone and claystone, and provide shallow loams which are more erodible, producing the broader valley basins of the Barnard and Manning rivers outside these parks (Floyd 1978).

The northern edge of Curracabundi National Park and Curracabundi State Conservation Area are underlain by undifferentiated clastic sediments of Devonian age (420 to 360 million years ago). In the Kalungra (western) portion of Curracabundi National Park this is overlain by a narrow capping of Comboyne basalt, which dates from the Neogene (late Tertiary) Period (about 11 to 13 million years ago). This capping coincides in part with the alignment of Cowsby Road through the park.

Small areas of serpentinite and associated rock types dating from the Cambrian (~500 million years ago) are present in these parks: in the south-west corner of the Kalungra portion of Curracabundi National Park (4 hectares) and in the north-east of Curracabundi State Conservation Area (7 hectares). This rock type is more extensive in neighbouring Watchimbark Nature Reserve (NPWS 2013). A small, 7-hectare area of norite (an intrusive igneous rock also dating from the Cambrian) is present in Curracabundi National Park near its boundary with Watchimbark Nature Reserve.

The parks covered by this plan feature approximately 40 kilometres of frontage either side of the scenic Barnard River, and include approximately 27 kilometres of the river's bed. Curracabundi National Park also includes 10 kilometres of the bed of the Curricabark River. The Barnard River flows from 450 metres above sea level in the Kalungra portion of Curracabundi National Park to 170 metres above sea level at Karamea. This section of the river forms a narrow floodplain hemmed in by spectacular cliffs and bluffs, including Monkeycot Bluff (996 metres above sea level), Cobbs High Point (900 metres) and Mernot Pimple (1057 metres).

Woko National Park is dominated by the peaks of Mount Myra (1057 metres) and Vinegar Mountain (744 metres). Woko Camping Area is located beside the Manning River at 240 metres above sea level. Other high points in the parks covered by this plan include the twin peaks of Camels Hump (~500 metres), after which Camels Hump Nature Reserve is named. The ridge lines in Bretti Nature Reserve include Karo Mountain (836 metres), Mount Adventure (526 metres) and Kauthi Hill (435 metres).

These parks are drained from west to east by Tuggolo Creek, Barnard River, Mernot Creek, Curricabark River and tributaries of Dewitt Creek. These form an important part of the Manning River catchment. The rugged uplifted terrain of the area captures the most reliable rainfall in the region and these parks provide catchment protection of a large portion of the Manning Valley (DECCW 2010a). The combination of terrain and rainfall results in the Barnard River being highly dynamic, with rapid rises and falls in river levels during and after rainfall events.

**Issues**

- Soils within these parks can be prone to erosion, particularly on steeper slopes.
- Several of the major watercourses within these parks have their headwaters located upstream of the park boundary. Therefore, land management practices outside as well as within these parks have the potential to affect the water quality of these rivers. Stream degradation is considered a potential threat to native animals in these parks (see Section 3.3).

**Desired outcomes**

- The catchment and scenic values of these parks are protected.
- Soil erosion is minimised.

**Management response**

3.2.1 Design, situate and maintain all new facilities to complement the surroundings and to be visually unobtrusive.

3.2.2 Manage recreational and other park uses to minimise erosion, changes to soil structure and degradation of catchment values.

3.2.3 Maintain the management trail network in a manner that minimises erosion.

3.2.4 Encourage efforts by the relevant authorities, local councils and landowners to maintain and, where possible, improve water quality and soil stability in catchments upstream of the parks.

## 3.3 Native plants

The parks covered by this plan support a wide variety of woodland, and moist and dry forest communities. The ridges and slopes are dominated by open forest and grassy woodland. Dry rainforest occurs in scree gullies and on more protected aspects. River oak, grassy woodland and native grassland occupy the alluvial flats and slopes.

Vegetation communities known to occur in these parks (and their principal species) include:

- Grey Gum – Stringybark Open Forest / Woodland on slopes and ridges — grey gum (*Eucalyptus biturbinata*), thin-leaved stringybark (*E. eugenioides*), forest red gum (*E. tereticornis*), rough-barked apple (*Angophora floribunda*)
- Blue Gum – White-topped Box Open Forest on the more fertile slopes in the western portions of the parks — Sydney blue gum (*E. saligna*), white-topped box (*E. quadrangulata*)
- old-growth and successional Red Gum Open Forest / Woodland and River Oak on slopes and alluvial terraces — forest red gum, rough-barked apple, river oak (*Casuarina cunninghamiana*)
- old-growth New England Blackbutt Open Forest on higher altitude ridges — New England blackbutt (*E. campanulata*), Sydney blue gum
- Wattle Low Open Forest in steep gorges and on slopes often near dry rainforest — Wollomombi wattle (*Acacia blakei* subsp. *diphylla*), grey gum
- Dry Rainforest on scree slopes and protected gullies in the east of the parks — shatterwood (*Backhousia sciadophora*), giant stinging tree (*Dendrocnide excelsa*), shiny-leaved stinging tree (*D. photinophylla*), yellow tulip (*Drypetes deplanchei*), lacebark tree (*Brachychiton discolor*), bird's eye (*Alectryon subcinereus*), native olive (*Notelaea microcarpa*), kurrajong (*Brachychiton populneus* subsp. *populneus*), white cedar (*Melia azedarach*), brush caperberry (*Capparis arborea*)
- Gorge Rainforest in protected gullies in the west of the parks — gorge alectryon *(Alectryon forsythii*), holly-leaved bird's eye (*Alectryon subdentatus*), native olive, black plum (*Diospyros australis*), green satinheart (*Geijera salicifolia*), red kamala (*Mallotus philippensis*)
- Subtropical Rainforest along sheltered streamlines, in gullies and on protected moist scarps — black booyong (*Argyrodendron actinophyllum*), Moreton Bay fig (*Ficus macrophylla*), giant stinging tree, scentless rosewood (*Synoum glandulosum*), flame tree (*Brachychiton acerifolius*), rosewood (*Dysoxylum fraserianum*), red cedar (*Toona ciliata*), pencil cedar (*Polyscias murrayi*), churnwood (*Citronella moorei*)
- Wattle Heath in shallow, rocky soils on metasediments at moderate altitudes — blunt-leaf wattle (*Acacia obtusifolia*), Barrington wattle (*A. barringtonensis*), common guinea flower (*Hibbertia obtusifolia*), wattle mat-rush (*Lomandra filiformis*)
- Natural Grasslands and Derived Native Grasslands — red grass (*Bothriochloa macra*), wiregrasses (*Aristida* spp.), tussock grass (*Poa labillardierei*), speargrass (*Austrostipa ramosissima*), kangaroo grass (*Themeda triandra*) and wallaby grass (*Rytidosperma* spp.), plus weeping lovegrass (*Microlaena stipoides*) in wetter areas.

These parks contain vegetation communities which are likely to meet the definitions of threatened ecological communities under the Biodiversity Conservation Act:

- occurrences of subtropical and dry rainforest below 600 metres above sea level, as part of the Lowland Rainforest Endangered Ecological Community (NSW SC 2007) predominately in Bretti Nature Reserve, Camels Hump Nature Reserve, Coneac State Conservation Area and Woko National Park

- New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments Endangered Ecological Community in the New England Tablelands Bioregion (NSW SC 2011b) in the Kalungra portion of Curracabundi National Park
- White Box – Yellow Box – Blakely's Red Gum Woodland Endangered Ecological Community (NSW SC 2002b), a community that is also listed as critically endangered under the EPBS Act, in the Kalungra portion and drier, western parts of Curracabundi National Park.

Camels Hump Nature Reserve contains a significant area of dry rainforest (Griffith 1989) which, in the long term, may provide insight into the dynamics of dry rainforest communities in the region (AHD 1992).

Table 1 provides a list of significant plant species recorded in these parks.

**Table 1: Significant plant species recorded in the parks**

| Common name | Scientific name | BC Act status [1] | EPBC Act status [1] | Other significance |
|---|---|---|---|---|
| Barrington Tops ant orchid | *Chiloglottis platyptera* | V | | Limited distribution, poorly known [2] |
| Barrington wattle | *Acacia barringtonensis* | | | Rare [2] |
| Burr daisy | *Calotis* sp. aff. *dentex* | | | Potentially new species [3] |
| Cockspur flower | *Plectranthus suaveolens* | | | Poorly known [2] |
| Grey grevillea | *Grevillea granulifera* (syn. *Grevillea obtusiflora* subsp. *granulifera*) | | | Poorly known [2] |
| Hill daisy | *Coronidium* sp. aff. *collinum* | | | Potentially new species [3] |
| Outcrop guinea flower | *Hibbertia hermanniifolia* | | | Rare [2] |
| Rainforest senna | *Senna acclinis* | E | | [2] |
| Silver plectranthus | *Plectranthus* sp. aff. *argentatus* | | | Potentially new species [3] |
| Slaty red gum | *Eucalyptus glaucina* | V | V | [2] |
| White-flowered wax plant | *Cynanchum elegans* | E | E | Inadequately reserved [2] |

Notes:
[1] Status under the Biodiversity Conservation (BC) Act and Environment Protection and Biodiversity Conservation (EPBC) Act: V = Vulnerable; E = Endangered.
[2] = identified as a Rare or Threatened Australian Plant consistent with the criteria of Briggs and Leigh (1996).
[3] = based on information in Eco Logical (2009).

Strategies for the recovery of threatened species, populations and ecological communities have been set out in a statewide *Biodiversity Conservation Program* (OEH 2017). These actions are currently prioritised and implemented through the *Saving our Species* program which aims to maximise the number of threatened species that can be secured in the wild in New South Wales for 100 years (OEH 2013b). Individual recovery plans may need to be prepared for threatened species listed under the Environment Protection and Biodiversity Conservation Act.

**Issues**

- There have been few flora surveys conducted in parts of the parks, and limited information is available on the native plants present in Curracabundi State Conservation Area, Mernot Nature Reserve and Monkeycot Nature Reserve.
- Vegetation mapping is a key tool in managing parks, in particular understanding the appropriate fire regimes to conserve biodiversity (see Section 4.2). The majority of the 32,152 hectares of these parks were mapped as part of the comprehensive assessments undertaken in the lead up to the Lower North East Regional Forest Agreement. However, an 1100-hectare area of Curracabundi National Park was not mapped and there are only limited data on the plant communities present in this area.
- At least 700 hectares of Curracabundi National Park and a small part of the neighbouring state conservation area were cleared or partially cleared, mostly by ringbarking, while under their former tenure to enhance farming/grazing opportunities. Extensive areas of dead ringbarked timber remain.
- In other parts of the parks, structural diversity and habitat values have been affected by timber harvesting, timber stand improvement and the regular practice of frequent burning for 'green pick', which has resulted in some areas having a simplified understorey.

