

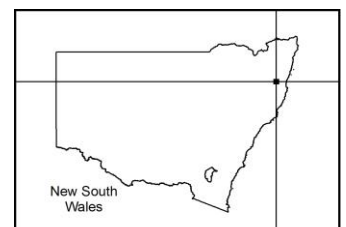


NSW National Parks
& Wildlife Service
Office of Environment & Heritage

Draft Plan of Management



New England National Park, Baalijin Nature Reserve and Jobs Mountain Nature Reserve



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NPWS acknowledges that these parks are in the traditional Country of the Thunggutti, Gumbaynggirr and Anaiwan peoples.

For additional information or any enquiries about these parks or this plan of management, contact the NPWS Dorrigo Plateau Area Office at the Rainforest Centre, Dorrigo National Park, or by telephone on 02 6657 2309.

Front cover image: View from Wrights Lookout showing the New England Wilderness.
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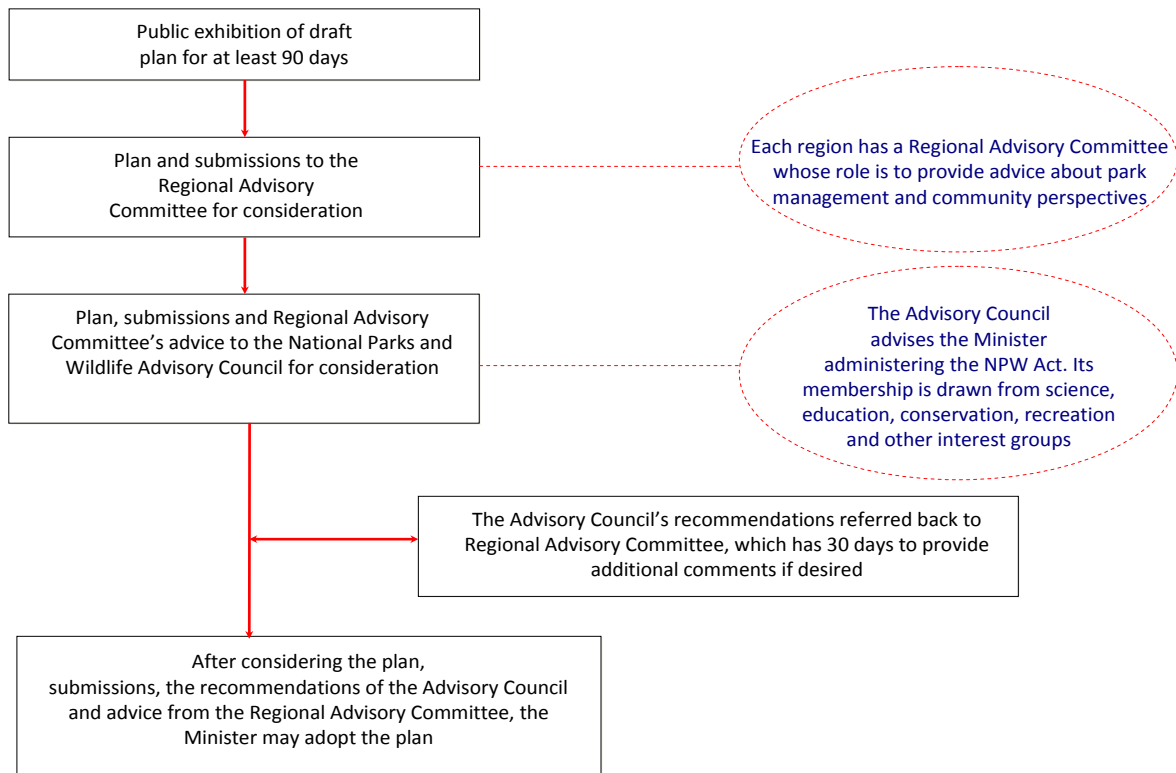
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Invitation to comment

The *National Parks and Wildlife Act 1974* requires that a plan of management be prepared that outlines how an area will be managed by the NSW National Parks and Wildlife Service (NPWS).

A plan of management for New England National Park was adopted in 1990. This current draft plan has been prepared as a replacement to the adopted plan, and includes updated information and management strategies. There has been no previous plan for Baalijin or Jobs Mountain nature reserves.

The procedures for the exhibition and adoption of plans of management are specified under Part 5 of the *National Parks and Wildlife Act* and involve the following stages:



Once adopted, this plan will replace the existing plan of management for New England National Park.

Members of the public, whether as individuals or as members of community interest groups, are invited to comment in writing on this plan of management.

The draft plan is on exhibition until **28 August 2017**.

You can provide your written submission in one of the following ways:

- i) use the online submission form at <https://engage.environment.nsw.gov.au/consult>
- ii) email your submission to npws.parkplanning@environment.nsw.gov.au
- iii) post your submission to New England Parks Plan of Management, PO Box 1236, Coffs Harbour NSW 2450.

To make consideration of your submission as effective as possible, please:

- identify the section heading and number to which your comment relates
- briefly explain the reason for your comment and, if appropriate, suggest other ways to address the issue.

Your submission will be provided to a number of statutory advisory bodies as outlined above. Your comments on the draft plan may include 'personal information'. OEH complies with the NSW *Privacy and Personal Information Protection Act 1998* which regulates the collection, storage, access, amendment, use and disclosure of personal information. See [OEH privacy webpage](http://www.environment.nsw.gov.au/help/privacy.htm) (www.environment.nsw.gov.au/help/privacy.htm) for details. Information that in some way identifies you may be gathered when you use our website or send us correspondence.

Your submission, in whole or part or as part of a summary, may be made publicly available on our website. If you do not want your submission made public in this way, please indicate this on your submission. If an application to access information under the *Government Information (Public Access) Act 2009* requests access to your submission, your views about release will be sought if you have indicated that you object to your submission being made public.

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1. Introduction

1.1 Location, reservation and regional setting

This plan relates to New England National Park, Baalijin Nature Reserve and Jobs Mountain Nature Reserve (collectively referred to as ‘the/these parks’ in this plan). These parks are located on the edge of the Great Escarpment, about 70 kilometres east of Armidale and 45 kilometres south-west of Coffs Harbour, as shown in Figure 1.

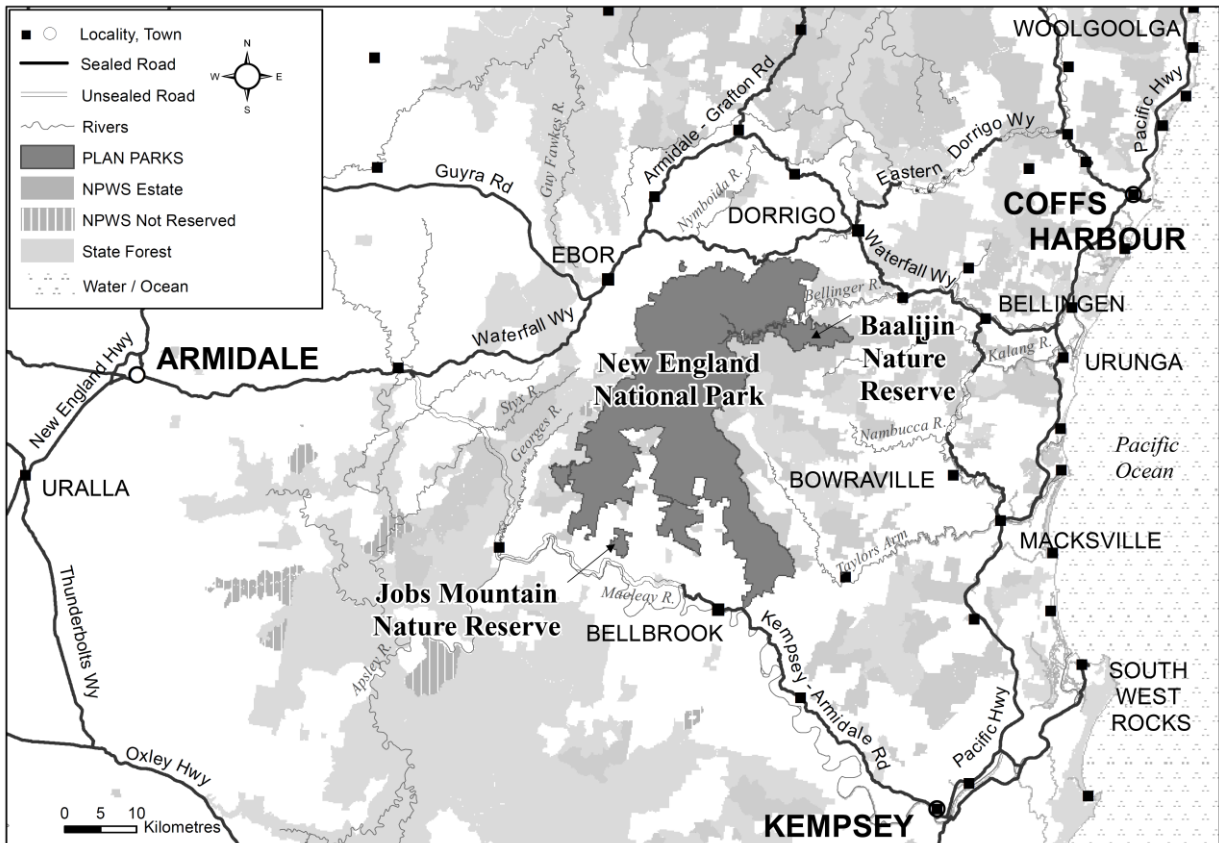


Figure 1: Locality map

The parks form part of the Great Eastern Ranges corridor of protected areas along the rugged hinterland of the Australian east coast that link the Australian Alps to the Atherton Tablelands in far north Queensland.

The parks are mostly located in the NSW North Coast Bioregion (biogeographic region), with a small area located in the New England Tablelands Bioregion. They contain a high diversity of vegetation communities, a number of endemic plant species and core habitat for a range of threatened animals. The parks also contain many sites of cultural significance.

The parks lie within the areas of the North Coast Local Land Services, several local government authorities (namely Bellingen Shire, Clarence Valley, Armidale, Kempsey Shire and Nambucca Shire), and the Bowraville, Thungutti and Dorrigo Plateau local Aboriginal land councils (see Section 3.5). Surrounding land-uses are mainly forestry and grazing.

New England National Park was established in 1931 as a ‘reserve for public recreation’ under the *Crown Lands Consolidation Act 1913*. It officially became ‘The New England National Park’ in November 1933 and was formally dedicated under this name in 1935. In 1967 it became one of the original areas to be protected under the *National Parks and Wildlife Act 1967*. Along with the other major rainforest parks in northern New South Wales, including nearby Dorrigo National Park, New England National Park was inscribed on the World Heritage List in 1986, and is now part of a group property known as the Gondwana Rainforests of Australia. New England National Park was included on the National Heritage List in 2007.

Large additions to the park occurred as a result of the Rainforest Decision in 1983, the Interim Forest Agreement in 1997 and in the lead up to the NSW North East Regional Forest Agreement in 1999. The most recent additions to the park have resulted from the purchase of private properties near Fernbrook on Dorrigo Plateau, on Petroi Plateau south of Ebor, and in the Bellinger Valley at Brinerville. The Brinerville property, in the Bellinger Valley upstream of Darkwood, was purchased with funding assistance from the Commonwealth Government. New England National Park is 68,847 hectares.

The North East Regional Forest Agreement also provided for the reservation of Baalijin and Jobs Mountain nature reserves in 1999. **Jobs Mountain Nature Reserve** was previously Crown land and was named after Jobs Mountain, which lies in the north-east corner of the reserve. It is 702 hectares.

Baalijin Nature Reserve was created by the *National Park Estate (Land Transfers) Act 1998* (formerly known as the *Forestry and National Park Estate Act 1998*) and then was doubled in size in 2003 through operation of the *National Park Estate (Reservations) Act 2002*. Its name comes from the Gumbaynggirr word for Bellingen, which is derived from their name for the eastern quoll (Morelli 2008). Formerly part of Oakes, Roses Creek and Diehappy state forests, Baalijin Nature Reserve is 2701 hectares.

In addition to these formally reserved areas, the parks also include unreserved Crown lands that are vested in the Minister under Part 11 of the NSW *National Parks and Wildlife Act 1974*. These unreserved ‘Part 11 lands’ include several roads that enable continuing access to neighbouring lands, including state forest and private property (see Sections 2.2 and 5.1). These roads do not form part of the area formally reserved, but their management is subject to this plan and relevant legislation.

Lands vested in the Minister also include lands that have been acquired under the National Parks and Wildlife Act but not yet reserved. A private property at Diamond Flat was acquired in 2014 (see Figure 2 ‘NPWS Not Reserved’). This impending addition to New England National Park includes a 458-hectare property with a house, large dam (30 megalitres), old research hut and management trails. The Diamond Flat property is included in this plan, however, until it is formally reserved no operations in this plan can occur on these lands.