**Desired outcomes**

- Negative impacts on threatened species and ecological communities are minimised.
- The habitat and populations of all significant plant species are protected and maintained.
- Structural diversity and habitat values are maintained and restored in degraded areas.

**Management response**

3.3.1 Implement relevant strategies in the *Biodiversity Conservation Program* or any recovery plans.

3.3.2 Undertake or encourage surveys of the parks to improve knowledge of significant plants (including their ecology and habitat requirements) and ecological communities. Priority will be given to identifying, mapping and recording significant plant species and ecological communities.

3.3.3 Monitor the natural regeneration of previously disturbed areas and assist revegetation where needed.

## 3.4 Native animals

The combined area of the parks covered by this plan is large, relatively undisturbed and highly diverse, and offers a range of habitats for native animals. The Curracabundi Wilderness is known to support 240 native vertebrate species, including 152 birds, 28 reptiles, 26 non-flying mammals, 19 bats and 14 frogs (DECCW 2010a).

These parks support some of Australia's most iconic and endangered species, including the brush-tailed rock-wallaby, koala (*Phascolarctos cinereus*) and spotted-tailed quoll (*Dasyurus maculatus*). Table 2 lists threatened species known or predicted to occur in the parks.

**Table 2: Threatened animal species recorded or predicted to occur in the parks**

| Common name | Scientific name | BC Act status [1] | EPBC Act status [1] | Park(s) where recorded |
|---|---|---|---|---|
| **Fish** | | | | |
| Purple spotted gudgeon | *Mogurnda adspersa* | E [2] | | Predicted to occur |
| **Amphibians** | | | | |
| Booroolong frog | *Litoria booroolongensis* | E | E | Curracabundi NP |
| Davies' tree frog | *Litoria daviesae* | V | | Curracabundi NP |
| Stuttering frog | *Mixophyes balbus* | E | V | Bretti Nature Reserve |
| **Reptiles** | | | | |
| Manning River helmeted turtle | *Myuchelys purvisi* | E | | Curracabundi NP |
| Stephens' banded snake | *Hoplocephalus stephensii* | V | | Curracabundi NP |
| **Birds** | | | | |
| Barking owl | *Ninox connivens* | V | | Predicted to occur |
| Black falcon | *Falco subniger* | V | | Curracabundi NP |
| Brown treecreeper | *Climacteris picumnus victoriae* | V | | Predicted to occur |
| Diamond firetail | *Stagonopleura guttata* | V | | Woko NP |
| Dusky woodswallow | *Artamus cyanopterus cyanopterus* | V | | Bretti NR, Curracabundi NP, Woko NP |
| Flame robin | *Petroica phoenicea* | V | | Curracabundi NP |
| Glossy black-cockatoo | *Calyptorhynchus lathami* | V | | Curracabundi NP, Woko NP |
| Grey-crowned babbler | *Pomatostomus temporalis temporalis* | V | | Bretti Nature Reserve |
| Little eagle | *Hieraaetus morphnoides* | V | | Woko NP |
| Masked owl | *Tyto novaehollandiae* | V | | Bretti NR, Curracabundi NP, Woko NP |
| Powerful owl | *Ninox strenua* | V | | Bretti NR, Woko NP |
| Scarlet robin | *Petroica boodang* | V | | Curracabundi NP, Woko NP |
| Sooty owl | *Tyto tenebricosa* | V | | Coneac State Conservation Area, Monkeycot NR, Woko NP |
| Speckled warbler | *Chthonicola sagittata* | V | | Curracabundi NP, Monkeycot NR, Woko NP |
| Varied sittella | *Daphoenositta chrysoptera* | V | | Curracabundi NP, Monkeycot NR, Woko NP |

| Common name | Scientific name | BC Act status [1] | EPBC Act status [1] | Park(s) where recorded |
|---|---|---|---|---|
| White-bellied sea-eagle | *Haliaeetus leucogaster* | V | | Curracabundi NP, Woko NP |
| Wompoo fruit-dove | *Ptilinopus magnificus* | V | | Woko NP |
| **Mammals** | | | | |
| Brush-tailed rock-wallaby | *Petrogale penicillata* | E | V | Curracabundi NP, Woko NP, Mernot NR, Monkeycot NR |
| Brush-tailed phascogale | *Phascogale tapoatafa* | V | | Curracabundi NP |
| Eastern bentwing-bat | *Miniopterus schreibersii oceanensis* | V | | Curracabundi NP |
| Eastern false pipistrelle | *Falsistrellus tasmaniensis* | V | | Woko NP |
| Eastern freetail-bat | *Mormopterus norfolkensis* | V | | Predicted to occur |
| Golden-tipped bat | *Kerivoula papuensis* | V | | Curracabundi NP, Woko NP |
| Greater broad-nosed bat | *Scoteanax rueppellii* | V | | Curracabundi NP |
| Greater glider | *Petauroides volans* | | V | Bretti NR, Coneac SCA, Woko NP |
| Grey-headed flying-fox | *Pteropus poliocephalus* | V | V | Woko NP |
| Koala | *Phascolarctos cinereus* | V | V | Curracabundi NP, Woko NP |
| Little bentwing-bat | *Miniopterus australis* | V | | Curracabundi NP |
| Long-nosed potoroo | *Potorous tridactylus* | V | V | Curracabundi NP |
| New Holland mouse | *Pseudomys novaehollandiae* | | V | Curracabundi NP |
| Parma wallaby | *Macropus parma* | V | | Coneac SCA, Monkeycot NR, Curracabundi NP |
| Southern myotis | *Myotis macropus* | V | | Woko NP |
| Spotted-tailed quoll | *Dasyurus maculatus* | V | E | Bretti NR, Curracabundi NP, Monkeycot NR |
| Yellow-bellied glider | *Petaurus australis* | V | | Curracabundi NP, Woko NP |

[1] Status under Biodiversity Conservation Act and Environment Protection and Biodiversity Conservation Act: V = Vulnerable, E = Endangered.
[2] Listed as endangered under the NSW *Fisheries Management Act 1994*.

These parks form part of the 'Curracabundi Connection' of the Great Eastern Ranges. This is a corridor that could potentially link the western forests along the Liverpool Range with the parks along the Great Eastern Escarpment to the north and Barrington Tops to the south (G Howling, 2014, pers. comm.). They lie at the crossroads of six regional wildlife corridors that link a number of disparate habitat types and allow movement across the landscape for the brush-

tailed rock-wallaby, New Holland mouse, yellow-bellied glider, koala and common wombat (*Vombatus ursinus*) (Scotts 2003). Within these parks, these six corridors are:

- Mernot–Tuggolo which runs north to south linking Nowendoc National Park with Mernot State Forest, across the Barnard River
- Tuggolo which runs north to south between a suite of state forests and other wildlife corridors linking to Barrington Tops
- Barnard–Glenrock which runs west to east along the Barnard River
- Giro–Woko–Monkeycot and Giro–Woko which run north to south linking Giro State Forest to Woko National Park (the former via Monkeycot Nature Reserve), with a subregional corridor providing a direct linkage between Bretti Nature Reserve and Woko National Park
- Giro–Bretti–Knorrit which is part of a link between Nowendoc National Park and Knorrit State Forest
- Bowman–Craven which links Coneac State Conservation Area to Barrington Tops National Park via Bowman and Barrington Tops state forests.

While extensive sections of wildlife corridors and key habitats are protected within the parks themselves, the broader corridors across the landscape improve the viability of the parks' wildlife populations. The Mernot–Tuggolo and Tuggolo corridors also provide an opportunity for altitudinal movement, which is important for adapting to climate change (see Section 4.3).

The parks covered by this plan provide extensive core habitat for the brush-tailed rock-wallaby in a region where it is otherwise fragmented. Mernot Ridge west from Monkeycot Bluff is one of 11 key sites in New South Wales where self-sustaining populations of the species are being managed. The north-facing rocky slopes of the ridge's escarpment provide the most extensive and some of the best areas of brush-tailed rock-wallaby habitat in the Hunter/Manning system (DECC 2008a).

The population of the Booroolong frog in the Barnard River is one of only two populations for the species known to be persisting along eastern-flowing streams (OEH 2012a). This species has undergone a severe decline in distribution, particularly in the Northern Tablelands.

As for threatened plant species, strategies for the recovery of threatened animal species and populations have been set out in a statewide *Biodiversity Conservation Program*, with priorities for implementation determined through the *Saving our Species* program.

Individual recovery plans are prepared for nationally listed threatened species and some recovery plans were previously prepared for some species listed in New South Wales to consider management needs in more detail. To date, recovery plans have been prepared for yellow-bellied glider (NPWS 2003), the large forest owls (DEC 2006), brush-tailed rock-wallaby (DECC 2008a), koala (DECC 2008b) and Booroolong frog (OEH 2012a). A draft recovery plan has been prepared for the grey-headed flying-fox (DECCW 2009).

### Issues

- Apart from surveys in Woko National Park, there have been relatively few systematic fauna surveys in the parks. No systematic surveys have been conducted in Bretti Nature Reserve, Camels Hump Nature Reserve, Coneac State Conservation Area, Curracabundi State Conservation Area and Mernot Nature Reserve. However, some systematic surveys have been undertaken in state forests adjacent to these parks.
- Key threats to native animal species include fire (see Section 4.2), introduced species (see Section 4.1), and erosion and stream degradation (see Section 3.1). Protection of habitat and appropriate fire regimes are a major determinant of the distribution and

abundance of native animals in the parks. The habitat values in some parts of the parks have been degraded by previous land uses, and require rehabilitation (see Section 3.2).

**Desired outcomes**

- Negative impacts on threatened animal species are minimised.
- Knowledge of the presence, distribution and abundance of significant native animal species and their habitat is sufficient for management purposes.

**Management response**

3.4.1 Implement relevant actions set out in the *Biodiversity Conservation Program* or any recovery plans.

3.4.2 Undertake or encourage fauna surveys (both systematic and targeted for significant animal species that are likely to occur within these parks) to improve understanding and enhance management.

## 3.5 Aboriginal heritage

The land, water, plants and animals 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 and need to be managed in an integrated manner across the landscape.

The parks covered by this plan lie within a landscape that is part of the identity, spirituality, connection and resource base of the Aboriginal people of the Biripi and the Worimi nations. The area is thought to have been used for ceremonial purposes, food-gathering and trade on a seasonal basis by Aboriginal communities from the coastal plain, foothills and tablelands (Jack 2007b). The ceremonial use is reflected in the place name, Corroboree Flat, which is located on the Barnard River adjacent to Curracabundi National Park. As per other parts of the Manning, words from the Kattang/Gathang language were used as place names for a few locations in the parks, indicating a significant shared history with early settlers. These include Curricabark (*Garrgabak*, an upland valley with a very narrow outlet or forested narrow gully) and Curricabundi (*Garrgabandi*, mouth of a narrow gully) (Lissarrague 2010).

It is acknowledged that the landscape has significant cultural and spiritual values to local Aboriginal people. The area of the parks would have provided a wide variety of fruits and other edible or medicinal plants, as well as a range of animal species and other important natural resources. The Aboriginal people of the Manning used to move up onto the New England Tableland in the spring and summer months (Blomfield 1992) and the area may have provided suitable routes for this migration. In addition, the rugged landscape of the parks and other parts of the Upper Manning provided an important refuge for Aboriginal people when dispossessed from the floodplains and other areas more suited for agriculture and settlement by Europeans (Blomfield 1992).

Aboriginal sites are places with evidence of Aboriginal occupation or use, or that are related to other aspects of Aboriginal culture. They are important as evidence of Aboriginal history and as part of the culture of local Aboriginal people. Multiple campsites have been recorded on flat areas along the Barnard River and on the ridges in Curracabundi and Woko national parks. Shelter deposits with artefact scatters have also been found in overhangs among rocky outcrops in Curracabundi and Woko national parks, and there is some evidence of use of resources in the presence of modified trees.

While the NSW Government has legal responsibility for the protection of Aboriginal sites and places under the National Parks and Wildlife Act, it acknowledges the right of Aboriginal people to make decisions about their own heritage. As such, Aboriginal communities will be consulted and involved in the management of Aboriginal sites, places and related issues, and the promotion and presentation of Aboriginal culture and history.

**Issues**

- NPWS has limited understanding of the significance of the parks to the local Aboriginal communities.
- Wildfire poses a risk to culturally modified trees. These trees are identified in the fire management strategies and prioritised for protection measures (see Section 4.2).

**Desired outcomes**

- Aboriginal sites and cultural values are identified, protected and managed with the involvement of the relevant members of the Aboriginal community.
- Understanding of the Aboriginal values of the park is improved and, where appropriate, interpreted.

**Management response**

3.5.1 Continue to consult and involve the Nungaroo, Purfleet-Taree and Forster local Aboriginal land councils, and other relevant Aboriginal community Elders in the management of Aboriginal sites, places and values, including interpretation of places or values.

3.5.2 Undertake an archaeological survey and cultural assessment before commencing any works with the potential to impact on Aboriginal sites or values.

3.5.3 Encourage further research into the Aboriginal heritage values of these parks in consultation with the relevant Aboriginal community members and organisations.

3.5.4 Provide opportunities for Aboriginal people to access Country, to maintain, renew or develop cultural practices and associations.

3.5.5 Permit cultural resource use in accordance with NPWS policy and legislation.

## 3.6 Shared heritage

Heritage places and landscapes are made up of living stories as well as connections to the past which can include natural resources, objects, customs and traditions that individuals and communities have inherited and wish to conserve for current and future generations. Cultural heritage comprises places and items that may have historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance. NPWS conserves the significant heritage features of NSW parks and reserves.

The parks covered by this plan have a rich European history which is dominated by the development of the Barnard River Valley, which dates from the 1860s when the area was opened up for grazing by the Australian Agricultural Company (Jack 2007b).

The area that is now Curracabundi National Park was previously six separate grazing properties. Each of these former leases has existing structures and other agricultural infrastructure in varying states of repair.

Karamea Homestead (located in the east of Curracabundi National Park) was established as an outstation of the Australian Agricultural Company in the 1880s. The foundations of the original

dwelling on the station date to 1890 and the current homestead was constructed in 1914. There are two graves in the vicinity of the homestead which date from the early 1900s, one of which is unmarked. Both gravesites are maintained, and the marked grave is still visited by the family (Jack 2007a). The property around Karamea Homestead has local historic and aesthetic significance because it demonstrates 19th and early 20th century responses to grazing and settling the upper reaches of the Barnard River (Jack 2007a).

Following the property's purchase by NPWS in 2006, Karamea Homestead underwent significant restoration works aimed at ensuring the long-term survival of one of the key historic buildings in the park as a living link to the area's rich agricultural history. These restoration works have reduced maintenance liabilities and have made Karamea Homestead suitable for adaptive re-use for short-term holiday accommodation that will allow park visitors to experience one of these remote former grazing properties while contributing to the long-term conservation of the homestead and its gardens (see Section 3.6).

Monkeycot House is located in the central part of the park, on the southern bank of the Barnard River to the west of Monkeycot Nature Reserve. The original Monkeycot House was built around 1915, though the current dwelling was built in the 1930s or 1940s. From the late 1960s it was principally used by stockmen as a camp when undertaking stock work. It is in a state of considerable disrepair and has been significantly impacted by termites. It is marked as a ruin on Figure 1.

Lea Hurst Cottage, located in the west of the main section of Curracabundi National Park north-east of Mernot Nature Reserve, is a simple timber structure which was built during the 1920s and continued to be used by the same family until NPWS acquired the property in 2003. Termite damage is evident throughout. It is also marked as a ruin on Figure 1.

Located on the south-west edge of the main part of Curracabundi National Park, Rock Glen Depot is the most modern of the buildings, being constructed in 1964. Works undertaken since its purchase by NPWS have made it suitable for use by NPWS staff as a remote depot and base to support park management activities (see Section 5.1).

A heritage action statement has been prepared for the homestead/cottage curtilages at Karamea, Monkeycot, Lee Hurst and Rock Glen to guide future management (McDougal & Vines Consultants 2009).

Construction of a dwelling on Mooney Ground in the south of Curracabundi National Park commenced in the early 1990s. It was never finished. The structures associated with these works comprise an interestingly formed concrete building as the main house, an innovative small-scale hydro-electric powerhouse and attached smaller buildings. However, the structures are in a poor state of repair, affected by termite damage and suffer from long-term deterioration. They are marked as a ruin on Figure 1.

The Kalungra portion of Curracabundi National Park also includes an unfinished house and associated plantings in a clearing along the Barnard River. It, too, is relatively recent, has no heritage value and will be allowed to degrade under natural processes. It is marked as a ruin on Figure 1. A hut in this section of the park (Kalungra Hut), situated close to Cowsby Road, is in good condition. It also lacks any heritage value. It is used as a base for management (see Section 5.1) but may also be suitable for overnight use by visitors (see Section 3.6).

The other parks covered by this plan do not have evidence of previous settlement by graziers or farmers, and instead reflect a long history of natural resource management, specifically timber-getting and forest grazing, under their previous Crown land and state forest tenures. Their rugged steep terrain assisted to prevent widespread clearing across the landscape, thereby conserving the natural values of these parks.

**Issues**

- Four dwellings were built along the banks of the Barnard River in Curracabundi National Park prior to its reservation. Two of these (Karamea and Rock Glen) have undergone substantial improvement. The others (Lea Hurst Cottage and Monkeycot House) have declined into a state of disrepair and are managed as ruins.
- The unfinished houses at Mooney Ground and Kalungra are considered hazardous due to the incomplete nature of the structures and their general state of disrepair.
- Wildfires pose a risk to the historic structures in the parks. These are protected through asset protection zones identified in the fire management strategies (see Section 4.2). However, some structures on the edge of the Karamea curtilage were destroyed by fire in 2017.

**Desired outcomes**

- Significant historic features are appropriately conserved, managed and recorded.
- Understanding of the cultural values in the Mooney Ground and Kalungra portions of Curracabundi National Park is improved.

**Management response**

3.6.1 Undertake an archaeological survey and cultural assessment before commencing any works with the potential to impact on historic sites and places.

3.6.2 Implement the heritage action statements for the homestead precincts within Curracabundi National Park.

3.6.3 Undertake a heritage assessment of historical sites within these parks, including the Mooney Ground and Kalungra structures, and make safe and manage in accordance with their assessed level of significance.

## 3.7 Visitor use

This plan covers a large area encompassing a number of separate parks, characterised by very limited public access, very steep and remote terrain, and almost no history of recreational use apart from the long-standing Woko Camping Area. Declared wilderness covers 62.5% of these parks. In the region surrounding these parks, visitor opportunities are provided in a number of easily visited and high-use parks, including Copeland Tops State Conservation Area and Barrington Tops National Park to the south.

**Access**

Historically, the parks covered by this plan have received comparatively low levels of recreational use, principally because the majority of access roads cross private properties or leasehold lands, and are gated to restrict public access. The only public roads providing access to these parks are:

- Thunderbolts Way — a sealed road linking Walcha and Gloucester, which provides direct access to part of the boundary of Bretti Nature Reserve
- Cowsby Road — a two-wheel drive gravel road that turns off from Nundle Forest Way before traversing the Kalungra portion of Curracabundi National Park to access private property and state forest held under lease
- Curricabark Road and Flood Detour Road — unsealed two-wheel drive roads providing access to Woko Camping Area which, when combined with the section of Flood Detour Road in the park, form a short loop.

### Bushwalking

Established walking tracks in these parks are confined to the Woko Camping Area precinct. There are two short walks here:

- Brush Turkey Track — an easy one-kilometre loop walk through dry rainforest, about 30 minutes return.
- Cliff Face Track — a steep four-kilometre circuit which branches off from the Brush Turkey Track, and passes through dry rainforest, pockets of subtropical rainforest and wet sclerophyll forest, and ends in dry sclerophyll forest/woodland.

In addition to these formed tracks, these parks present a number of excellent opportunities for long distance remote walks in a unique landscape. The management trails (as shown on Figure 1) provide opportunities for long walks, although the fact that these generally terminate at a park boundary with private property presents a significant constraint to promoting them as walking routes. It may, however, be appropriate to promote off-track walking routes such as Karamea to Monkeycot Bluff, the ridge top and escarpment lines in Woko National Park, or other scenic topographical features.

### Fishing

The rivers and streams in the Curracabundi Parks provide habitat for Australian bass (*Macquaria novemaculeata*), and Gulf Creek in the Kalungra portion of Curracabundi National Park forms part of the Barnard River general trout stream (DPI 2014). All fishing activities in NSW waters are regulated under *Fisheries Management Act 1994*. Both commercial and recreational fishing must be in accordance with licence conditions specified by the Department of Primary Industries (DPI Fisheries). Access to potential fishing spots in these parks is, however, highly constrained and remote bush walking is the only means of accessing most fishing spots. Visitors to Karamea and the Woko Camping Area may fish in the nearby Barnard River and Manning River, respectively.

### Horse riding and cycling

Horse riding is a popular recreational activity that has cultural associations for many Australians. The NPWS *Strategic Directions for Horse Riding in NSW National Parks* (OEH 2012d) provides a framework to improve riding opportunities.