1.2 Statement of significance

The parks are of international and national significance for biological and landscape values, and of state significance for cultural heritage and recreation. The northern portion of New England National Park is part of the Gondwana Rainforests of Australia World Heritage property, which supports a range of outstanding universal values (see Section 3.1)

Key **World Heritage and natural values** include:

- outstanding examples of ongoing geological processes associated with volcanic activity in the Cenozoic Period
- outstanding examples of ongoing ecological and biological processes in the evolution and development of ecosystems and communities of plants and animals

- large natural areas that are in an essentially unmodified condition and have been declared wilderness
- diverse vegetation communities (including rainforest, tall open forest, open forest, woodland, heath and swamp communities) reflecting the large range of altitudes, geologies and aspects
- habitat for threatened or otherwise significant plants and animals, including several plants that are endemic to the parks and a number of relic species that have survived over geological times due to the refugia provided by these parks
- a regionally significant corridor for wildlife movement between the coastal hinterland and the New England Tableland
- an extensive network of watercourses in a pristine environment, including the main channel of the Bellinger River and several tributaries of the Macleay River, namely the Dyke River, Five Day Creek and Nulla Nulla Creek.

Significant **scenic values** include:

- sweeping vistas of rugged landscapes covered by natural vegetation
- dramatic cliff features associated with the sharp rise to the edge of the Great Escarpment
- large scenic rivers with deep gorges winding through predominantly natural riverine vegetation.

Key **cultural heritage values** include:

- traditional Aboriginal pathways and ceremonial sites, including rare examples of stone arrangements
- Burrel Bulai Aboriginal Place, which is of exceptional significance for Thunghutti People and associated cultural groups
- a well-documented and ongoing association of Aboriginal communities with sites and locations within the parks
- the history of New England National Park's creation as the first official national park in northern New South Wales
- evidence of remote settlements and farming activities at Petroi and Brinerville.

Major **recreation and tourism values** include:

- New England National Park's long-standing value as a tourist destination, with historic park infrastructure including cabin accommodation and an extensive network of walking tracks in the Point Lookout area
- opportunities for a range of activities including bushwalking, camping, cycling, swimming, birdwatching, photography and sightseeing
- four-wheel drive touring opportunities linked to adjoining public and forestry roads
- opportunities for solitude and self-reliant recreation in a rugged wilderness environment.

Research and educational values include:

- a long history of scientific/educational use by individuals, groups, schools, universities and government agencies
- New England National Park's large altitudinal range makes it highly suitable for research into climate change and associated responses at the species and community level

- ready access to spectacular landscapes, geological features, biodiversity and cultural features at Point Lookout, which provide outstanding opportunities for community education.

2. Management context

2.1 Legislative and policy framework

The management of national parks and nature reserves in New South Wales is in the context of a legislative and policy framework of NPWS; primarily the National Parks and Wildlife Act and Regulation, *Wilderness Act 1987*, *Threatened Species Conservation Act 1995* and NPWS policies.

Other legislation, international agreements and charters also apply to management of the parks. In particular, the *Environmental Planning and Assessment Act 1979* may require assessment and mitigation of the environmental impacts of works proposed in this plan. 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 World Heritage values and threatened species listed under that Act. The NSW *Heritage Act 1977* may apply to the excavation of known archaeological sites or of sites with potential to contain historical archaeological relics.

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 future additions to New England National Park, Baalijin Nature Reserve or Jobs Mountain Nature Reserve. Should management strategies or works be proposed for these parks, or any additions to these parks, that are not consistent with this plan, an amendment to the plan will be required.

2.2 Management purposes and principles

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 and landscapes or phenomena, which provide opportunities for public appreciation/inspiration and also sustainable visitor or tourist 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 or tourist 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 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.

Aboriginal places are areas of special significance to Aboriginal culture. Declaration provides recognition of the significance of the area and its heritage values which relate to traditions, observances, customs, beliefs or history of Aboriginal people. An 871-hectare area in the south-east of New England National Park was declared an Aboriginal place in 1989 under section 90 of the National Parks and Wildlife Act. The Burrell Bulai Aboriginal Place covers the slopes and summit of Andersons Sugarloaf, called *Barralbalayi* by Aboriginal people.

Wilderness covering 51,700 hectares within New England National Park (see Figure 2) has been declared under the Wilderness Act. Wilderness areas are large, natural areas of land that, together with their native plant and animal communities, are essentially unchanged by human activity. Wilderness areas provide opportunities for solitude and appropriate self-reliant recreation, however, protection of natural values has priority over providing for recreational use.

In accordance with section 9 of the Wilderness Act, wilderness areas are managed according to the following management principles:

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

Programs to manage natural and cultural heritage and to control introduced species and fire are a priority in wilderness areas, and are carried out with special attention to enhancing and minimising impacts on wilderness values.

The **Gondwana Rainforests of Australia World Heritage** property encompasses a section of New England National Park (see Figure 2). The Gondwana Rainforests of Australia were inscribed on the World Heritage List because of their outstanding universal significance. This property, originally listed in 1986, was extended in 1994 (under the name Central Eastern Rainforest Reserves of Australia) and includes the major rainforest reserves in north-east New South Wales and south-east Queensland. The World Heritage property was renamed in 2007.

The *Convention Concerning the Protection of the World Cultural and Natural Heritage* (UNESCO 1972), commonly called the World Heritage Convention, provides a framework for international cooperation and the collective protection of cultural and natural heritage of outstanding universal value. Under this convention, Australia has obligations to do all it can to ensure that effective and active measures are taken for the identification, protection, conservation and presentation of the cultural and natural heritage situated on its territory.

World Heritage Management Principles and responsibilities are detailed in the Australian World Heritage Intergovernmental Agreement. It includes agreement to manage World Heritage properties in accordance with the World and National Heritage provisions of the Environment Protection and Biodiversity Conservation Act and in accordance with Australia's obligations under the World Heritage Convention to identify, protect, conserve, present and transmit to future generations Australia's cultural and natural heritage of outstanding universal value. Management arrangements must also ensure that the integrity and authenticity of World Heritage properties at the time of their inscription are maintained. The World Heritage Management Principles also describe a number of components that management

arrangements should contain, including identifying community and stakeholders and how they will participate in property management and decision-making.

The Gondwana Rainforests World Heritage property was listed on the **State Heritage Register** in 1999, and in 2007 it was included in the National Heritage List, which recognises outstanding examples of natural, historic or Indigenous significance to the Australian nation. Under the Heritage Act all items listed on the State Heritage Register must have a conservation management plan and be maintained in accordance with best practice management principles, including maintenance to at least the minimum standards required under that Act.

A strategic overview for management of the Gondwana Rainforests (CERRA 2000) has been prepared and was considered in the preparation of this plan.

Part 11 lands (i.e. unreserved lands) are lands vested in the Minister and include land that is intended to be reserved (e.g. newly acquired additions to the park estate that have not yet been formally reserved); and land that is unlikely to ever be reserved (e.g. severely modified areas, quarries, telecommunication towers, some access roads). Part 11 lands are managed in accordance with the objectives of the National Parks and Wildlife Act, including to:

- conserve nature, including habitats, ecosystems, biodiversity, landforms, landscapes, wilderness and wild rivers
- conserve objects, places or features of cultural value
- foster public appreciation, understanding and enjoyment of natural and cultural heritage and conservation
- apply the principles of ecologically sustainable development.

2.3 Specific management directions

In addition to the general principles for management of these parks (see Section 2.2), the following specific management directions will apply to the management of the parks:

- maintain the status of New England National Park and the characteristics that make it such an iconic park experience in New South Wales
- increase the involvement of the Aboriginal community in the management of the parks, particularly in the management of Aboriginal sites and places of significance
- provide visitor facilities at Point Lookout (on the escarpment) while conserving and enhancing the wilderness values in the core of New England National Park
- rehabilitate the Brinerville, Misty Valley and Diamond Flat areas
- maintain or enhance water quality and aquatic habitats in the watercourses of the parks
- maintain and protect scenic views from Point Lookout
- research and monitor to improve knowledge of the area's resources and responses to climate change, to evaluate and adapt management programs.

3. Values

The location, landforms and plant and animal communities of an area determine how it is used and valued. Both Aboriginal and non-Aboriginal people place values on natural areas, including aesthetic, social, spiritual and recreational values. These values may be attached to the landscape as a whole or to individual components, for example, to plant and animal species used by Aboriginal people. This plan of management aims to conserve both natural and cultural values. To make the document 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 Gondwana Rainforests World Heritage

The northern portion of New England National Park is part of the Gondwana Rainforests of Australia World Heritage property (see Figure 2). New England National Park is one of 50 separate reserves between Newcastle and Brisbane which make up the World Heritage property. These areas protect remnants of the rainforests which once covered the supercontinent of Gondwana. These remnant areas preserve:

- outstanding examples of ongoing **geological processes** associated with volcanic activity in the Cenozoic Period (formerly known as the Tertiary)
- outstanding examples of ongoing ecological and biological processes in the **evolution** and development of ecosystems and communities of plants and animals
- important and **natural habitats** for the in situ conservation of biological diversity, including more than 270 rare and threatened plant and animal species.

The spectacular Great Escarpment is a significant geological landform, and the section from the Dorrigo Plateau to the Bellinger Valley in New England National Park is the best example in Australia. It was carved out of the uplifted layers of basalt that were spread over a 45-kilometre radius by the ancient Ebor shield volcano.

When Australia separated from Antarctica following the breakup of Gondwana, new continental margins developed. The Ebor volcano was formed when the continental plate moved over one of the planet's hot spots. Volcanoes erupted in a sequence along the east coast of Australia, resulting in the Tweed, Focal Peak, Ebor and Barrington volcanic shields. This sequence of volcanos is significant because it enables the dating of geomorphic evolution of eastern Australia.

Erosion of the New England landscape is enhanced by high rainfall which feeds the tributaries of the Bellinger River to the east, the Macleay River to the south, and the Nymboida River to the north. These rivers, related to the Ebor Shield Volcano, represent an excellent example of radial drainage pattern.

At least three major stages in the Earth's evolutionary history — the ages of ferns, conifers and flowering plants — are evident in the flora of Gondwana Rainforest. In New England National Park this is evidenced by dry- and cold-adapted rainforest vegetation, and a high level of endemism in plants and animals. In New England National Park, ferns such as rough water fern (*Blechnum wattsii*) and king fern (*Todea barbara*), hoop pine (*Araucaria cunninghamii*), Antarctic beech (*Nothofagus moorei*) and subtropical rainforest are part of this evolutionary history. Gondwanan rainforests are exceptionally rich in primitive and relict species, many of which are similar to fossils from Gondwana.

Gondwana Rainforests also support species representative of the oldest lineages of passerines (songbirds) that evolved in the late Cretaceous (100–66 million years ago). In New England National Park, this includes lyrebirds, scrub-birds, treecreepers, bowerbirds and catbirds. Other birds dating from Gondwana that occur in the park include logrunners, thornbills, scrubwrens and gerygones.

New England National Park supports a large diversity of threatened species, many of which are restricted to rainforest environments. New England National Park supports 55 species of threatened plants and animals (see Appendices A and B).

The *Statement of Outstanding Universal Value for the Gondwana Rainforests* (Department of the Environment 2014) summarises the World Heritage Committee's determination of the property's outstanding universal value. The statement provides a justification for the criteria under which the property was inscribed; and includes an assessment of the integrity of the Gondwana Rainforests, their requirements for protection and the management arrangements in place.

Further details of these values, along with associated desired outcomes and management responses, are detailed in relevant sections of this plan.

Issues

- Knowledge regarding World Heritage values is continuing to evolve, as new species are discovered and understanding of Cenozoic volcanism improves. This needs to be reflected through regular updates to interpretation material (see Section 3.8). It also prompts ongoing research interest in the park's World Heritage values (see Sections 3.3, 3.4 and 3.8).
- Threats to World Heritage values include inappropriate fire regimes, weeds, bell miner associated dieback in the sclerophyll communities, and climate change (see Section 4).

Desired outcomes

- World Heritage values and attributes are identified, protected, conserved and (where appropriate) presented.

Management response

3.1.1 Continue to be involved in the appropriate management and interpretation of World Heritage values.

3.1.2 Continue to participate in relevant Gondwana Rainforests intergovernmental management committees; and continue to support community and technical input into the management of the property.

3.2 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.

Three-quarters (51,700 hectares) of New England National Park is dedicated wilderness. 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 and self-reliant recreation, directs the management approaches that can be applied. Self-reliant bushwalking in the New England Wilderness should only be undertaken by those who are adequately prepared and experienced in remote country navigation (see Section 3.9b). Formed trails are limited but basic walking tracks and remote camping may be appropriate. Facilities, signposting and other management devices are generally avoided unless essential for public safety, management operations or environmental protection. Management of natural and cultural heritage, introduced species and fire is carried out in wilderness areas as in other parts of the parks, but with special attention to minimising impacts on wilderness values.