The Bicentennial National Trail is a 5300-kilometre continuous route along eastern Australia which is available for various forms of non-motorised transport, including walkers, horse riders and cyclists (BNT 1991). The formal route of the Trail traverses the eastern part of Curracabundi National Park and the north-west corner of Woko National Park between Karamea and Drovers Gate (see Figures 1 and 2).

Access to the section of the Trail through Curracabundi National Park, however, is dependent on a number of local adjoining landholders because the route of the Trail crosses neighbouring private properties to the north and south of the park. Since 1995 some landholders in the Curricabark area have refused access, due to ongoing concerns. Hence, the Bicentennial National Trail through Curracabundi National Park is not currently used. An alternative route exists to the north of Nowendoc National Park via Nundle. Known as the ‘Nundle Detour’, this alternative route bypasses the Curracabundi area and is currently recommended for users of the Trail (BNT 2013).

NPWS has negotiated an arrangement with the landholder to the north of Curracabundi National Park to provide access to members of the public who have booked accommodation at Karamea Homestead or have notified their intention to use the Bicentennial National Trail within the parks. This arrangement will not however re-establish the Trail as a through route, as there will remain access issues south of the parks. Resolution of these other access issues is the

responsibility of the Bicentennial National Trail Organisation and NSW Department of Industry (Lands).

Despite its current lack of use, the route of the Bicentennial National Trail was excluded from the declared wilderness so as to provide for its future use. Management and use of the Trail where it traverses national parks is subject to the memorandum of understanding between the Bicentennial National Trail Board and NPWS and would also need to be consistent with this plan of management and NPWS policies.

NPWS is committed to establishing a program of five wilderness horse riding pilots across New South Wales, with one of these in the Curracabundi Wilderness (OEH 2012d). As part of this pilot program, horse riding will be trialled along certain management trails in Curracabundi National Park as indicated on Figure 2.

The pilot will be undertaken for a period of up to 2 years in conjunction with a monitoring framework, and will only be accessible to riders using the Bicentennial National Trail or staying at Karamea. At the conclusion of the pilot, an assessment of the outcomes of the pilot will be undertaken. Decisions about the continuation of horse riding in the wilderness area following the end of the trial will be undertaken in consultation with the National Parks and Wildlife Advisory Council and will be subject to ongoing agreement to allow access across neighbouring land.

Due to the history of lack of public access to suitable trails, there are very few routes that are currently used for cycling. Cycling currently only occurs in Woko Camping Area and along the Flood Detour Road loop. In line with NPWS policy and the *Sustainable Mountain Biking Strategy* (OEH 2011a), and following a consideration of potential impacts on the values of these parks, cycling is allowed on the Bicentennial National Trail and adjoining management trails including Mernot Creek Trail through Monkeycot Nature Reserve, but to protect the neighbouring Watchimbark Nature Reserve cycling is not allowed beyond the Mooney Ground ruin.

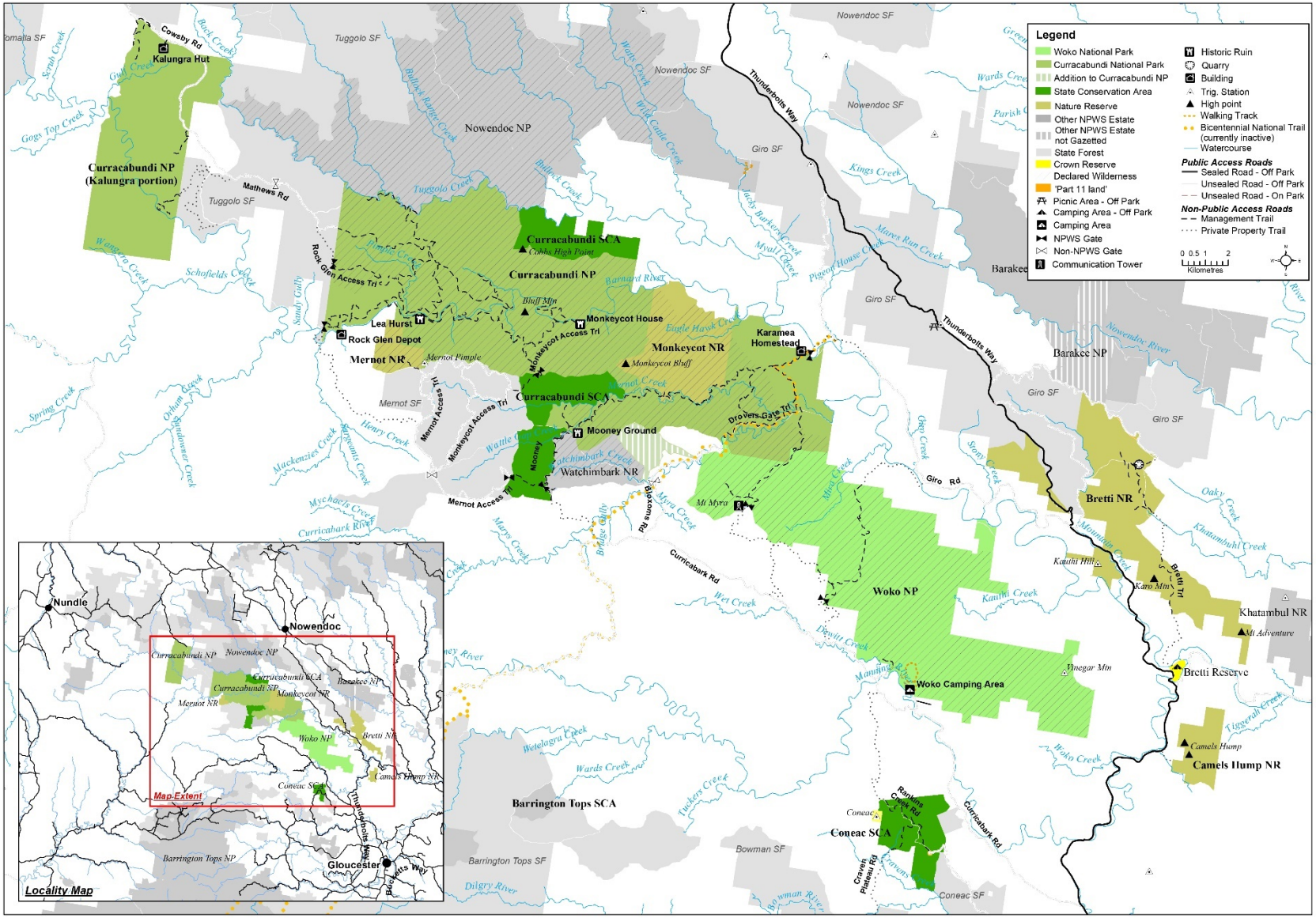


**Figure 1 Curracabundi Parks Map**

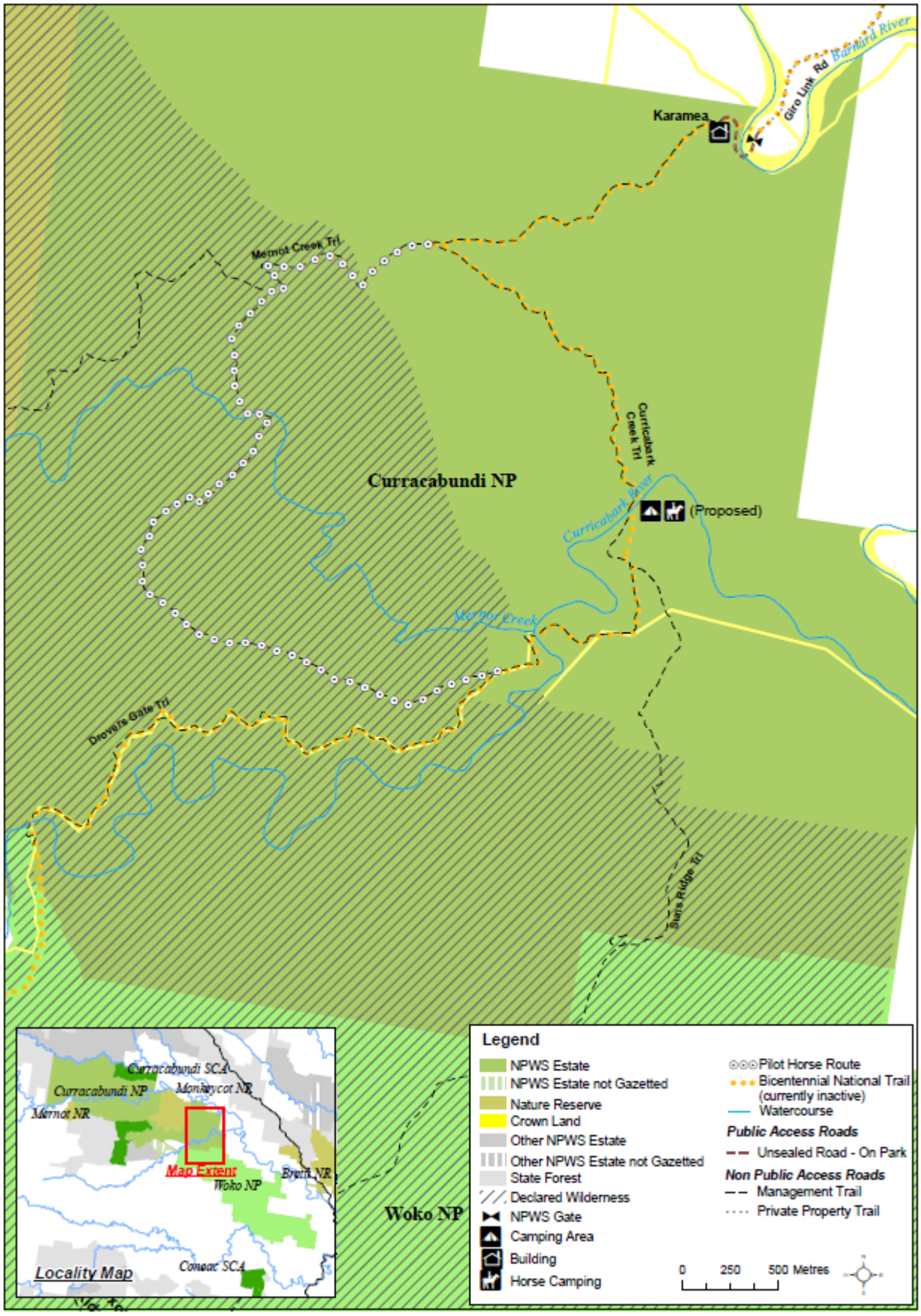


**Figure 2 Route for wilderness horse riding pilot**

### Camping and accommodation

Woko Camping Area is the main visitor destination in these parks and the only existing camping area in these parks. It is popular with family groups and caters to a range of vehicle-based and camper trailer camping. It is well patronised during the warmer summer months and has a high frequency of repeat users. At other times of the year, it is increasingly popular with grey nomads. The main facilities in the camping area are gas barbecues, several small shelters and toilets. Campsites are undefined.