Issues

- Threats to wilderness values include inappropriate fire regimes, weeds and bell miner associated dieback (see Section 4).

Desired outcome

- Key wilderness values and attributes are preserved and recognised.

Management response

3.2.1 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, management or environmental protection.

3.2.2 Allow appropriate self-reliant recreation.

3.3 Geology, hydrology, landforms and scenery

The predominant landform in these parks is the Eastern Fall, the rugged coastal hinterland between the Great Escarpment and the coast. The parks also encompass a variety of other topographic features including parts of the eastern edge of the undulating New England Tableland, the southern edge of the Dorrigo Plateau and a section of the Great Escarpment itself.

The parks are part of the Nambucca Slate Belt. The underlying rocks are from the Lower Permian and consist of slate, phyllite, greywacke and schistose conglomerate. In parts of the Dyke River and Five Day Creek areas there are also basic volcanics. The Petroi Plateau was formed by an Upper Permian intrusion of biotite-hornblende adamellite known as the Botumburra Range Adamellite, part of the New England Batholith.

The Crescent, a topographical feature located in the north-east of New England National Park, is assumed to contain the remains of the magma chamber below the long-eroded Ebor volcano, last active in the Cenozoic (approximately 18.9 million years ago). The lava flows from this volcano formed the sheet of Tertiary igneous rocks that previously covered much of the area. Most of this sheet has been eroded, but is still present on the Dorrigo and Ebor plateaus, and on parts of the Cunnawarra and Snowy ranges, including Cockatoo and Andersons Sugarloaf / *Barralbalayi*. Most of this sheet is basalt; and near Deer Vale and Barren Mountain, trachyte is present. A dolerite dyke forms Killiekrankie Mountain in the east of New England National Park (McArthur 1964).

The uplift, which created the Great Dividing Range, triggered the active erosion by the coastal rivers through the basalt sheet and deep into the underlying rocks. This relatively recent deep dissection of the Permian sediments forms the bulk of the rugged lowland section of the parks. Soil fertility of derived soils declines with distance from the basalt parent rock, so within the park, soil fertility generally declines from west to east.

The precipitous drop from the plateaus' rim dominates New England National Park, where altitudes range from 1563 metres at Point Lookout to 100 metres in the Bellinger Valley. The altitudinal range is an important contributor to the variety of environments present in the area, and the diversity of native vegetation communities and animal habitats.

Over one-third of the area covered by these parks has ground slopes greater than 18 degrees. Reflecting the topography of the parks, soil landscapes are mostly derived from erosional and colluvial processes.

The climate of the parks varies dramatically with altitude. On the plateaus, rainfall is high and under the influence of easterly winds, with mists often shrouding the escarpment in summer. In winter, frosts are common and to be expected on most winter nights, with light snowfalls occurring occasionally. The lowland areas experience a milder climate, with less rainfall than at the plateau edges. However, intense rainstorms may occur under the influence of east coast lows, and up to 500 millimetres has been recorded in a 24-hour period.

Given the steepness of the terrain and erosive events such as intensive summer rainstorms, much of the area is prone to mass movement and severe localised erosion. Landslips frequently occur along the escarpment. In the past, this has forced the temporary closure of sections of the walking track network in the Point Lookout area. Mass movement is also currently occurring on a hillside above Nulla Range Trail (a management trail). These processes are intrinsic to the landscape and are major constraints on the sustainability of road construction and operations within the parks and also on some neighbouring lands. This has implications for the maintenance of infrastructure, provision of recreational opportunities (see Section 3.9), and may potentially require the relocation of some trails and tracks (Milford 1996).

The parks are drained by the upper tributaries of several river systems (see Figure 1). The intricate network of tributaries includes many ephemeral watercourses, but also many small waterfalls, rapids and cascades. The upper reaches of the Bellinger River have previously been identified as forming a wild and scenic river system (Helman 1981; DWR 1987). Wild rivers are defined as a watercourse or watercourse network which exhibits substantially natural flow and contains substantially undisturbed biological, hydrological and geomorphological processes associated with river flow and in the catchment with which the river is intrinsically linked. Wild rivers are managed to maintain these natural processes. Almost the entire headwaters of the Bellinger River upstream of Bishops Creek are protected in New England National Park and Baalijin Nature Reserve.

Headwaters on the plateaus form sphagnum swamps and peatlands. Those on the Ebor and Dorrigo plateaus flow away from the escarpment, down the slopes formed by the ancient volcano and include the headwaters of the Nymboida and the Guy Fawkes rivers (both of which flow into the Clarence River). Watercourses from the Petroi Plateau plunge over the scarp forming spectacular waterfalls, and flow into the Dyke River and Five Day Creek, both tributaries of the Macleay River. Within these parks, the Dyke River, Five Day Creek and Nulla Nulla Creek (another tributary of the Macleay River) may also qualify as wild rivers.

The scenic nature of the landscapes in these parks is a major appeal to visitors, particularly those going to Point Lookout, Wrights Lookout and Banksia Point in the west of New England National Park, and to Killiekrankie Mountain in the east. The Great Escarpment is a major visual feature. The section of the escarpment within New England National Park has been described as a high abrupt wall densely clothed with natural forest, the sheer vastness of

which 'provides visual excitement of high order' (Adam 1987). On a clear day, the views from Point Lookout extend from Middle Brother and North Brother (near Laurieton) to the ocean beaches around Urunga, and northward to the Coffs Harbour hinterland. Other aspects of exceptional natural beauty present in New England National Park in particular, include its wild rivers, wilderness panoramas, and the diversity of vegetation including rainforest, heaths, open forests and woodlands (DASET 1992). While scenic values are not one of the listed World Heritage values of the park, the International Union for Conservation of Nature has recommended that the aesthetic values of the Gondwana Rainforests of Australia World Heritage Area should be recognised in management. The intrusion of visually inappropriate development on high points in or adjacent to the park would threaten this scenic amenity (Hunter 2003).

Issues

- Natural landslips are common along the escarpment edge, and this has implications for the maintenance of walking tracks below the escarpment.
- Erosion has been identified as a significant constraint to previous land uses, such as forestry. It remains a major issue in relation to the construction and maintenance of management trails.
- Waste water treatment systems in the park have the potential to impact the high water quality of creeks and rivers within and downstream of New England National Park. Many of the park's toilets have been upgraded, however, there are older toilets that still need to be upgraded or decommissioned.
- Gullies in the Brinerville area were used as rubbish tips for both domestic and farming rubbish in the past. While these are a source of water pollution, they may have cultural heritage value (see Section 3.7).
- Views from lookout platforms can be lost due to growing vegetation so regrowth needs to be managed to maintain views.
- Visually inappropriate development in or adjacent to the parks, including telecommunication towers, would threaten the scenic amenity.

Desired outcomes

- Significant geological and geomorphological features are interpreted, including the Great Escarpment, the Ebor volcano and the Crescent.
- The existing high water quality and health of the parks' streams are maintained.
- The scenic values of the parks, and in particular the escarpment edge and mountain tops, are protected.

Management responses

- 3.3.1 Carry out trail and track maintenance in a manner that limits erosion and siltation of watercourses. Trails or walking tracks may need to be closed or realigned in response to mass movement or landslips.
- 3.3.2 Monitor sites of known erosion and take action if needed to minimise impacts on water quality.
- 3.3.3 Monitor the performance of waste water systems in New England National Park and water quality of downstream creeks, and decommission toilets and address pollutants as required.
- 3.3.4 Determine the location of former tips in Brinerville and assess/address potential for groundwater pollution.

- 3.3.5 Where required, liaise with neighbours and authorities to minimise the impact of adjacent land uses on water quality in the parks.
- 3.3.6 Where required, liaise with neighbours and authorities to minimise the impact of adjacent land uses on the scenic values of key locations.
- 3.3.7 Control the regrowth of vegetation to maintain views at designated lookouts.
- 3.3.8 Designate the following high points as remote natural areas: Majors Point, Darkies Point, Barren Mountain, Mount Woorong Woorong and Andersons Sugarloaf / *Barralbalayi* in New England National Park; and all of Jobs Mountain Nature Reserve.
- 3.3.9 Ensure information about the New England National Park's key geological and geomorphological features is included in information displays and other interpretation programs.

3.4 Native plants

The parks conserve a complex pattern of plant communities which reflects: major differences in climate, altitude, topography, parent rock material (geology), aspect and exposure; the adaptation of native plants in response to environmental change over geological time periods; and the variation in moisture availability determined by mist and clouds. The Gondwana Rainforests in New England National Park support important and natural habitats for the in situ conservation of biological diversity. Plant communities present include cool and warm temperate rainforest, subtropical rainforest, wet sclerophyll forest, dry sclerophyll forest, snow gum woodland, grassy forest, heath, mallee and swamp. Several of these communities are recognised as threatened ecological communities (see Table 1).

Table 1: Threatened ecological communities recorded in the parks

Community name under Threatened Species Conservation Act	Status ^a		Presence ^b		
	TSC Act	EPBC Act	NENP	BNR	JMNR
Ribbon Gum – Mountain Gum – Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion	E		X		
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South-east Corner, South-eastern Highlands and Australian Alps bioregions	E		X		
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions ^c	E	CE	X	X	X
Subtropical Coastal Floodplain Forest of the NSW North Coast Bioregion	E		X		

^a Status as follows: E = endangered ecological community; CE = critically endangered ecological community; TSC Act = Threatened Species Conservation Act; EPBC Act = Environment Protection and Biodiversity Conservation Act.

^b Park names abbreviated as follows: NENP = New England National Park; BNR = Baalijin Nature Reserve; JMNR = Jobs Mountain Nature Reserve. X = Occurs in the reserve.

^c Equivalent community under Environment Protection and Biodiversity Conservation Act is Lowland Rainforest of Subtropical Australia.

In the highest parts of the parks, **subalpine woodlands** featuring low-growing eucalypts are one of the main plant communities on basalt soils of the plateau, above 1350 metres altitude. The ground cover is mainly tussocky snow grass (*Poa sieberana*), with occasional shrub patches. The tree species are mainly snow gum and shining gum, with occasional stands of

messmate. These woodlands are considered part of the Ribbon Gum – Mountain Gum – Snow Gum Grassy Forest/Woodland Endangered Ecological Community, listed under the Threatened Species Conservation Act. In New England National Park, there is a small area of this community which is often subject to grazing by stock straying from properties neighbouring the national park.

Heath communities have a very restricted distribution in these parks. Much of the heath is on poor shallow rocky soils usually derived from trachyte, such as at Wrights Lookout (1300 metres altitude) and Barren Mountain (1435 metres). The heath at Barren Mountain supports two rare endemic species, both of which are only known from this area:

- Barren Mountain mallee (*Eucalyptus approximans*), a vulnerable species listed on the Threatened Species Conservation Act
- Barren Mountain paperbark (*Melaleuca tortifolia*), a rare plant with a restricted distribution (Briggs & Leigh 1996).

A denser wet heath is occasionally found on peaty soils in swampy depressions. Heath communities stand out because of the richness of species within relatively small areas. Heath is prone to serious disturbance from trampling by walkers (particularly on Wrights Lookout), nutrient enrichment and a lack of fire.

Small patches of **sedge swamp** and sphagnum bog occur on the high plateaus on basalt in the upper reaches of streams which are waterlogged for the greater part of the year (McArthur 1964). Various sedge and rush species tend to dominate, and shrubs may colonise the hummocks. The upland wetlands in New England National Park are considered to be part of the Montane Peatlands and Swamps EEC listed under the Threatened Species Conservation Act.

Wet sclerophyll forest above 1200 metres is of markedly different composition to that found at lower altitudes, being dominated by cold-adapted species such as New England messmate (*E. obliqua*), shining gum (*E. nitens*), manna gum (*E. nobilis*), brown barrel (*E. fastigata*) and New England blackbutt (*E. campanulata*). These wet forests grade into the plateaus' grassy forests. The shining gum is of special interest, as its occurrence here is disjunct and at its northern limit.

Dry sclerophyll forest has a limited occurrence in New England National Park, being restricted to shallow stony trachyte soils on the plateau, and dominated by small- to medium-sized, cold-adapted eucalypts. Trees include narrow-leaf peppermint (*E. radiata*), mountain gum (*E. dalrympleana* subsp. *heptantha*), snow gum (*E. pauciflora*) and messmate. The rare eyebright, *Euphrasia ramulosa*, is found in dry sclerophyll forests and is confined to sections of New England National Park above 1400 metres. This community is more widespread in Baalijin Nature Reserve, found on ridgetops and north-facing slopes, and dominated by tallowwood and grey gum (*E. propinqua*).