Camping is available at several nearby locations outside these parks. A few kilometres to the south of Bretti Nature Reserve, camping is allowed on Bretti Reserve (R89537, a Crown reserve for public recreation), close to the junction of the Barnard and Manning rivers. To the north, Nowendoc and Mummel Gulf national parks provide camping areas (some of which are only accessible by four-wheel drive vehicles). A picnic area is located on Thunderbolts Way in Giro State Forest north of Bretti Nature Reserve (see Figure 1).

Under this plan, it is proposed to establish another designated camping area on the southern side of Curricabark River in Curracabundi National Park (see Figure 2). This is located next to ruined stockyards. It will be promoted as the only site in the park where camping with horses will be allowed.

For those bushwalking or cycling in the Curracabundi Wilderness, remote bush camping is allowed at locations that are more than one kilometre from the Woko Camping Area and Karamea Homestead, and at least 200 metres from a public or park road or the parks' boundary.

Karamea Homestead, on the Bicentennial National Trail, provides the only possible public access point into Curracabundi National Park. Following restoration works (see Section 3.5), the four-bedroom homestead is operating as a short-term holiday destination, providing overnight self-contained accommodation to small groups. With NPWS consent, overflow camping may be used to accommodate larger groups. Karamea is well placed and structured to provide a venue for other events and functions (such as artistic, health/wellbeing and corporate training retreats) and to provide a base for education and research activities. Guests staying at Karamea Homestead with horses will need to establish temporary yards in which to keep their horses overnight.

In the Kalungra portion of Curracabundi National Park, Kalungra Hut may also be suitable for overnight visitation and as a base for self-reliant low-impact activities in that part of the park. This hut will also be used as a remote depot by NPWS (see Section 5.1).

### Group and commercial activities

Group activities can provide opportunities for people who would otherwise not be able to experience these parks and can promote environmental understanding and support for conservation. Large groups can, however, have an environmental impact and can impact other visitors' feelings of solitude and restrict opportunities for independent visitors.

Any non-commercial large-scale organised group activities may require consent under the National Parks and Wildlife Regulation. Organised group activities of a commercial nature all require licensing under the National Parks and Wildlife Act. All activities must be compatible with the natural and cultural heritage values of the parks. Applications will be assessed in accordance with relevant NPWS policies and procedures.

The need to retain wilderness in a substantially unmodified state and to provide opportunities for solitude and self-reliant recreation directs the management approaches that can be applied for group and commercial activities in the wilderness area of these parks. Commercial recreation activities such as bushwalking may be suitable but will be subject to licensing and licence

conditions, including a maximum group size of 15 people inclusive of guides. Non-commercial groups larger than 15 people will not be allowed in the wilderness and will require consent in other parts of these parks.

Limits will also apply to horse riding groups within these parks consistent with the approach taken for the Bicentennial National Trail in other national parks in northern New South Wales, such as Mummel Gulf and Oxley Wild Rivers national parks. Accordingly, the maximum size of a horse riding group in the parks covered by this plan shall be 20 horses (including pack animals).

### Information and interpretation

Visitor information is an important aspect of park management in that it enhances visitor experience and understanding while promoting appropriate use. Interpretive and promotional themes particularly relevant to these parks include Aboriginal cultural values, past history and the diversity of native plants and animals. Fixed interpretive facilities are provided at Woko Camping Area. As part of their licensing conditions, commercial tour operators will be required to interpret the values of the park they are visiting to their clients.

### Issues

- Visitor access into the majority of these parks is constrained by roads and trails that cross private property and leasehold land. As such, there are very few visitor entry points into these parks.
- Short-term holiday accommodation is provided at Karamea Homestead. The homestead is suitable for family stays, organised group activities, a venue for functions and events, or retreat-type groups (such as artists or nature enthusiasts). However, vehicle access to the homestead from Giro Road is via an informal trail (known as the Giro Link Road) that crosses private property and does not coincide with a public road reserve. Hence ongoing public use of the homestead will be dependent upon either continuation of the current access agreement or securing permanent legal access.
- Kalungra Hut may be suitable for low-key overnight visitation, but this would be subject to further investigation.
- With the resolution of public access to the boundary of Curracabundi National Park in the vicinity of Karamea Homestead, these parks have untapped potential to provide opportunities for cycling and horse riding activities, including a 2-year trial of horse riding within declared wilderness.
- Visitors to Woko Camping Area utilise a diversity of camping accommodation options ranging from tents, to caravans, campervans and light buses. There is an increasing trend for visitors to use generators and water pumps. It is recognised that technological advancements in this type of equipment have greatly reduced noise levels, thereby reducing the objections and conflict associated with use of older models. However, the associated equipment that tends to be powered by generators (e.g. sound systems) may impact on other users' peace and enjoyment.
- Aside from the Brush Turkey and Cliff Face walking tracks at Woko Camping Area, there are no other designated walking tracks in these parks.

### Desired outcomes

- Visitor access is appropriate and ecologically sustainable.
- Current camping capacity at Woko National Park is maintained.
- Visitors are aware of these parks' values and recreational opportunities, and can easily find their way to facilities.

- Karamea Homestead is established as a short-term holiday destination and venue.

**Management response**

3.7.1 Continue to seek arrangements to provide legal public access to Karamea in perpetuity.

3.7.2 Maintain short access roads in the vicinity of Woko Camping Area and Karamea Homestead. No other public vehicle access will be provided within the parks covered by this plan.

3.7.3 Subject to ongoing access arrangements over neighbouring property, allow horse riding along the Bicentennial National Trail.

3.7.4 Signpost and otherwise promote (through NPWS website etc.) that camping overnight with horses within the parks is only allowed in the designated camping area (see Figure 2) next to the stockyard ruins on the southern side of the Curricabark River, and that all horses and other pack animals need to be yarded and fed away from the river. Overnight yarding of horses is allowed at Karamea for guests staying at the homestead.

3.7.5 Permit recreational horse riding within the wilderness area on the route shown on Figure 2, initially for a trial period of 2 years commencing on a date to be publicly notified and in conjunction with a monitoring program. Use of this route will be limited to riders using the Bicentennial National Trail and/or staying at Karamea Homestead. Ongoing use of this route for horse riding will be subject to the outcomes of the monitoring program and securing ongoing public access to this part of the park.

3.7.6 Maintain existing walking tracks in the vicinity of Woko Camping Area.

3.7.7 Investigate and promote additional walking routes to key features within these parks.

3.7.8 Allow cycling within Curracabundi National Park, Monkeycot Nature Reserve and Woko National Park along park roads, management trails and the Bicentennial National Trail.

3.7.9 Maintain existing camping opportunities at Woko National Park. No additional camping areas will be developed at Woko National Park.

3.7.10 Identify, signpost and otherwise promote (through NPWS website etc.) designated camping sites within Woko Camping Area where generators may be used. Generator use will be subject to NPWS policy and may be terminated if there is ongoing evidence of conflict with other visitors' peace and enjoyment.

3.7.11 Promote Karamea Homestead as a short-term holiday option for families, small groups, or as a venue for low-key events/functions or theme-based retreats. Management of the letting of Karamea for short-term accommodation may include lease or licence arrangements.

3.7.12 Investigate and, if appropriate, upgrade Kalungra Hut and make it available for overnight visitation.

3.7.13 Maintain interpretation facilities at Woko Camping Area.

3.7.14 Maintain directional signage on council roads to direct visitors to Karamea Homestead.

# 4. Threats

## 4.1 Pests

Pest species are plants and animals that have negative environmental, economic and social impacts. They are most commonly introduced species, but can include native species not endemic to a location. Pests can have impacts across the range of park values, including impacts on biodiversity, cultural heritage, catchment and scenic values.

The *Biosecurity Act 2015* and its regulations provide specific legal requirements for the response, management and control of biosecurity risks, including weeds and pest animals. These requirements apply equally to public and privately owned land. Under this framework Local Land Services (LLS) has prepared regional strategic management plans for each of its 11 regions, including Hunter and North West LLS regional weed plans (Hunter LLS 2017; North West LLS 2017) and regional pest animal plans (Hunter LLS 2018; North West LLS 2018).

The LLS plans identify priority weeds and pest animals in each of the regions, plus the appropriate management response for the region (i.e. prevention/alert, eradication, containment or asset protection).

NPWS prepares regional pest management strategies which identify the operations and control actions undertaken by NPWS to meet the priorities from regional strategic pest and weed management plans. This also includes other important programs such as the *Biodiversity Conservation Program* (see Sections 3.2 and 3.3). The overriding objective of the NPWS regional pest management strategies is to minimise adverse impacts of introduced species on biodiversity and other park and community values while complying with legislative responsibilities.

The pest species and priority programs for the parks covered by this plan are identified in the NPWS pest management strategies for the Lower North Coast and Northern Tablelands regions (OEH 2012b, 2012c) and listed in Table 3. The strategies also identify where other site- or pest-specific plans or strategies need to be developed to provide a more detailed approach. The strategies will be regularly updated. Reactive programs may also be undertaken in cooperation with neighbouring land managers, in response to emerging issues.

Pest species that are also key threatening processes may be managed under the *Biodiversity Conservation Program* where it includes strategies for key threatening processes. The *Saving our Species* program has developed targeted strategies for managing key threatening processes using the best available information to minimise current and future impacts of key threatening processes on priority biodiversity values, including threatened species and ecological integrity.

### Weeds

Principal weeds of concern in these parks include lantana, blackberry, moth vine, climbing asparagus and cape ivy. Control programs targeting these invasive species have been in place for the past several years.

The invasion and establishment of exotic vines and scramblers; the loss and degradation of native plant and animal habitat by invasion of escaped garden plants; and the invasion, establishment and spread of lantana are listed as key threatening processes under the Biodiversity Conservation Act (NSW SC 2006a, 2006b, 2011a).

### Pest animals

Key threatening processes relating to pest animals known to occur within these parks are:

- predation by the European red fox (NSW SC 1998; DoE 2009)
- predation and hybridisation by feral dogs (NSW SC 2009)
- predation by feral cats (NSW SC 2000b; DoE 2009)
- herbivory and environmental degradation caused by feral deer (NSW SC 2004b)
- predation, habitat degradation, competition and disease transmission by feral pigs (NSW SC 2004c; TSSC 2001b)
- competition and grazing by feral European rabbits (NSW SC 2002a; DoE 2009)
- competition and habitat degradation by feral goats (NSW SC 2004a; DoE 2009).

**Table 3: Weeds and pest animals recorded in these parks**

| Common name | Scientific name | Comment |
|---|---|---|
| **Weeds** | | |
| Blackberry [1, 2] | *Rubus fruticosus* agg. | Isolated patches in Curracabundi NP |
| Cape ivy | *Delairea odorata* | Isolated populations in Woko NP |
| Climbing asparagus [1, 2] | *Asparagus plumosus* | Isolated populations around Karamea Homestead and Monkeycot House in Curracabundi NP |
| Crofton weed [3] | *Ageratina adenophora* | Widespread across the landscape, particularly in disturbed areas and wet gullies |
| Blue periwinkle [3, 4] | *Vinca major* | Scattered populations along Barnard River in Curracabundi NP |
| Broad-leaf privet | *Ligustrum lucidum* | Scattered along Barnard River in Curracabundi NP |
| Lantana [1, 2] | *Lantana camara* | Widespread across the landscape, particularly in disturbed areas |
| Mistflower [3] | *Ageratina riparia* | Widespread along trails and creeks in Curracabundi NP |
| Moth vine [3] | *Araujia sericifera* | Along Manning River in Woko NP. Along Tuggolo Creek and Barnard River, in Curracabundi NP including in Kalungra portion |
| Paterson's curse [5] | *Echium plantagineum* | Along Barnard River in Curracabundi NP (Kalungra portion) |
| Pepper tree [3] | *Schinus* spp. | Along Barnard River system in Curracabundi NP |
| Prickly pear [1, 2] | *Opuntia spp.* | Isolated outcrops confined to Curracabundi and Woko NPs |
| Saint John's wort [3, 6] | *Hypericum perforatum* | In central and Karamea portions of Curracabundi NP, in areas of open grassland |
| Spiny burr grass | *Cenchrus* spp. | Significant infestation in central Curracabundi NP has been controlled |
| Tree of heaven [3] | *Ailanthus altissima* | Along Barnard River in Curracabundi NP (Kalungra portion) |
| **Pest animals** | | |
| Cat [7] | *Felis catus* | Scattered populations throughout parks |
| European red fox [7] | *Vulpes vulpes* | Scattered populations throughout parks |
| Feral cattle | *Bos taurus* | Isolated groups of animals occur in Curracabundi NP |

| Common name | Scientific name | Comment |
|---|---|---|
| Feral horse [7] | *Equus caballus* | A small population occurs in Tuggolo Creek and Kalungra portions of Curracabundi NP |
| Feral pig [7] | *Sus scrofa* | Scattered populations throughout parks |
| Goat [7] | *Capra hircus* | Small groups occur in the rocky escarpments of Mernot and Monkeycot NRs, Curracabundi NP and SCA |
| Rabbit [7] | *Oryctolagus cuniculus* | Isolated populations restricted to small areas |
| Red deer[7] | *Cervus elaphus* | Isolated populations in Curracabundi NP |
| Wild dogs [7] | *Canis lupus* subspp. | Scattered populations throughout parks |

Notes:
[1] Weed of National Significance.
[2] State level priority weed under the Biosecurity Act.
[3] Identified as a species of additional concern in the Hunter LLS region (Hunter LLS 2017).
[4] Identified as a key emerging weed in the North West LLS region (North West LLS 2017).
[5] Identified as a regional-level priority weed.
[6] Identified as a species of concern in the North West LLS region (North West LLS 2017).
[7] Regional priority pest animal (North West LLS 2018)

The NSW *Threat Abatement Plan for Predation by the Red Fox* was initiated in 2001 (and revised in 2010) with the primary objective of establishing long-term control programs at priority sites across New South Wales to protect threatened species and populations of native animals (OEH 2011b). One of these priority sites occurs in these parks, where a program to control foxes to protect the brush-tailed rock-wallaby in Curracabundi and Woko national parks began in 2001. Fox control and monitoring continues to be undertaken in accordance with a site plan under the red fox threat abatement plan.

Goats occur in small numbers in the rocky escarpments on either side of the Barnard River in Curracabundi National Park, Mernot Nature Reserve and Monkeycot Nature Reserve, as well as in Curracabundi State Conservation Area, and also pose a threat to the brush-tailed rock-wallaby. Their numbers have been significantly reduced due to a combination of aerial and ground-based control programs.

Wild dogs — including dingos (*Canis lupus dingo*), feral domestic dogs (*Canis lupus familiaris*) and their hybrids — are known to occur within these parks. Wild dogs are a declared pest under the *Local Land Services Act 2013* due to their impacts on livestock. NPWS, therefore, has a statutory obligation to eradicate wild dogs in these parks. An annual wild dog control program is implemented in Curracabundi National Park in line with the Barnard River and Niangala wild dog management plans which were prepared in consultation with the former relevant livestock health and pest authorities.

### Desired outcomes

- The impacts of weeds and pest animals on native species, neighbouring properties and catchment values are minimised.
- Weeds and pest animals are controlled and where possible eliminated.
- Appropriate pest management techniques are implemented.

### Management response

4.1.1 Manage pest species in line with pest management strategies relevant to the parks, with priority given to the control of lantana, blackberry, moth vine, climbing asparagus, cape ivy, wild dogs and foxes.

4.1.2 Monitor priority weeds and their impacts. Treat any new outbreaks where possible.

4.1.3 Seek the cooperation of neighbours in implementing weed and pest animal control programs.

4.1.4 Continue to collaborate with relevant wild dog associations in carrying out wild dog control programs, with aerial baiting in the Rock Glen portion of Curracabundi National Park confined to the northern side of the Barnard River.

4.1.5 Continue to implement fox control and associated monitoring programs in accordance with the threat abatement plan to limit fox predation on the brush-tailed rock-wallaby in Curracabundi and Woko national parks.

4.1.6 Develop and implement a feral horse management plan to remove feral horses from these parks.

4.1.7 Continue and complete targeted program for feral cattle removal.

## 4.2 Fire

The primary objectives of NPWS fire management are to protect life, property, community assets and cultural heritage from the adverse impacts of fire, while also managing fire regimes in parks to maintain and enhance biodiversity. NPWS also assists in developing fire management practices that contribute to conserving biodiversity and cultural heritage across the landscape; and implements cooperative and coordinated fire management arrangements with other fire authorities, neighbours and the community (OEH 2013a).

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 Biodiversity Conservation Act.

There is a history of significant wildfires in these parks. Some extensive fires have been ignited by a single lightning strike and spread over large areas of park. Some originate on neighbouring properties and escape into the parks. Wildfires are known to have impacted some of the historic heritage values and are likely to have also impacted Aboriginal heritage values.

Most of Curracabundi National Park has traditionally had a high frequency of fire associated with previous grazing management, as fire is traditionally used to promote pasture availability and growth. Fire frequency has been reduced since reservation to allow for forest regeneration. However, the use of prescribed fire may be appropriate to maintain biodiversity, particularly in native grasslands and grassy woodlands.

Separate fire management strategies have been prepared for Bretti Nature Reserve (DEC 2005a), Curracabundi National Park, Mernot and Monkeycot nature reserves and Curracabundi State Conservation Area (DEC 2005b), and Woko National Park (DEC 2005c). These strategies identify key assets within and adjoining these parks (including sites of natural and cultural heritage value), fire management zones and fire control advantages such as management trails and water supply points. They also contain fire regime guidelines to conserve the parks' vegetation communities.

In accordance with these fire management strategies, hazard reduction works are conducted to protect assets such as the Woko Camping Area and the communications tower at Mount Myra (see Section 5.1), and also to provide strategic fire control advantage. The fire strategies also identify asset protection zones around the historic homestead precincts.

NPWS maintains cooperative arrangements with surrounding landowners and Rural Fire Service brigades and is actively involved in the Mid-Coast, Tamworth and Liverpool Range bush

fire management committees which cover these parks. Cooperative arrangements include fire planning, fuel management and information sharing. Hazard reduction programs, ecological burning proposals and fire trail works are submitted annually to the relevant bush fire management committee.

**Desired outcomes**

- Life, property and natural and cultural values are protected from fire.
- Fire regimes are appropriate for conservation of native plant and animal communities.
- Negative impacts of fire on natural and cultural heritage values are minimised.

**Management response**

4.2.1 Implement the fire management strategies for these parks, including hazard reduction activities and trail maintenance, and update as required.

4.2.2 Participate in the relevant bush fire management committees. Maintain cooperative arrangements with local Rural Fire Service brigades and fire control officers, Forestry Corporation of NSW and other neighbours in regard to fuel management and fire suppression.

4.2.3 Manage these parks to protect biodiversity in accordance with the identified fire regimes/thresholds identified in the fire management strategies.

4.2.4 Avoid the use of heavy machinery for fire suppression other than where appropriate on existing fire management trails or on dormant trails which remain clearly delineated. No new trails are to be constructed.

4.2.5 Avoid use of retardants in the more heavily timbered sections of these parks or in areas predicted to support *Grevillea granulifera*.

4.2.6 Rehabilitate areas disturbed by fire suppression activities as soon as practical after the fire.

4.2.7 Encourage further research into the ecological effects of fire in these parks, particularly the fire response of significant plant species.

## 4.3 Climate change

Human-induced climate change is listed as a key threatening process under the Biodiversity Conservation Act (NSW SC 2000a) and the associated loss of habitat is listed under the Environment Protection and Biodiversity Conservation Act (TSSC 2001a). The latest information on projected changes to climate are from the NSW and ACT Regional Climate Modelling (NARClim) project (OEH 2014a–c). The climate projections for 2020–39 are described as ‘near future’; and projections for 2060–79 are described as ‘far future’. The snapshot shown in Table 4 is for the NARClim Hunter Region, which covers about 90% of the Curracabundi Parks. Most of the Kalungra (western) portion of Curracabundi National Park lies in the NARClim New England North West region. A small part of Bretti Nature Reserve is in the NARClim North Coast Region.

**Table 4: Hunter Region climate change snapshot**

| **Projected temperature changes** | |
|---|---|
| Maximum temperatures are projected to increase in the near future by 0.4–1.0°C | Maximum temperatures are projected to increase in the far future by 1.6–2.6°C |

| | |
|---|---|
| **Projected temperature changes** | |
| Minimum temperatures are projected to increase in the near future by 0.5–0.9°C | Minimum temperatures are projected to increase in the far future by 1.5–2.5°C |
| The number of hot days (i.e. >35°C) will increase | The number of cold nights (i.e. <2°C) will decrease |
| **Projected rainfall changes** | |
| Rainfall is projected to decrease in spring and winter | Rainfall is projected to increase in autumn |
| **Projected Forest Fire Danger Index (FFDI) changes** | |
| Average fire weather is projected to increase in summer, spring and winter | Severe fire weather is projected to increase in summer and spring |

Source: OEH 2014a.