An area of high altitude **subtropical rainforest** on nutrient-poor granite soil is found on the Petroi Plateau (around 1000 metres elevation). Commonly occurring trees include black booyong (*Heritiera actinophylla*), yellow carabeen (*Sloanea woollsi*), flame tree (*Brachychiton acerifolius*), strangler fig (*Ficus watkinsiana*) and Moreton Bay fig (*Ficus macrophylla*). Hoop pine is found at its southern limit in New England National Park and the tallest known specimen, at 62 metres (Floyd 1990), is found in the central part of the park. Despite selective logging of red cedar (*Toona ciliata*), several of the rainforest gullies in New England National Park still contain large cedar trees.

Temperate rainforest is found mainly above 1000 metres elevation and forms an extensive strip along the escarpment, on Cunnawarra Range and on the Petroi Plateau. In contrast to the subtropical rainforest, it is dominated by relatively few tree species. At the highest altitudes (above 1200 metres) and on the plateaus in several sheltered positions, cool temperate

rainforest is dominated by Antarctic beech. Antarctic beech rainforests are only found in north-east New South Wales and along the Border Ranges in Queensland. The five main areas of occurrence are of quite limited extent, being restricted to areas of cool and moist habitat on the eastern highlands. Along with other rainforest types, they are relics of an ancient Gondwanan flora.

Below 1200 metres, the **cool temperate rainforest** grades into warm temperate rainforest in which the dominant trees are coachwood (*Ceratopetalum apetalum*), sassafras (*Doryphora sassafras*) and corkwood (*Caldcluvia paniculosa*).

Subtropical rainforest is found mainly below 1000 metres elevation in moist, more-fertile and fire-protected sites such as along streams and in gullies. At suboptimal locations on the poorer soils of the lower sections of creeks, the rainforest in the Bellinger Valley is typically intermediate between warm temperate and subtropical rainforest (Floyd 1979). Rainforest in the parks occurring below 600 metres elevation are considered part of the lowland rainforest threatened ecological community (see Table 1).

Wet sclerophyll forest is the main vegetation type in the lower elevations in New England National Park and in Baalijin Nature Reserve. It consists of several associations of tall species, including Sydney blue gum (*E. saligna*), tallowwood (*E. microcorys*), blackbutt (*E. pilularis*), grey ironbark (*E. siderophloia*), turpentine (*Syncarpia glomulifera*) and brush box (*Lophostemon confertus*). Some forests occurring on the floodplain of the Bellinger River are considered to be part of the Subtropical Coastal Floodplain Forest Endangered Ecological Community.

Within the 24 main vegetation types that have been described in New England National Park (Clarke et al. 2000) there is a rich diversity of plant species, many of which were initially collected and described by John B Williams of the University of New England. New England National Park is known to contain more than 970 native plant species (Clarke et al. 2000), including 43 species which are considered rare or threatened (see Appendix A). This represents over 15% of the species recognised as contributing to the outstanding universal value for Gondwana. Continuing work at the NCW Beadle Herbarium at the University of New England has recently led to the description of more species for the national park. Some have very restricted distributions, being only recorded from these parks.

There are a number of previously cleared areas in New England National Park that were formerly farmed or cropped. These areas, including Brinerville, Misty Valley and Diamond Flat, will be the focus for vegetation regeneration and restoration in the park. Some significant plant communities, including threatened ecological communities and rare plants, that occur in the high altitude areas are at potential risk from climate change.

Strategies for the recovery of threatened species, populations and ecological communities have been set out in a statewide *Threatened Species Priorities Action Statement* (DECC 2007). 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). The *Priorities Action Statement* currently contains strategies for many of the threatened plant species found in these parks, and also for several of the threatened ecological communities. Individual recovery plans may also be prepared for threatened species to consider management needs in more detail.

Issues

- Opportunities exist to regenerate previously cleared areas, particularly in the Brinerville, Misty Valley and Diamond Flat areas (see Sections 3.7 and 4.1).
- Significant vegetation communities and plants occur in limited environmental domains at high altitude, and are at potential risk from climate change (see Section 4.3).

- Lack of boundary fencing has allowed grazing by stock in New England National Park's plateau communities (see Section 4.1).
- There is a concentration of threatened and endemic species at Point Lookout, which is a key visitor destination in New England National Park. There is a risk these plants could be picked/damaged by visitors if their location is promoted. NPWS staff need to know about these plants to reduce risks associated with maintaining tracks and trails.
- There is limited understanding of the long-term viability of plants that are endemic to New England National Park.
- Cascade Walking Track adjoins the only known extant population of the nationally threatened silver sword lily (*Neoastelia spectabilis*).
- Heath on Wrights Lookout, which is limited in area, contains a number of rare and threatened plant species that are at risk of being trampled by walkers. This is further exacerbated by the slow growth rates and brittle nature of the vegetation.
- Phytophthora has been recorded in New England National Park and may lead to the dieback of certain species (see Section 4.1).

Desired outcomes

- Native plant species and communities are conserved, particularly threatened and endemic species and communities, and other significant and restricted heath and plateau communities.
- Structural diversity and habitat values are restored in areas subject to past disturbance.

Management responses

- 3.4.1 Encourage or undertake targeted surveys and research for known and predicted threatened plants, and implement other relevant recovery actions in accordance with the *Priorities Action Statement*.
- 3.4.2 Monitor impacts on the silver sword lily along Cascade Walking Track and realign the track if necessary to reduce impacts.
- 3.4.3 Continue vegetation rehabilitation works at Brinerville, Misty Valley and Diamond Flat.
- 3.4.4 Ensure that threatened plant species at Point Lookout are not promoted other than in advice for visitors to stay on walking tracks.
- 3.4.5 Monitor the condition of heath plants at Wrights Lookout. Improve the delineation of the walking track as necessary to prevent trampling of plants.
- 3.4.6 Ensure all field staff are familiar with the identity of and management prescriptions for endemic and threatened plants on escarpment edges (such as the Point Lookout area and Wrights Lookout), particularly for those species occurring on the sides of tracks and trails.

3.5 Native animals

These parks are part of a broad, virtually unbroken belt of forested land extending north to south along the Great Escarpment and plateau margins from eastern Dorrigo, through national parks and state forests to the Hastings Valley. New England National Park and Baalijin Nature Reserve are part of an identified regional wildlife corridor (Scotts 2003). The unbroken altitudinal range within the park allows for monitoring of the response of native animal communities to climate change impacts (see Sections 3.8 and 4.3).

Together with Cunnawarra, Oxley Wild Rivers and Werrikimbe national parks, the parks form one of the largest significant refuges for forest-dependent fauna in north-east New South Wales (Scotts 2003). The altitudinal range and the variety of plant communities in the parks produce a range of fauna habitats and this is reflected in the rich diversity of native animals, including 40 threatened species that are known to occur in the parks (see Appendix B). Based on the habitat available, several more threatened animals are predicted to occur (NPWS 1999). The wilderness of New England National Park protects the habitat of these species from most disturbances. By preserving large, unroaded territories as wilderness, ingress by introduced species, including feral predators such as foxes, is also minimised.

Moist montane forest fauna are animals dependent on moist mountainous environments for their survival. The parks include large areas identified as refugia for moist montane forest fauna which are important to their persistence in the region. Several of the threatened animals found in the parks are moist montane forest fauna. This group includes the frogs, Stephens' banded snake (*Hoplocephalus stephensii*), birds such as the olive whistler (*Pachycephala olivacea*) and sooty owl (*Tyto tenebricosa*), and mammals such as the eastern false pipistrelle (*Falsistrellus tasmaniensis*), parma wallaby (*Macropus parma*) and red-legged pademelon (*Thylogale stigmatica*). These native animals and their habitat are likely to be susceptible to the impacts of climate change associated with increased temperatures (DECCW 2010a). Monitoring the current and future distribution of these animals is considered important as changes in their population size or distribution may indicate broader environmental changes such as climate change (DECCW 2010a).

A number of species in the parks have relatively **restricted habitat areas**. The beech skink (*Cautula zia*), for example, is only recorded from Antarctic beech forests and ecotonal areas around these forests. The population of beech skink in New England National Park is isolated and, although not currently considered threatened, may be at risk from climate change in the long term due to its limited ability to move through the landscape. The olive whistler is also primarily a cool temperate rainforest specialist and may be at risk from climate change.

Frogs are extremely susceptible to environmental changes due to their dependence on both terrestrial and aquatic environments throughout their lifecycle and their having highly-permeable skins. As such, amphibians can be important indicators of environmental health.

The Booroolong frog (*Litoria booroolongensis*) has been recorded in New England National Park. This frog has undergone a severe decline in distribution, particularly in the northern tablelands. Records from the higher altitude parts of the park date from before the 1980s. Populations may survive at lower altitudes although there are no recent confirmed sightings. Habitat disturbance and predation of tadpoles by introduced species of fish have been implicated in the decline of this species (see Section 4.1).

The only reports of the tusked frog (*Adelotus brevis*) from the high altitude parts of New England National Park are also old, dating from the 1960s. The reasons for this frog's decline in the park are unknown. There are, however, more recent records at lower altitudes in the park and, as an intact altitudinal range of potential habitat exists, there is the potential to experimentally reintroduce the species at higher altitudes in accordance with the *Priorities Action Statement*.

No reports for the pouched frog (*Assa darlingtoni*) are known from these parks, but known populations occur in nearby areas and potential habitat does exist. Surveys should be carried out prior to road and track maintenance in potential habitat of the species, particularly along Kilprotay Road.

The **Bellinger River snapping turtle** (*Myuchelys georges*) is a short-necked native freshwater turtle known only from an approximately 60-kilometre stretch of the Bellinger River from Bellingen township to near Brinerville in New England National Park. The preferred habitat of the Bellinger River snapping turtle is moderate to deep pools with a rocky substrate.

After a mortality event from a suspected virus in early 2015, more than 430 animal deaths were recorded and the animal has since been listed as critically endangered under the Threatened Species Conservation Act (NSW SC 2016).

The major threat to the turtle is the virus suspected to have caused the mortality event in 2015. Potential hybridisation and competition with the Murray River turtle (*Emydura Macquarii*) are also thought to be threats to the recovery of the species, along with nest predation by foxes.

New England National Park is identified as an **Important Bird Area** by Birds Australia, as it supports a number of threatened birds, including one of the five extant populations of the threatened rufous scrub-bird (*Atrichornis rufescens*). The northernmost population of the southern subspecies of the rufous scrub-bird (*Atrichornis rufescens ferrieri*) occurs in New England National Park and Baalijin Nature Reserve. Habitat is generally restricted to areas above 500 metres elevation, along the Dorrigo escarpment in the west and Petroi Plateau to the south, and ridges running from these areas to the east. Small numbers of birds in the Horseshoe Road area were monitored in the periods 1997–2004 and 2010–2013 and numbers appear to be stable (M Andren [Office of Environment and Heritage] 2013, pers. comm.). However, anecdotal evidence indicates that declines are continuing along the Dorrigo escarpment. For example, birds are now apparently absent from the Lyrebird Mountain and Point Lookout areas where they were known to occur in the 1980s (M Andren [Office of Environment and Heritage] 2013, pers. comm.).

The New England National Park Important Bird Area also supports populations of a number of birds with restricted distributions, such as the pale-yellow robin (*Tregellasia capito*), paradise riflebird (*Ptiloris paradiseus*), green catbird (*Ailuroedus crassirostris*), regent bowerbird (*Sericulus chrysocephalus*) and Australian logrunner (*Orthonyx temminckii*) (Birds Australia 2009). There is an old record of an eastern bristlebird (*Dasyornis brachypterus*) from the national park but this species is suspected to be locally extinct in the parks and the surrounding district.

The tunnels of the old antimony mine at the top of Platypus Creek (see Section 3.7) form an **eastern bentwing-bat (*Miniopterus schreibersii*) maternity roost site**. Disturbance of the colony in winter and during the spring–summer maternity season may impact breeding success.

New England National Park has been identified as containing **high quality dingo (*Canis lupus dingo*) habitat**, and genetic testing has confirmed high levels of genetic purity in the population of dingos in the park, particularly in the vicinity of Point Lookout and Petroi Plateau. These areas formed part of a comprehensive scientific study on dingo ecology, which was conducted over a number of years (Harden 1985; Robertshaw & Harden 1985a, 1985b, 1986), and which showed that dingos do not range far from their territorial grounds.

Research and monitoring programs have focused on heathland birds (e.g. McFarland 1986) and spotted-tailed quolls (*Dasyurus maculatus*). New England National Park appears to support a healthy population of quolls as evidenced by population monitoring studies and other research conducted on the Petroi Plateau. More research specifically into the national park's mammals and rainforest birds would be valuable (Reis 2005).

Issues

- There are important corridors linking these parks to other parks and vegetated areas. Native animal populations in Jobs Mountain Nature Reserve are at risk of being isolated if the corridor values on surrounding leasehold land are not maintained.
- There is limited understanding of the health of populations of many threatened animals and the reasons for the decline of some amphibians within the area.

- New England National Park and Baalijin Nature Reserve contain core habitat for dingos which needs to be managed (see Section 4.1b).
- Climate change is likely to have significant impacts on a number of threatened animal species, particularly those at the upper altitudinal range of New England National Park.

Desired outcomes

- The full range of native animal species found in the parks is conserved.
- There is greater understanding of species diversity, distribution and ecological requirements.
- The habitat and populations of all threatened animals and biogeographically significant species are protected and maintained.
- Park neighbours support conservation of remaining areas of native vegetation near the parks.

Management responses

- 3.5.1 Encourage targeted surveys and research for threatened and other significant animals, monitor populations of key species, including those which are key indicators of ecological health for values associated with world heritage outstanding universal values as well other priority species such as the spotted-tailed quoll and rufous scrub-bird.
- 3.5.2 Implement the *Priorities Action Statement* and other relevant strategies.
- 3.5.3 Install signage to advise visitors on access restrictions at the old antimony mine to limit impacts on bat populations.
- 3.5.4 Liaise with neighbours of Jobs Mountain Nature Reserve to encourage the retention and appropriate management of native vegetation links between the nature reserve and New England National Park.
- 3.5.5 Encourage research into the genetics, movement, population dynamics and distribution of dingos so as to more clearly delineate core dingo conservation areas.

3.6 Aboriginal heritage

The landmarks, water, plants and animals within the 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 are within the traditional Country of the Thunggutti (Dhinggati), Gumbaynggirr and Anaiwan Aboriginal peoples. Most of the southern part of New England National Park and Jobs Mountain Nature Reserve are within the traditional Country of the Thunggutti. The Macleay Range (which forms the watershed between the Nambucca and Macleay valleys) provides the boundary between the Thunggutti and the Gumbaynggirr coastal people. Gumbaynggirr Country also extends above the escarpment towards Guyra, with Anaiwan Country extending from New England National Park south-west towards Armidale. The tribes share several sacred sites and in the past often carried out combined ceremonies.

The parks lie within the area of several local Aboriginal land councils, as shown on Figure 3: Bowraville, Thunggutti and Dorrigo Plateau. The section of New England National Park and Jobs Mountain Nature Reserve in Armidale Region Local Government Area is not formally classified as occurring within any local Aboriginal land council. Apart from the local Aboriginal

land councils, there may also be other Aboriginal community organisations and individuals with an interest in the use and management of the parks.

There are few known archaeological sites in the parks. Except for routes between the coastal river valleys and the tablelands, it is likely that the central part of New England National Park was little used due to its thick forests and rough terrain (Belshaw 1978). Parts of the area are likely to have been used for collecting certain foods. For example, Beech fungus (*Cyttaria septentrionalis*), which grows on Antarctic beech, is found in the cool temperate rainforests on the western edge of the park during spring and is one of only five fungi known to have been eaten by Aboriginal people (Low 1989).

The parks include several landmarks that are important to the Thunggutti and Gumbaynggirr peoples.

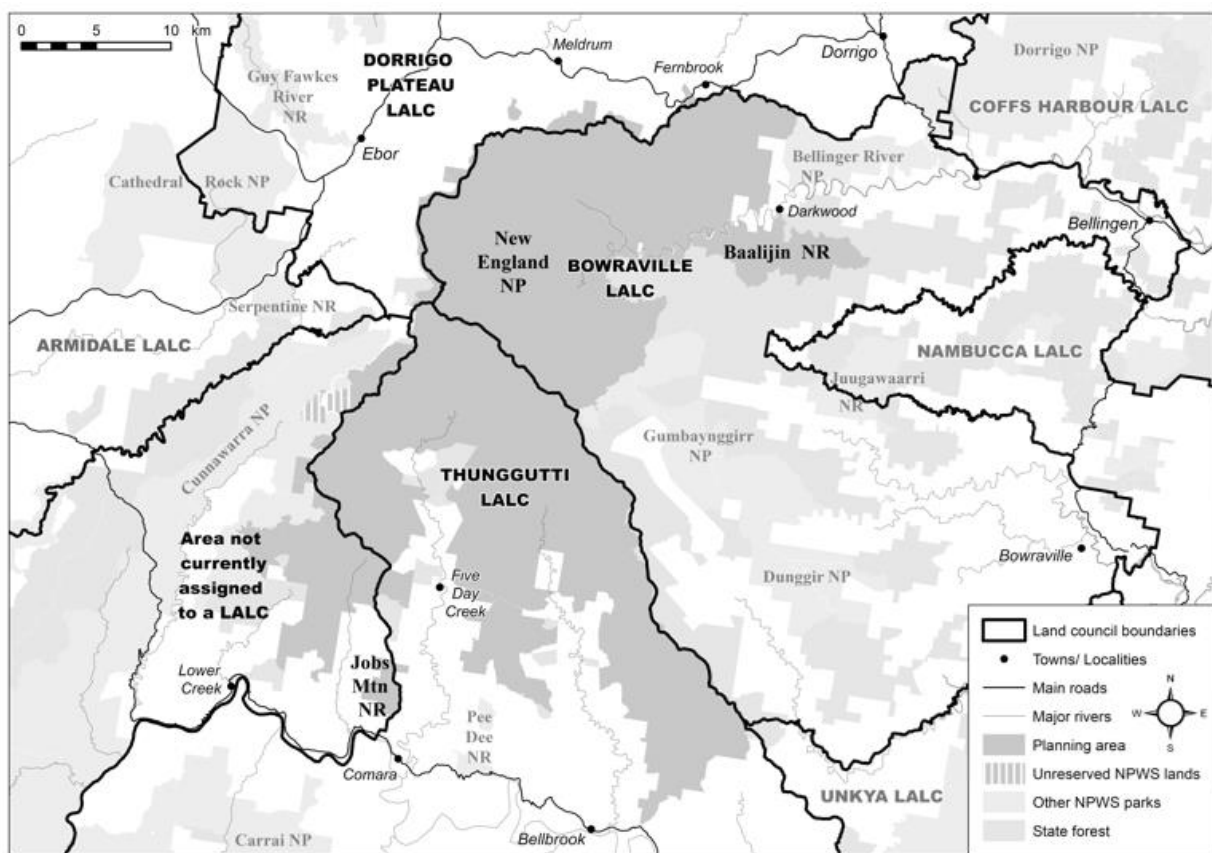


Figure 3: Local Aboriginal land councils in the vicinity of the parks

3.6a Burrel Bulai Aboriginal Place

The Burrel Bulai Aboriginal Place was gazetted in 1989 due to the significance of Andersons Sugarloaf, or *Barralbalayi*. Burrel Bulai is in the south-east section of New England National Park, east of Bellbrook (see Figure 3).

NPWS is currently working with key stakeholders to develop a management plan for the place. This work is ongoing and a working draft plan has been developed to guide further conversations about how best to manage Burrel Bulai. The statement of cultural values in the working draft plan states that:

‘Burrel Bulai Aboriginal Place is a place of exceptional cultural significance for Thungutti people and associated cultural groups. The Aboriginal Place is itself a mythological site. ... The mountain is a dominant geographic feature overlooking the Bellbrook Aboriginal Reserve and provides an enduring symbol of ‘Home’ for Thungutti people who have familial ties to Bellbrook’ (OEH 2016).

The summit of Burrel Bulai is of particular significance, as it is an important men’s site. One option being considered by key stakeholders involved in developing the management plan for the Aboriginal place is to restrict access to the summit of the mountain, or to provide information to explain why certain people should not go to the summit. This includes women, people who are not undertaking ‘traditional cultural activities’ and people who are considered to be desecrating the core values of the place.

Traditional cultural activities include activities related to Aboriginal ceremony, initiation and teaching, as well as activities that have taken place in the historical period such as bushwalking and horse rides to the summit (OEH 2016).

The draft management plan outlines appropriate governance arrangements and the community’s management goals and conservation priorities. These are consistent with this plan of management. If the final management plan for Burrel Bulai Aboriginal Place is not consistent with this plan of management, an amendment to the plan of management may be required.

There is a saddle at the base of the summit of Burrel Bulai, at about 600 metres above sea level, where the main trail ends. From this point, there is a cultural pathway that leads to the summit (872 metres above sea level).

3.6b Other culturally important areas and landmarks

Point Lookout is an area sacred to the surrounding tribes. It is known as *Berarngutta* (or *Buran Ngata*) to the Thungutti (Lissarrague 2007) and *Marlawgay Miirlarl* (‘lightning special place’) to the Gumbaynggirr (Morelli 2008). This area was traditionally prohibited from visitation to all except ‘clever men’, that is, males who had undergone initiations to the highest degree. According to legend, this area was the dwelling place of a giant wombat from the Dreamtime who, if disturbed, could cause the earth to tremble and strong winds to sweep down the Bellinger and Macleay valleys. Since the construction of the tourist road to Point Lookout in the late 1930s (see Section 3.7) this area has been the main visitor precinct in the area (see Section 3.9).

Jobs Mountain is a natural feature of great spiritual importance to the Thungutti People.

The Thungutti have a legend describing the creation of the **Nulla Nulla Creek**. The unusual meanders of the creek were created by a Dreamtime echidna (*ngagayn*), chased by a hunting group that eventually caught and killed it at a site near the headwaters of the creek now marked by a special rock. The story also explains how the echidna came to have quills, which according to the Thungutti are the hunters’ spears (Creamer 1981; Lissarrague 2007).

The parks also include several ceremonial sites, which indicate the importance of the area to the individual tribes for their own ceremonies and for interactions between the neighbouring tribal groups.

There are several complexes of **stone arrangements** at locations within and extending beyond the New England National Park that are of potential national significance (McIntyre-Tamwoy 2005). Three of these sites are within New England National Park, and two are in Serpentine Nature Reserve to the west of the park. An earth-circle (bora) ring in the south of New England National Park, on the Petroi Plateau, was used by both coastal and tableland tribes for initiation ceremonies and was considered second only to Serpentine in importance as a ceremonial ground to the Thungutti and Anaiwan Aboriginal peoples (McBryde 1974).

During these ceremonies, the main camp was at Lower Creek (20 kilometres south of the site, on the Macleay River), and the pathway between the two sites lies within the park. After 1924, initiation ceremonies were moved from this isolated site to Middle Creek and thence to Bellbrook, south of the park (Creamer & Shepherd 1975).

The **conflict** between Aboriginal and European settlers led to several massacres in the area surrounding the parks. Within the parks themselves, it is thought that the most notable massacre occurred on the escarpment edge at Darkies Point when a large group of Aboriginal people was forced off the escarpment edge as punishment for stealing cattle (Kohn 2006). By 1865 most of the river flats along the Macleay Valley had been selected by settlers, and in 1885 the remaining Thunggutti were settled on Aboriginal Protection Board reserves. One of these was located on Nulla Nulla Creek at Bellbrook, just south of New England National Park.

3.6c Protection of Aboriginal sites and places

While the NSW Government has legal responsibility for the protecting Aboriginal sites and places, it acknowledges the right of Aboriginal people to make decisions about their own heritage. Aboriginal communities will be consulted and involved in the management of Aboriginal sites, places and related issues, and in the promotion and presentation of Aboriginal culture and history. Gumbaynggirr Elders have been involved in some interpretation programs in the east of the New England National Park and in Baalijin Nature Reserve.

Aboriginal people will be encouraged to access the parks to undertake activities that support and maintain their connection with Country. Such activities should be ecologically sustainable, culturally appropriate and consistent with this plan of management. Some cultural resource use and cultural activities will be subject to NPWS consent.

Issues

- The parks include significant Aboriginal landmarks, ceremonial areas, pathways and archaeological sites. There is a need not only to preserve the physical attributes at these sites but also preserve the landscape and cultural significance associated with these sites with the involvement of the appropriate Aboriginal community. The exact location on the ground and any associated markers or sites are not known and may be unwittingly disturbed through management operations (e.g. trail maintenance). There are calls from the Aboriginal community to identify pathway locations, including pathways in Burrell Bulai Aboriginal Place.
- NPWS has attempted dual language signs in the past (e.g. at Point Lookout), and is interested in dual naming of New England National Park. However, with the traditional Country of several tribes overlapping in the area, there are problems with the selection of suitable Aboriginal place names.
- There has been a recent history of cultural learning on Petroi Plateau and there is the potential to formalise future opportunities by establishing a campsite there to allow cultural camps (see Section 3.9).
- The trig station on Burrell Bulai is in an Aboriginal Place of exceptional cultural significance. Consultation with the relevant government department is needed to determine the future need for the trig (see Section 5.3).

Desired outcomes

- Understanding of the Aboriginal heritage values of the parks is improved.
- Aboriginal sites, places and landscapes of significance are conserved and protected from damage.
- There is cooperative and integrated management of Aboriginal places and objects with Aboriginal communities and relevant agencies.