The projected increases in temperature, number of hot days and severe fire weather (OEH 2014a–c) are likely to influence bushfire frequency and intensity across the regions, with greater frequency of fires (DECCW 2010b). The projected decrease in spring and winter rainfall is likely to result in more severe short-term droughts and an earlier start to the fire season (DECCW 2010b). Higher rainfalls in autumn will lead to increased river run-off at this time of year, changes in flood behaviour and greater frequency of floods, and increased erosion (DECCW 2010b).

Climate change may significantly affect biodiversity by changing the size of populations and distribution of species, modifying species composition, and altering the geographical extent of habitats and ecosystems. Ecosystems most vulnerable to climate change include fragmented forests and woodlands, and it is predicted that high-altitude forests, such as found in the north-west of the Curracabundi Parks, are likely to contract (DECCW 2010b).

The full range of potential impacts of climate change on these parks is difficult to predict 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. It is likely that the parks' rainforest communities will be adversely affected by increased frequency of fires.

Programs to reduce the pressures arising from other threats, such as pollution, habitat fragmentation, invasive species and bushfires, may help reduce the severity of the effects of climate change. See Sections 3.1, 3.3, 4.1 and 4.2.

### Desired outcomes

- The effects of climate change on natural systems are minimised.

### Management response

4.3.1 Continue existing fire, pest and weed management programs to increase the parks' ability to cope with future disturbances, including climate change, and encourage research into appropriate indicators to monitor the effects of climate change.

# 5. Management operations and other uses

It is important to build and maintain appropriate infrastructure in order to achieve protection of park values, to provide opportunities for visitors and to facilitate management operations. Infrastructure may also be provided within these parks by other authorities or for other purposes authorised under the National Parks and Wildlife Act.

## 5.1 Management facilities and operations

### Management trails and access

The network of management trails in the parks, as shown on Figure 1, is maintained and regularly used for fire and pest species management, along with the few park roads listed in Section 3.7. In accordance with NPWS policy, vehicle use of management trails is available only for NPWS authorised activities, such as essential park management and emergency response.

Several of the management trails continue across private property and NPWS has informal arrangements in place with neighbouring landholders to use private property trails to enable access for management purposes. There is a need to formalise these arrangements to ensure NPWS has secure legal access in perpetuity for management purposes.

As discussed in Section 3.7, the trail which has historically been used to access the Karamea Homestead in Curracabundi National Park also traverses adjoining private property. NPWS has negotiated an access agreement over the trail to provide access for both management purposes and park visitors authorised to use the Bicentennial National Trail and/or stay at the Homestead (see Section 3.6).

### Quarries

There is an inactive quarry in Bretti Nature Reserve on Khatambuhl Creek Road (see Figure 1). This quarry contains a valuable gravel resource for maintaining roads and trails in these and other parks, and may be re-opened in the future to provide road-base material as required.

The site of another former quarry lies in Coneac State Conservation Area, on land that has been retained as Crown land under Part 11 of the National Parks and Wildlife Act (see Figure 1). While this quarry is overgrown, it may also need to be re-opened in the future to provide gravel. However, any potential re-opening would be subject to further investigation regarding the available resource and the economic feasibility of extracting it, as well as an environmental impact assessment and registration of the quarry with NSW Department of Planning, Industry and Environment (Resources and Geoscience).

### Remote depots

Rock Glen Depot, the house which was part of the former Lonsdale holding, is located in the south-west of the central portion of Curracabundi National Park and provides an important remote depot location for staff accommodation during field work. The depot is used to support park management operations which are scheduled over several days, such as pest control, trail maintenance and fire management. Rock Glen Depot is also used for overnight accommodation by others with NPWS consent (e.g. contractors undertaking works on behalf of NPWS and researchers/students).

Kalungra Hut, located off Cowsby Road in the Kalungra portion of Curracabundi National Park, is occasionally used as a remote depot and this use will continue. This hut may also be suitable for overnight use by visitors (see Section 3.7).

### Communication towers

A radio repeater tower is located on Mount Myra in Woko National Park. This communications tower serves as a key communication asset in the area and is currently utilised by NPWS and the Rural Fire Service to provide extensive and reliable coverage across NPWS parks and surrounding lands. Other agencies have expressed an interest in co-locating their radio transmitters on this tower. Any such co-location would be subject to a licence under the National Parks and Wildlife Act. Principal access to the tower is across neighbouring private property.

### Desired outcomes

- Legal, practical access is available to all sections of the parks covered by this plan.
- Management facilities and operations adequately serve management needs and have minimal impact.
- The existing quarry is available when required to supply gravel to maintain roads and management trails.
- Existing and proposed on-park infrastructure is managed to minimise impacts on natural and cultural values.

### Management response

5.1.1 Maintain the on-park roads and management trails shown on Figure 1. Other trails within these parks that are not shown on Figure 1 will be closed and allowed to revegetate.

5.1.2 Install signs and gates on management trails where necessary to prevent unauthorised access and trail damage.

5.1.3 Negotiate practical legal access in perpetuity where necessary to secure continued management access to the parks' boundaries and management trail network, including access into Karamea Homestead.

5.1.4 Register the Khatambahl Quarry with NSW Department of Planning, Industry and Environment (Resources and Geoscience) and prepare a quarry safety management plan.

5.1.5 Re-open Khatambahl Quarry when required as a source of gravel for maintaining the road and trail network within and leading to the parks.

5.1.6 If economically feasible, re-open the former quarry in Coneac State Conservation Area when required, subject to completion of an environmental impact assessment and registration requirements.

5.1.7 Maintain the Rock Glen Depot and Kalungra Hut for use as remote depots by NPWS. These facilities may be used by others subject to authorisation by NPWS and compliance with an accommodation agreement.

5.1.8 Maintain the communications tower at Mount Myra, and permit upgrades as required. Where appropriate, license use of the tower by others and facilitate the formalisation of their access to the tower.

## 5.2 Non-NPWS uses/operations

### Trig stations

The following trigonometrical stations are located on high points within these parks:

- Kauthi in Bretti Nature Reserve

- Vinegar and Myra in Woko National Park.

Mernot Trig is located on a small lot of Crown land surrounded by Curracabundi National Park, and Coneac Trig lies on a Crown reserve to the west of Coneac State Conservation Area.

An agreement between NPWS and the former Central Mapping Authority (now NSW Land Registry Services) provides continued right of access to the stations for survey purposes, subject to environmental impact assessment. Only the Myra and Coneac trigs are accessible by vehicle.

### Mining and mineral interests

Exploration for minerals and petroleum, as well as mining and petroleum production, are permissible uses within state conservation areas. Curracabundi and Coneac state conservation areas were covered by petroleum exploration licences at the time of the 5-yearly reviews (DECC 2008c; NPWS 2014). Both parks are considered prospective for petroleum and gas. Coneac State Conservation Area is also considered significantly prospective for gold, and a series of faults suggests some mineral prospectivity in Curracabundi State Conservation Area (NPWS 2014).

NSW Department of Planning, Industry and Environment (Resources and Geoscience) is the lead authority for mining and petroleum activities, including mineral exploration and mine site rehabilitation. NPWS works with Resources and Geoscience NSW to ensure that exploration and production proposals in state conservation areas comply with all statutory requirements, including any necessary environmental impact assessments and approvals. This cooperative approach is outlined in the memorandum of understanding between NPWS and Resources and Geoscience NSW.

Curracabundi and Coneac state conservation areas are environmentally sensitive areas containing significant ecosystems with a number of threatened species. It is recognised that the transport of mining infrastructure (e.g. heavy machinery) could introduce or spread weeds and pathogens such as the root-rot water mould, *Phytophthora cinnamomi*, into the area, which may have significant impacts on biodiversity. Soil erosion can also result from inappropriate use of heavy machinery. These issues will need to be explicitly considered in any environmental impact assessment for exploratory works within these parks.

There is no history of recreational fossicking within these parks. Fossicking can potentially impact the natural, cultural and other recreational values of the area, and is prohibited in these parks consistent with NPWS policy.

### Boundary encroachments and fencing

A combination of the steeply dissected terrain and complex cadastral boundaries has meant that, historically, there have been ‘give and take’ boundary arrangements with neighbours to improve the feasibility of establishing effective boundary fences. These arrangements require thorough investigation and documentation with the aim of developing written agreements with relevant neighbours.

Under the *Dividing Fences Act 1991* NPWS has no responsibility for constructing or maintaining boundary fencing. However, NPWS recognises the conservation benefits of excluding stock from parks, and encourages neighbours to construct and maintain boundary fences through providing assistance in line with the NPWS *Boundary Fencing Policy*.

### Access to private property and state forest

Baxters Ridge Road traverses in and out of Bretti Nature Reserve and Giro State Forest. An easement has been established over Baxters Ridge Road to allow continued access to private

property and to allow reciprocal access for NPWS and the Forestry Corporation of NSW over parts of the road which traverse private property. The corridor of this road within these parks does not form part of the reserved area of Bretti Nature Reserve and is Crown land held under Part 11 of the National Parks and Wildlife Act.

A short section of trail from the causeway at Karamea to the park boundary north of the homestead (approximately 200 metres) may also be used to access an area of private property located between the park and the Barnard River. Formalising this use however would be subject to securing a reciprocal easement for public access to Karamea (see Section 3.7).

Pets and other animals may be transported within vehicles using these roads/trails to access private property, in accordance with the NPW Regulation and NPWS *Pets Policy*. The vehicles must not stop and the animals must not leave the vehicle within the reserve.

**Desired outcomes**

- Non-NPWS uses, including potential mining and exploration activities in Curracabundi and Coneac state conservation areas, have limited impacts on the parks' values.

**Management response**

5.2.1 Continue to authorise access for use and maintenance of the trigonometrical stations in accordance with existing or future formal agreements between NPWS and Land and Property Information.

5.2.2 Assess the potential environmental impacts of any proposals for mining or exploration in Curracabundi and Coneac state conservation areas and ensure that operations comply with appropriate conditions on approvals. Hygiene protocols aimed at stopping the spread of pathogens and weeds into the area will be included in the conditions on approvals.

5.2.3 Investigate and document existing 'give and take' boundary arrangements. Where appropriate, enter into formal agreements with neighbouring landholders for access and land management.

5.2.4 Encourage construction and maintenance of boundary fences to exclude stock from the parks. Fencing assistance may be provided in accordance with NPWS policy.

# 6. Implementation

This plan of management establishes a scheme of operations for the parks subject to this plan. Implementation of this plan will be undertaken within the annual program of the NPWS Barrington Tops and New England areas.