- The conservation of Aboriginal cultural heritage incorporates acknowledgment of both traditional and contemporary associations of the Aboriginal people with the environment.
- The important linkages between the various Aboriginal nations and the parks are documented, explored and enhanced.

Management responses

- 3.6.1 Manage Aboriginal heritage within the parks in partnership with relevant Elders, local Aboriginal land councils and other representatives of the Aboriginal community.
- 3.6.2 Work with relevant stakeholders to manage access and use of Burrell Bulai Aboriginal Place, including vegetation management to maintain cultural pathways.
- 3.6.3 Ensure management, use and any access restrictions (particularly to the summit) in Burrell Bulai Aboriginal Place are implemented in line with the final management plan for the place. Install any signage as required and provide interpretive/promotional information in consultation with key Aboriginal stakeholders.
- 3.6.4 Provide for access to Country for Aboriginal people to maintain, renew or create cultural practice.
- 3.6.5 Undertake an archaeological survey and cultural assessment before any works are undertaken that have the potential to impact Aboriginal sites and places.
- 3.6.6 Do not publicise the location of Aboriginal sites and places except where the agreement of relevant Aboriginal community organisations has been obtained. Before promoting a site or place, prepare a conservation study and undertake any management work necessary to protect the site or place.
- 3.6.7 Work with the members of the relevant Aboriginal communities to identify Indigenous names for key sites, places and culturally significant features within and surrounding the parks. Where appropriate, work with the Geographical Names Board to formally use these names.
- 3.6.8 Interpret the Aboriginal heritage and contemporary associations of the area in consultation with Aboriginal community representatives. Support Aboriginal community proposals to undertake interpretation of Aboriginal cultural values in the parks.

3.7 Historic heritage

NPWS protects and conserves the cultural and heritage landscapes located in NSW parks. Cultural heritage comprises places and items that may have historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance. Conservation involves identifying, assessing, protecting and maintaining the important cultural and heritage values of landscapes, resources, places and objects.

European knowledge of the New England Tableland began after the explorations of John Oxley in 1818, with settlement occurring from the early 1830s by graziers seeking new pastures for their flocks. The rich river valleys of the Macleay and Bellinger were opened by cedar-getters in the early 1840s.

Exploration of the tablelands and the lower river valleys preceded full exploration of the country near the escarpment. The first good trafficable route from the tablelands to the coast was surveyed in 1856. Called Kemps Line, it followed Tellygram Range and Five Day Creek, and then crossed the range to the Nulla Nulla Creek Valley, tracing the route of Postmans Trail (Lea et al. 1977; Neil 1972). Both Diamond Flat and Upper Five Day Creek were settled at this

time. Kemps Line was superseded by the route of the Armidale–Kempsey Road via Jeogla when it was upgraded for general traffic in 1902. Another route from the tablelands followed the Botumburra Range, linking the Petroi Plateau with the Lagoon Creek Valley, and was used sporadically from the 1870s. It is likely that these routes followed established Aboriginal pathways.

The grazing land on the plateau edge, overlooking the coastal valleys, was originally part of the Serpentine River pastoral run (Lea et al. 1977). This area was selected into smaller holdings and settled at the end of the 19th century. From the time of the original surveys, the scenic values of the plateau edge were recognised by the inclusion of Point Lookout and the adjacent cliffs in scenic reserves not available for settlement, thus protecting them from the extensive clearing that occurred on the Ebor Plateau.

The steep rugged country in the headwaters of the coastal rivers was reserved for timber production in the early part of the 20th century, having experienced very little exploration and development in contrast to the tablelands and coastal floodplains. The timber industry was originally based on the selective logging of rainforest timbers, including red cedar, which was a particularly valuable timber. The largest recorded red cedar, also reportedly the largest known tree to have occurred in New South Wales, grew near Nulla Nulla Creek. It was felled in 1883, yielding 240 cubic metres of timber (FCNSW 1989, p.138). Rainforest logging continued until after the Second World War. At this time, two of the main mills cutting softwoods in the Macleay Valley were located at Upper Five Day Creek and at Carcolla in the Nulla Nulla Valley, just outside the park (Neil 1972; Hudson & Henningham 1986). Major hardwood logging did not occur in the area until the 1960s.

Inspired by the declaration of Queensland's Lamington National Park in 1915, Phillip Wright, a grazier and Dumaresq Shire councillor, advocated for a large national park in the New England region (Stanley 1982). This park would feature at its heart the spectacular, rugged wilderness landscape visible from Point Lookout. The most inaccessible parts of the state forests were revoked to establish a reserve in 1931. In 1933 this reserve was named 'The New England National Park' and the area was formally dedicated in 1935. Shortly after its creation, additions saw the park grow to 22,500 hectares. The official opening by the Governor-General took place at Point Lookout in 1937 (Stanley 1982). Management of the park was carried out by a Trust, which was formed in 1933, and continued to operate until 1976 (Wright no date [n.d.]).

The park is historically significant because it was the first national park dedicated in northern New South Wales. However, until the protection of New England National Park under the National Parks and Wildlife Act, its designation as a 'national park' did not preclude extractive uses.

For example, on the Snowy Range there is a large antimony deposit, which was originally worked in 1907. Mining efforts recommenced and intensified after the park's gazettal in the 1930s and continued after the Second World War, with mining leases issued until 1956. Mining occurred in a number of widely spaced shafts and tunnels, as well as minor surface workings and dumps, with up to 40 miners working at the site. No processing of antimony occurred on site and there were no tailing dams established. As well as the tunnels and other ground modifications, there are some ruins remaining at the site, including the remains of two buildings and a loading ramp. Robinsons Knob Trail was partially constructed in the latter stages of mining to allow access by the army surplus trucks, which replaced packhorses to remove the mined ore. As the natural process of regeneration continues, most of the area of disturbance is returning to an essentially natural condition and the tunnels are now being used as roosts by eastern bentwing-bats.

Extractive uses within the park also included timber harvesting. A number of stands of red cedar within the park and some hoop pine were logged in 1957 by the 'cedar king', Bill Hayden, with the permission of the Trust. The royalties from this operation provided

substantial funds that allowed for the management of the park and development of visitor facilities (Wright n.d.).

Timber harvesting was the major land-use in most of the recent additions to New England National Park and in Baalijin Nature Reserve before their reservation. To facilitate timber extraction, substantial efforts were made to construct roads to access the forests, including Horseshoe Road and Kilprotay Road. Kilprotay Road is named after Kilgour, Provan and Taylor; the crew who originally built the road (D Hitchcock, pers. comm.).

Major additions to New England National Park were made in the 1980s (as a result of the Wran Government's Rainforest Decision) and in the lead up to the North East Regional Forest Agreement in the 1990s following a blockade of Horseshoe Road by the North East Forest Alliance in what was then Oakes State Forest. The protest site is considered to be of regional significance (NPWS 2003) although there is no longer any physical evidence of the blockade at the site.

The recent additions to the park in the upper Bellinger Valley at Brinerville contain an extensive area that was released for homestead farms in the 1920s. A number of small holdings were taken up and the area developed into an isolated farming precinct. Following the 1950 flood most of the holdings were abandoned, and by the early 1970s most of these had been purchased as a single holding (Lean 2009). There are currently five houses and other associated structures (including two dairies, a cheese-making cool house and a telephone exchange) in varying states of disrepair. A preliminary archaeological inspection has identified that the area is of local heritage significance and interim cultural heritage management guidelines have been prepared (Lawrance 2009; McAdam 2009).

The Misty Valley area, added to the park in 2000, contains a house and nursery constructed of fibro-asbestos sheeting that were removed in 2014. The former dairy bales on the property may have some cultural heritage value.

The 2003 Petroi Plateau additions to the park contain several huts, a besser-brick garage, a neglected orchard of apple and pear trees, and other exotic trees. The huts are in a poor condition.

The early management and development of New England National Park provides part of the historic heritage of the area, and includes cabins and facilities in the vicinity of Point Lookout. A heritage assessment has been completed for these structures (Gojak 2005). Following the construction of 'Tourist Road 4002' to Point Lookout by Dumaresq Shire Council in 1938, Point Lookout became the focus for early park development works. The original buildings in the area (i.e. cabins, shelter sheds, a store and toilets) share a design style that involved rough-hewn granite stone imported to the site and rough timber carpentry, in keeping with the international park design tradition (Gojak 2005). Early infrastructure at Point Lookout has been assessed to be of regional significance (Gojak 2005). The store and former toilets at Point Lookout are currently not being used and require some maintenance works to conserve them against the weather. The major shelter shed is currently underutilised. In order to determine the most appropriate management for these heritage items, a conservation management plan will be prepared. Management will focus on improving visitor experience in the area, in particular, by improving the amenity and utility of the major shelter shed (see Section 3.9e).

Toms Cabin is a timber building with corrugated iron roof, which was constructed in 1954 specifically for visitor accommodation. It is named after Tom Elliott, an early ranger in the park. After 1958, when the Chalet and the Residence were constructed, Banksia Point became the focus for park visitors. The Chalet was built for visitor accommodation, whereas the Residence was constructed for staff accommodation and as a public information office. The buildings at Banksia Point still retain their original unpainted concrete block walls, although the original corrugated iron roofs have been replaced.

In the 1970s the use of the Residence was changed to visitor accommodation, and a house was constructed at the park's entry for ranger accommodation. Currently the Rangers House is not being used and is in poor condition (see Section 3.9f). A heritage assessment has identified that the building has limited possible local significance that is restricted to demonstrating the changing way that the park has been managed through time (Gojak 2005).

Issues

- Due to the regional significance of the heritage structures in the Point Lookout area, a detailed conservation management plan needs to be developed to guide future maintenance and management of the structures.
- Stanley's history of New England National Park, in particular, the historic values associated with the early management of the park and their significance is incomplete.
- More work is needed to identify the heritage values associated with the former small settlements that existed at Brinerville before the 1950 floods.
- Some of the structures at Petroi may have ongoing management value (see Section 5.2).

Desired outcomes

- Historic features are appropriately conserved and managed.
- Understanding of the cultural values of the parks is improved.

Management responses

- 3.7.1 Prepare and implement a conservation management plan (or heritage action statement) for the Point Lookout structures or any additional sites identified as being of state heritage significance.
- 3.7.2 Collect oral history as well as other information to support the documentation of the history of New England National Park.
- 3.7.3 Document and assess the heritage values of the localities and remaining structures at Brinerville and Petroi. Progressively record other historic places and structures, assess their significance and develop appropriate management strategies including maintenance, demolition or allowing them to decay.
- 3.7.4 Ensure protection of historic sites from fire in accordance with the park's fire management strategy through establishment and maintenance of appropriate asset protection zones.

3.8 Education and research

The focus for education and research activities in these parks is in New England National Park.

The Point Lookout area of New England National Park has a long history of providing opportunities to explore, appreciate and understand the values of the park, including its World Heritage values. One of the obligations of World Heritage listing of the Gondwana Rainforests of Australia is to present the outstanding universal values of the park to the broader community, in the context of the World Heritage property (CERRA 2000).

To facilitate this understanding, interpretive displays are provided in the shelter shed at Point Lookout and there are a few trackside interpretive signs.

It is estimated that about 1000 school and university students visit New England National Park each year. Point Lookout is the site most visited by students. A large proportion of the school

students are taken to the park on day trips as part of their stay at the Thalgarrah Environmental Education Centre. The park is also visited by students from Armidale for day excursions or camping trips.

NPWS conducts Discovery program activities in the park during school holidays focussing on the Point Lookout area.

Themes regularly covered in Discovery programs and included in on-park interpretive displays in New England National Park include:

- Aboriginal heritage and connections across the landscape
- the World Heritage significance of the rainforests and what World Heritage means in the Australian and global context
- the importance of wilderness in providing opportunities for ongoing natural evolutionary processes and large expanses of undisturbed habitat
- the diversity of ecosystems present in the park and their features (such as old-growth forest and significant species)
- community-initiated conservation reflected in the history of the park's establishment and early management by the Trust.

Provision of information about these parks will continue to involve three levels:

- promotion to increase community awareness of the existence of New England National Park, its conservation importance and visitor opportunities
- presentation of the outstanding universal values of Gondwanan rainforests
- orientation and regulatory signage to enable visitors to find their way around the parks, introduce them to the landscape and advise them about use restrictions
- interpretation of individual components of New England National Park's environment in order to increase visitor understanding of its values and of the environment in general, and to provide information on minimal impact use.

Research conducted in New England National Park underlies much of the information provided to the public in interpretation programs. The University of New England, in particular, has a long association with education and research programs in the park, starting in the 1960s, with an early strong emphasis on ecological studies and the earth sciences. The rainforest and heathland communities around Point Lookout have been the focus for much of this interest due to its accessibility from Armidale, and the area is a standard site for first and second year botany and ecology students.

To support its research program, the university installed a demountable cabin in the park that was used primarily for accommodating researchers and as a laboratory and storage facility. It is now dilapidated, no longer in use and will be removed (see Section 5.3).

The park's large altitudinal range makes it ideal as a field laboratory for research into the overall environmental impacts of climate change and, in particular, the changes in species distribution in response to warming. The park also offers opportunities for research into changes in the abundance of those high altitude species that have little opportunity to move to higher altitudes or latitudes to avoid temperature rises.

Issues

- There is an ongoing commitment to promote the World Heritage values of New England National Park and its role within the Gondwana Rainforests of Australia.
- Little is documented about the park's rainforest birds or mammals (apart from quolls and dingos) (see Section 3.4). Little or no research has been carried out in the nature reserves.
- The park offers unparalleled opportunities for monitoring the impacts of climate change due to its diversity of vegetation communities over a large altitudinal range.

Desired outcomes

- There is widespread community understanding and appreciation of the parks' natural and cultural values.
- New England National Park remains a useful educational resource for local schools and universities.
- Research programs enhance NPWS' capacity to manage park values.

Management responses

- 3.8.1 Continue to liaise with and support universities and research institutions to encourage appropriate research in the parks, including the environmental impacts of climate change.
- 3.8.2 Maintain and renew the following as a priority:
- orientation signage for the walking track system outside the wilderness
 - interpretive displays in the Point Lookout area.
- 3.8.3 Support and assist educational use of New England National Park by schools, Thalgarrah Environmental Education Centre, universities and other organisations.

3.9 Recreational opportunities

The management of recreation and tourism in NPWS parks aims to ensure that visitors enjoy, experience and appreciate parks, while at the same time conserving and protecting park values. Visitor opportunities provided by NPWS are typically in natural and undeveloped settings and generally at the low-key end of the spectrum. The provision of visitor opportunities offering a range of recreation experiences is a key goal for recreation planning across the region. The specific recreation opportunities provided at a particular park depend on:

- the type of park and associated management principles under the National Parks and Wildlife Act (see Section 2.2)
- the park's values in the context of the broader landscape
- the level and nature of demand for particular tourism and recreation products
- the sustainability of the activity and access.

Due to access restrictions, planning for visitor use of these parks will continue to focus on the Point Lookout area of New England National Park, with some low-key uses permitted in the east of the park and in Baalijin Nature Reserve. As Jobs Mountain Nature Reserve is surrounded by private freehold and leasehold property and there is no secure, legal practical access to the reserve, recreational use will not be promoted.

The location of New England National Park between the New England Tableland and the Mid North Coast, combined with its natural features, make it a desirable location for visitors wishing to undertake a range of recreation activities, such as bushwalking, camping, staying overnight in built accommodation, picnicking and birdwatching. Formal visitor facilities, including lookouts and walking tracks at Point Lookout and Killiekrankie Mountain, provide opportunities for visitors to enjoy the spectacular landscape values of the area. Point Lookout's location just a short detour off the Waterfall Way ensures ongoing moderate visitation levels.

By far the majority of visitors to New England National Park only visit the natural escarpment setting of the Point Lookout area. It is the only section of the park easily accessible to two-wheel drive vehicles and it is the location where nearly all of the park's visitor facilities have been developed, including a range of walks. The rugged nature of the topography and access restrictions mean that Point Lookout will continue to be the main focus of visitation.

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. Facilities, including formed tracks and trails and signposts, are generally avoided unless essential for public safety, management operations or environmental protection.

Nature-based recreational opportunities in New England National Park and Baalijin Nature Reserve are complemented by opportunities provided in adjoining national parks and other public and private lands, where there are also a range of visitor facilities. These include the Cathedral Rock, Cunawarra, Dorrigo, Bellinger River and Oxley Wild Rivers national parks.

The management actions below are designed to maintain the low-key, remote, scenic and natural settings, which are special features of these parks. They also provide for future use in a manner that protects ecological integrity, and cultural, World Heritage and wilderness values while contributing to the environmental, social and economic wellbeing of local and regional communities.

3.9a Vehicular visitor access

The only easy two-wheel drive access to and within New England National Park is along Point Lookout Road and other short roads within the Point Lookout area. Elsewhere, access to sections of New England and Baalijin bordering state forests is via remote four-wheel drive trails and there are limited public access rights to those sections of the parks that border neighbouring freehold lands (see Figure 2).

The majority of New England National Park is very steep and there are limited vehicle touring opportunities within the park itself, except for Hickeys Creek Road and Postmans Trail. There have been incidents with inappropriate public use of Kilprotay Road, particularly after wet weather. It is currently considered only suitable for use by four-wheel drive vehicles in dry weather, and is regarded as treacherous in wet weather, especially in the vicinity of Cockatoo.

Horseshoe Road is the principal access to Baalijin Nature Reserve and the eastern boundary of New England National Park, including Killiekrankie Mountain (see Figure 2). While it has the potential to be a tourist drive linking Bellingen and Bowraville, work would be required to maintain it to a suitable standard before being promoted.

Access to Brinerville (i.e. the section of New England National Park in the Bellinger Valley upstream of Darkwood) is via Horseshoe Road and Zeepaert Road, a route which requires a four-wheel drive vehicle. Currently vehicular access to Brinerville is restricted to management vehicles and private property inholding owners. Owners of inholdings will be allowed to continue to access their properties via these roads (see Section 5.1). The only other way to access Brinerville is on foot along the New England Wilderness Walk (see Figure 2).

3.9b Bushwalking

The parks provide a range of bushwalking opportunities within a number of settings with varying degrees of social interaction, physical challenge and self-reliance. All existing formal walking tracks are located in New England National Park (see Table 2). Most of these are located in the Point Lookout area (see inset on Figure 2).

By design, they offer a range of walking experiences and standards. The walking track grades identify a track's suitability for different user groups as follows:

- Grade 1 – assisted disabled walkers (sealed path)
- Grade 2 – walkers with young children (generally formed tracks)
- Grade 3 – beginner walkers (generally formed tracks with some steep sections)
- Grade 4 – experienced walkers (generally rough tracks).

All walking tracks, except for the Point Lookout Circuit, are natural surface tracks, with occasional orientation signage. Ongoing maintenance of tracks, including drainage, is required to minimise erosion on the tracks. Track sections along the Cascades Walk and Wrights Lookout may require further works to minimise impacts to significant vegetation (see Section 3.3).

A small proportion of visitors who are experienced and equipped for self-reliant bushwalking also utilise the large wilderness and remote sections of the parks. These provide opportunities for self-reliant recreation in an undisturbed setting away from the formal track network. A popular long-distance (2–3 day) wilderness walking route traverses the northern half of the wilderness area from the top of the escarpment near Point Lookout to the Bellinger River valley at Darkwood (see Figure 2). The Brinerville addition to the park has allowed for this route to be promoted to the general public as the New England Wilderness Walk. Bushwalking in Jobs Mountain Nature Reserve is only allowed where permission to access the reserve has been obtained from reserve neighbours.

Table 2: Walking tracks in New England National Park

Track name	Setting	Distance	Track grade ^a
Point Lookout Circuit	Subalpine woodland, escarpment edge	400m	For the first 100m, all access path (Grade 1); graded path (Grade 2) for remainder; all sealed
Antarctic Beech	Rainforest	340m (one way)	Walking track (Grade 3)
Berarngutta Circuit	Subalpine woodland	1.1km	Walking track (Grade 3)
Cascades Walk	Rainforest	2.5km	Hiking track (Grade 4); track head located 1.5km along management trail
Eagles Nest Track	Escarpment edge, rainforest	2km	Walking track (Grade 4); steep sections below escarpment
Lyrebird Walk	Escarpment edge, subalpine woodland, wet heathland, rainforest	5.5km	Walking track (Grade 3); steep sections below escarpment
Tea Tree Falls Walk	Subalpine woodland, rainforest	4km (one way)	Walking track (Grade 3)

Track name	Setting	Distance	Track grade ^a
Tree Fern Valley	Rainforest	110m (one way)	Walking track (Grade 3); steep sections; primarily used to form a shorter circuit with Lyrebird Track
Wrights Lookout	Heathland	1.5km (one way)	Hiking track (Grade 4); track head located 1.5km along management trail; short steep section
Killiekrankie Mountain	Wet sclerophyll forest, rainforest	1.4km (one way)	Hiking track (Grade 4); some stairs
New England Wilderness Walk	Escarpment edge, ridge-top eucalypt forest, rainforest, river flats	33km (one way)	Walking route traversing management trails and walking tracks (Grade 4); some steep and poorly defined sections; takes 2–3 days

^a The Australian Walking Track Grading System has been used as the basis for this track classification system. For further information on these grades and their relationship to the Australian Standard on walking tracks, please refer to the *Australian Walking Track Grading System Discussion Paper* (DSE 2010).

3.9c Cycling

Under NPWS policy and the *Sustainable Mountain Biking Strategy* (OEH 2011b) cycling is permitted on park roads and management trails outside of wilderness areas, and is generally not permitted along management trails within wilderness areas. Within wilderness areas, cycling is only permitted where it will not degrade natural or cultural heritage values.

Within the declared wilderness area cycling is currently occurring along Robinsons Knob Trail and, less regularly, along the other management trails. At current levels this use has minimal impacts on natural and cultural heritage values, however, impacts will be monitored and assessed. Cyclists need to be aware that management trail maintenance is infrequent and so hazards such as encroaching vegetation and stick injuries are likely. Riders should also comply with the International Mountain Bicycling Association *Rules of the Trail*, and any quarantine procedures that are introduced to reduce the spread of phytosphthora (see Section 4.1).

Opportunities for cycling are also available in the south-east of New England National Park (around Hickeys Creek Road, and along Horseshoe and Kilprotay roads), and on the park road network within Baalijin Nature Reserve. Cycling is also permitted on park roads and management trails in nearby Cunnawarra National Park.

3.9d Horse riding

There is no history of horse riding in the bulk of New England National Park due to the steepness of the terrain, the thick vegetation and the unstable nature of the soils. Horse riding is not permitted in the New England Wilderness Area.

Outside the New England Wilderness, horse riding occurs occasionally along Horseshoe Road through Baalijin Nature Reserve and adjacent to New England National Park. Horse riding occasionally occurs in the south-east of the park, along Hickeys Creek Road and the southern part of Kilprotay Road, and is also part of the cultural heritage associated with Postmans Trail. Burrel Bulai has been used by Aboriginal men from Bellbrook as a place for horse riding to support traditional cultural activities. There are limited opportunities for circuit rides that can be completed in a day, and there are no sites within any of these parks where camping with horses can be undertaken.

The Bicentennial National Trail follows the Styx Forest Way through nearby Cunnawarra National Park but does not traverse these parks. Riders are not permitted to detour off the

Bicentennial National Trail to Point Lookout with their horses. Point Lookout Road is a popular road throughout the year, it is narrow and steep in sections and there would be safety issues with horse riders using this road.

3.9e Day use areas

Day use areas are the main destination for the vast majority of visitors to parks. Day use areas typically have picnic facilities and are the start and finish points for walking tracks.

Point Lookout in New England National Park is a major day use area and is the focus for most visitation. As well as numerous lookouts and walking tracks, there is a shelter shed with a fireplace, an interpretation display, toilets and a small picnic area located 50 metres before the main car park. Firewood will continue to be provided for the barbecue in the shelter shed. The current configuration of the main car park is 13 designated car parking spaces and 2 spaces for buses, with an additional couple of vehicle spaces adjacent to the small picnic area. This configuration meets current demand. A small picnic area is located at Banksia Point. It has public toilets, tables and a barbecue.

The track head for the Killiekrankie Mountain Walking Track is currently the only day use area in the east of the park. It has minimal facilities.

A former picnic area along the Berarngutta Circuit walking track is located several hundred metres west of Point Lookout and is accessed via a short, gravel road. It is in a subalpine woodland setting on the edge of the escarpment with good views but no formal lookout. It is linked to Point Lookout by road and by Berarngutta Circuit. The gravel car park has the capacity for six vehicles. The toilets have been closed and the area functions more as a rest stop for people doing the circuit walk than as a picnic area. There are potential risks to visitors posed by the natural, unfenced vantage point.

3.9f Visitor accommodation

Camping and campfires

Current and proposed camping areas in New England National Park are listed in Table 3. Bush camping is currently allowed throughout New England National Park and Baalijin Nature Reserve at sites remote from public access roads.

Table 3: Existing and proposed camping areas in New England National Park

Camping area (class ^a)	Defined camp sites	Capacity (as proposed by this plan)	General facilities	Fires
Thungutti (medium)	Yes	15 vehicle-based sites (including provision for camper trailers); 3 walk-in campsites (no change proposed)	Tables, galley, enclosed cold shower, toilets, gravity-fed water	18 wood fireplaces 2 gas barbecues in galley
Woods Creek (bush)	No	5 walk-in campsites	None (toilet may be installed if needed)	None (users encouraged to carry stoves)

^a Camping Area Classification as follows:

Bush = Walk-in camping area with capacity for fewer than five tents, no defined sites or vehicle access. Toilets, water and barbecues would be the only facilities provided.