Identified activities for implementation are listed in Table 5. Relative priorities are allocated against each activity as follows:

- **High priority** activities are imperative to achieve 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 necessary to achieve the objectives and desired outcomes but are not urgent.
- **Low priority** activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.
- **Ongoing** is for activities that are undertaken on an annual basis or statements of management intent that will direct the management response if an issue that arises.

This plan of management does not have a specific term and will stay in force until amended or replaced in accordance with the National Parks and Wildlife Act.

**Table 5: Summary of management responses**

| Management response | Priority |
|---|---|
| **Wilderness** | |
| 3.1.1 Preserve the capacity of the wilderness area to evolve in the absence of significant human interference by avoiding the creation of management and/or visitor facilities unless considered essential for public safety, environmental protection or management of wilderness values (including monitoring and research). | Ongoing |
| 3.1.2 Allow appropriate self-reliant recreation in the wilderness area, including cycling on the Bicentennial National Trail and adjoining management trails. | Ongoing |
| **Geology, landscape and hydrology** | |
| 3.2.1 Design, situate and maintain all new facilities to complement the surroundings and to be visually unobtrusive. | Ongoing |
| 3.2.2 Manage recreational and other park uses to minimise erosion, changes to soil structure and degradation of catchment values. | Ongoing |
| 3.2.3 Maintain the management trail network in a manner that minimises erosion. | Ongoing |
| 3.2.4 Encourage efforts by the relevant authorities, local councils and landowners to maintain and, where possible, improve water quality and soil stability in catchments upstream of the parks. | Ongoing |
| **Native plants** | |
| 3.3.1 Implement relevant strategies in the *Biodiversity Conservation Program* or any recovery plans. | High |
| 3.3.2 Undertake or encourage surveys of the parks to improve knowledge of significant plants (including their ecology and habitat requirements) and ecological communities. Priority will be given to identifying, mapping and recording significant plant species and ecological communities. | Medium |

| Management response | Priority |
|---|---|
| 3.3.3 Monitor the natural regeneration of previously disturbed areas and assist revegetation where needed. | Low |
| **Native animals** | |
| 3.4.1 Implement relevant actions set out in the *Biodiversity Conservation Program* or any recovery plans. | High |
| 3.4.2 Undertake or encourage fauna surveys (both systematic and targeted for significant animal species that are likely to occur within these parks) to improve understanding and enhance management. | Medium |
| **Aboriginal heritage** | |
| 3.5.1 Continue to consult and involve the Nungaroo, Purfleet-Taree and Forster local Aboriginal land councils, and other relevant Aboriginal community Elders in the management of Aboriginal sites, places and values, including interpretation of places or values. | Ongoing |
| 3.5.2 Undertake an archaeological survey and cultural assessment before commencing any works with the potential to impact on Aboriginal sites or values. | Ongoing |
| 3.5.3 Encourage further research into the Aboriginal heritage values of these parks in consultation with the relevant Aboriginal community members and organisations. | Low |
| 3.5.4 Provide opportunities for Aboriginal people to access Country, to maintain, renew or develop cultural practices and associations. | Ongoing |
| 3.5.5 Permit cultural resource use in accordance with NPWS policy and legislation. | Ongoing |
| **Shared heritage** | |
| 3.6.1 Undertake an archaeological survey and cultural assessment before commencing any works with the potential to impact on historic sites and places. | Ongoing |
| 3.6.2 Implement the heritage action statements for the homestead precincts within Curracabundi National Park. | Low |
| 3.6.3 Undertake a heritage assessment of historical sites within these parks, including the Mooney Ground and Kalungra structures, and make safe and manage in accordance with their assessed level of significance. | Low |
| **Visitor use** | |
| 3.7.1 Continue to seek arrangements to provide legal public access to Karamea in perpetuity. | High |
| 3.7.2 Maintain short access roads in the vicinity of Woko Camping Area and Karamea Homestead. No other public vehicle access will be provided within the parks covered by this plan. | |
| 3.7.3 Subject to ongoing access arrangements over neighbouring property, allow horse riding along the Bicentennial National Trail. | Ongoing |
| 3.7.4 Signpost and otherwise promote (through NPWS website etc.) that camping overnight with horses within the parks is only allowed in the designated camping area (see Figure 2) next to the stockyard ruins on the southern side of the Curricabark River, and that all horses and other pack animals need to be yarded and fed away from the river. Overnight yarding of horses is allowed at Karamea for guests staying at the homestead. | Medium |

| Management response | Priority |
|---|---|
| 3.7.5 Permit recreational horse riding within the wilderness area on the route shown on Figure 2, initially for a trial period of 2 years commencing on a date to be publicly notified and in conjunction with a monitoring program. Use of this route will be limited to riders using the Bicentennial National Trail and/or staying at Karamea Homestead. Ongoing use of this route for horse riding will be subject to the outcomes of the monitoring program and securing ongoing public access to this part of the park. | High |
| 3.7.6 Maintain existing walking tracks in the vicinity of Woko Camping Area. | Ongoing |
| 3.7.7 Investigate and promote additional walking routes to key features within these parks. | Low |
| 3.7.8 Allow cycling within Curracabundi National Park, Monkeycot Nature Reserve and Woko National Park along park roads, management trails and the Bicentennial National Trail. | Low |
| 3.7.9 Maintain existing camping opportunities at Woko National Park. No additional camping areas will be developed at Woko National Park. | Ongoing |
| 3.7.10 Identify, signpost and otherwise promote (through NPWS website etc.) designated camping sites within Woko Camping Area where generators may be used. Generator use will be subject to NPWS policy and may be terminated if there is ongoing evidence of conflict with other visitors' peace and enjoyment. | Medium |
| 3.7.11 Promote Karamea Homestead as a short-term holiday option for families, small groups, or as a venue for low-key events/functions or theme-based retreats. Management of the letting of Karamea for short-term accommodation may include lease or licence arrangements. | Medium |
| 3.7.12 Investigate and, if appropriate, upgrade Kalungra Hut and make it available for overnight visitation. | Low |
| 3.7.13 Maintain interpretation facilities at Woko Camping Area. | Ongoing |
| 3.7.14 Maintain directional signage on council roads to direct visitors to Karamea Homestead. | Low |
| **Pests** | |
| 4.1.1 Manage pest species in line with pest management strategies relevant to the parks, with priority given to the control of lantana, blackberry, moth vine, climbing asparagus, cape ivy, wild dogs and foxes. | High/ Ongoing |
| 4.1.2 Monitor priority weeds and their impacts. Treat any new outbreaks where possible. | Ongoing |
| 4.1.3 Seek the cooperation of neighbours in implementing weed and pest animal control programs. | Ongoing |
| 4.1.4 Continue to collaborate with relevant wild dog associations in carrying out wild dog control programs, with aerial baiting in the Rock Glen portion of Curracabundi National Park confined to the northern side of the Barnard River. | Ongoing |
| 4.1.5 Continue to implement fox control and associated monitoring programs in accordance with the threat abatement plan to limit fox predation on the brush-tailed rock-wallaby in Curracabundi and Woko national parks. | High/ Ongoing |
| 4.1.6 Develop and implement a feral horse management plan to remove feral horses from these parks. | Medium |
| 4.1.7 Continue and complete targeted program for feral cattle removal. | Medium |

| Management response | Priority |
|---|---|
| **Fire** | |
| 4.2.1 Implement the fire management strategies for these parks, including hazard reduction activities and trail maintenance, and update as required. | High/ Ongoing |
| 4.2.2 Participate in the relevant bush fire management committees. Maintain cooperative arrangements with local Rural Fire Service brigades and fire control officers, Forestry Corporation of NSW and other neighbours in regard to fuel management and fire suppression. | Ongoing |
| 4.2.3 Manage these parks to protect biodiversity in accordance with the identified fire regimes/thresholds identified in the fire management strategies. | Ongoing |
| 4.2.4 Avoid the use of heavy machinery for fire suppression other than where appropriate on existing fire management trails or on dormant trails which remain clearly delineated. No new trails are to be constructed. | Ongoing |
| 4.2.5 Avoid use of retardants in the more heavily timbered sections of these parks or in areas predicted to support *Grevillea granulifera*. | Ongoing |
| 4.2.6 Rehabilitate areas disturbed by fire suppression activities as soon as practical after the fire. | Ongoing |
| 4.2.7 Encourage further research into the ecological effects of fire in these parks, particularly the fire response of significant plant species. | Medium |
| **Climate change** | |
| 4.3.1 Continue existing fire, pest and weed management programs to increase the parks' ability to cope with future disturbances, including climate change, and encourage research into appropriate indicators to monitor the effects of climate change. | Ongoing |
| **Management facilities and operations** | |
| 5.1.1 Maintain the on-park roads and management trails shown on Figure 1. Other trails within these parks that are not shown on Figure 1 will be closed and allowed to revegetate. | Ongoing |
| 5.1.2 Install signs and gates on management trails where necessary to prevent unauthorised access and trail damage. | Ongoing |
| 5.1.3 Negotiate practical legal access in perpetuity where necessary to secure continued management access to the parks' boundaries and management trail network, including access into Karamea Homestead. | Medium |
| 5.1.4 Register the Khatambahl Quarry with NSW Department of Planning, Industry and Environment (Resources and Geoscience) and prepare a quarry safety management plan. | Medium |
| 5.1.5 Re-open Khatambahl Quarry when required as a source of gravel for maintaining the road and trail network within and leading to the parks. | Ongoing |
| 5.1.6 If economically feasible, re-open the former quarry in Coneac State Conservation Area when required, subject to completion of an environmental impact assessment and registration requirements. | Ongoing |
| 5.1.7 Maintain the Rock Glen Depot and Kalungra Hut for use as remote depots by NPWS. These facilities may be used by others subject to authorisation by NPWS and compliance with an accommodation agreement. | Ongoing |
| 5.1.8 Maintain the communications tower at Mount Myra, and permit upgrades as required. Where appropriate, license use of the tower by others and facilitate the formalisation of their access to the tower. | Ongoing |

| Management response | Priority |
|---|---|
| **Non-NPWS uses/occupations** | |
| 5.2.1 Continue to authorise access for use and maintenance of the trigonometrical stations in accordance with existing or future formal agreements between NPWS and NSW Land Registry Services . | Ongoing |
| 5.2.2 Assess the potential environmental impacts of any proposals for mining or exploration in Curracabundi and Coneac state conservation areas and ensure that operations comply with appropriate conditions on approvals. Hygiene protocols aimed at stopping the spread of pathogens and weeds into the area will be included in the conditions on approvals. | Ongoing |
| 5.2.3 Investigate and document existing ‘give and take’ boundary arrangements. Where appropriate, enter into formal agreements with neighbouring landholders for access and land management. | Medium |
| 5.2.4 Encourage construction and maintenance of boundary fences to exclude stock from the parks. Fencing assistance may be provided in accordance with NPWS policy. | Low |

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