Medium = Vehicle-based camping area with capacity for up to 40 tents, usually with defined sites. Barbecues, tables, shelters and information displays provided, with water, showers, garbage collection and recycling facilities optional.

Thungutti Camping Area is the only established camping area. Its current configuration allows for 15 tents adjacent to vehicles, plus three walk-in campsites. There are an increasing number of small caravans, camper trailers and campervans using this camping area and a reconfiguration of the camping area is required to accommodate this change in use patterns, although capacity will remain unchanged. The camping area is currently not suitable for large caravans and this situation will remain in the long term. However, the Little Styx River Camping Area located 2 kilometres west of the park provides for large caravans and campers.

The Brinerville area is a remote, difficult to access part of the park. Due to restricted access and the difficulty in maintaining such a remote area, it is not considered suitable for development or promotion as a general camping area. However, opportunities for group activities will be considered in this area (see Section 3.9h).

Because of its strong ongoing cultural associations, Petroi Plateau is a site that is suitable for Aboriginal culture camps, but such use would be subject to consent from NPWS. Due to access problems, difficulty in maintenance due to its remoteness and for cultural reasons, it is not considered suitable for development or promotion as a general camping area.

The walk-in, bush camping area at the junction of Woods Creek and the Bellinger River will be formalised. Depending on the level of use of the New England Wilderness Walk, it may be necessary to install a toilet at this camping area.

Apart from the barbecue in the shelter shed at Point Lookout (see above), designated fireplaces (including wood barbecues, fire pits and fire rings) are provided at various locations in New England National Park. NPWS has historically provided wood for use in these open fireplaces, however, additional firewood collection at camping areas has impacted native vegetation at a local level. At times firewood has been stolen for off-park use and it is no longer cost-effective for NPWS to provide firewood in these areas. As such, firewood collection will be prohibited in the park and provision of firewood will be phased out. Visitors will be encouraged to bring their own firewood.

Built accommodation

Given the long-term use and ongoing popularity of the cabins within the park, existing built accommodation will be retained with new acquisitions considered on a case-by-case basis for suitability (see Table 4).

Table 4: Built accommodation in New England National Park

Accommodation	Maximum capacity (persons)	Mains power	Configuration
Chalet	5	Yes	Open plan
Toms Cabin	8	No ^a	2 bedrooms
Residence	10	Yes	3 bedrooms
Diamond Flat House ^b	8	No ^c	2 bedrooms

^a Stand-alone solar power provided for lighting only.

^b Subject to assessment of most appropriate use and feasibility.

^c Stand-alone solar power system.

The Chalet and Toms Cabin were specifically built for visitor accommodation by the former Trust. The Residence and the Rangers House were built for staff accommodation purposes, with part of the Residence also used as an office and visitor information centre. From time to time upgrades have been made to the Chalet, Residence and Toms Cabin to improve visitor safety and amenity.

Three cabins in the park are currently rented out to the public for short-term holiday accommodation: the Chalet, Toms Cabin and the Residence. Two of the cabins are located at Banksia Point (the Residence and the Chalet), and Toms Cabin is on Point Lookout Road about halfway between the park entrance and Point Lookout. Any changes to these buildings will be consistent with an assessment of their heritage values.

There is a relatively new two-bedroom house at Diamond Flat (see Section 1.1). This house is only accessible via a gated, four-wheel drive road. There is potential for the adaptive re-use ('adaptive reuse' as defined by the National Parks and Wildlife Act) of the Diamond Flat House as visitor accommodation or for park management purposes. Use of the house will be subject to an assessment of the most appropriate use and any necessary feasibility study.

The Rangers House is currently not in use, is in poor condition and will be decommissioned (i.e. removed). The existing structures at Brinerville, Misty Valley and Petroi are currently in such poor condition that they cannot be made suitable for holiday letting.

3.9g Adventure activities

Due to its rugged topography, thick vegetation and high rainfall, the parks are not generally appropriate locations for most activities considered 'adventure activities' under the National Parks and Wildlife Regulation (such as rock-climbing, abseiling, hang-gliding and white-water boating).

Adventure activities may be permitted with NPWS consent following a case-by-case consideration of potential impacts on park values and other users.

3.9h Commercial, organised and group activities

Commercial operators currently offer tours in New England National Park and Baalijin Nature Reserve. Most licensed operators visit the Point Lookout area, some hiring cabins for overnight stays and some providing guided walks in the area. There is the potential for commercial providers to guide hikes in other parts of these parks. Local Aboriginal people who wish to run commercial tours in the Burrell Bulai Aboriginal Place, or elsewhere in the parks, to tell their traditional stories will be supported. Guided motor (trail) bike riding occurs in the east of the planning area, primarily along Horseshoe Road.

In licensing commercial tours in parks, NPWS develops and applies conditions to minimise environmental impact, to ensure quality interpretation of the park's values to tour participants and to maintain the experience of other visitors.

Under the National Parks and Wildlife Regulation, rallies or other competitive activities require consent. Rallies involving trail bikes and four-wheel drive vehicles are occasionally permitted along Horseshoe and Kilprotay roads, but only for sectors not based on speed. Orama Road through Baalijin Nature Reserve may also be suitable. Organised events and commercial tours will be subject to the same closures of Kilprotay Road following wet weather that apply to other park visitors.

Group activities, including visits by schools or Landcare groups, facilitate a quality experience for participants enhancing their understanding and appreciation of the natural, cultural and social heritage value of the parks. Limiting group sizes and imposing conditions on how certain activities are undertaken assists in the mitigation of potential impacts of large groups.

The definition of what constitutes a 'large' group varies according to the activity. Those participating in activities that have the potential for higher impacts will require consent for smaller group sizes than those participating in activities that have lower impacts, in accordance with Table 5.

Table 5: Group size thresholds

Activity description	Group size requiring consent
Horse riding	Groups involving more than 10 horses
Four-wheel drive touring	Groups involving more than 10 vehicles
Walking/cycling in the wilderness	Groups of more than 15 people
Walking/cycling elsewhere in the park	Groups of more than 20 people
Other activities	Groups of more than 40 people

The Brinerville area has the potential to provide an outdoor venue location for group activities. Subject to the heritage assessment of structures (see Section 3.7), facilities may be provided and consent may be issued for events and functions in this area. Such events and functions could include Aboriginal culture camps, NPWS open days to present the area to the public, and other group activities that have a clear relationship to park management. The number and scale of such events would be strictly limited to reduce impacts. Construction of a shelter in the venue location will be considered during site planning. Adaptive re-use of the Bros dairy building in the Brinerville area may also be possible, subject to heritage, safety and feasibility assessments. Other buildings in the area are beyond any form of adaptive re-use due to their dilapidated condition.

Issues

- The only access to Jobs Mountain Nature Reserve is across private property and access requires the permission of reserve neighbours.
- Horseshoe Road has the potential to be promoted as a tourist route but maintenance responsibilities need to be determined, along with the standard that is suitable for promotion. Orientation signage will also need to be improved.
- The section of Kilprotay Road in the vicinity of Cockatoo is dangerous for all types of vehicles in wet conditions.
- There are varying standards of walking track in New England National Park and this is communicated to visitors through track-head signage.
- There have been instances where people undertaking self-sufficient remote walking in the wilderness areas of New England National Park have become disoriented/lost.
- Given high visitation levels at Point Lookout, the more accessible walks require ongoing maintenance to meet specified track standards.
- The impacts of cycling and remote walking need to be monitored. If impacts become a concern, carrying capacities will need to be established and systems put in place either to limit numbers or to limit impacts.
- Use of day use areas is currently within capacity. The toilets at Berarngutta are a potential source of pollution (refer Section 3.1).
- There are risks to visitors posed by the natural vantage point at Berarngutta.
- Changes in types of camping and visitor expectations/needs necessitate the reconfiguration of Thungutti to accommodate campervans and camper trailers.
- The major shelter shed at Point Lookout is currently underutilised. It may be appropriate to investigate ways to improve the amenity/utility of the shed in association with the development of a conservation management plan for the site (see Section 3.7).

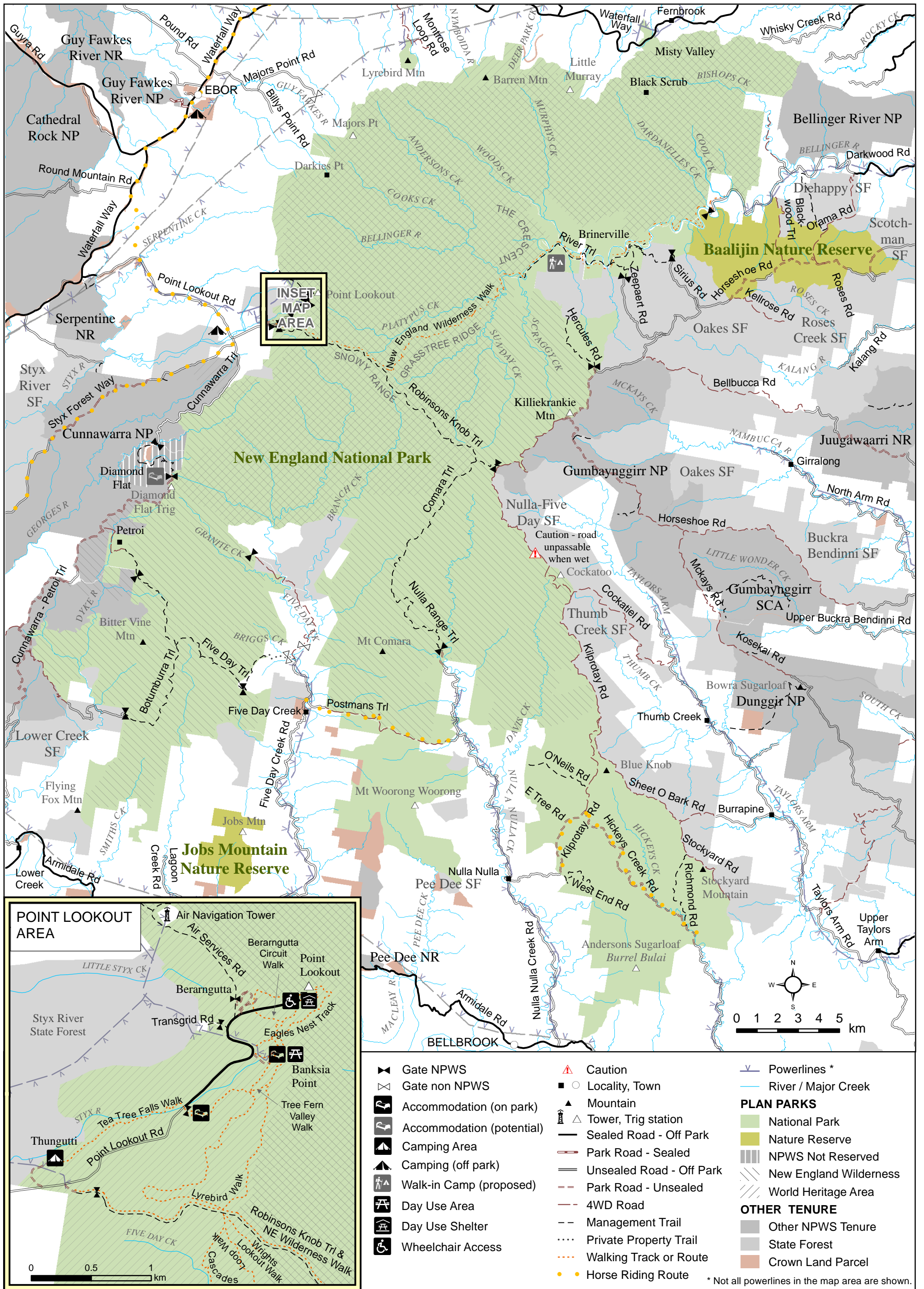


Figure 2. Map of the parks

- The cabins in New England National Park are very popular and there is strong demand for their continued holiday letting.

Desired outcomes

- Visitor use is appropriate, ecologically sustainable and maintains low-key, remote, scenic and natural park experiences.
- Visitors are aware of recreation opportunities in New England National Park and can easily find their way to park facilities and orientate themselves on the walking tracks outside the wilderness area.
- Visitor use encourages appreciation of park values.
- Provision of accommodation within New England National Park is financially sustainable.

Management responses

Visitor access

- 3.9.1 Recreational use of Jobs Mountain Nature Reserve will not be promoted.
- 3.9.2 Support the concept of a tourist drive along Horseshoe Road to expand on the existing experiences available to visitors to the region.
- 3.9.3 Close Kilprotay Road to public vehicular use following wet weather. In liaison with Forestry Corporation of NSW, install advisory signs and/or gates at the intersections with the Horseshoe Road, Cockatiel Road, Sheet O Bark Road and Hickeys Creek Road to achieve this closure. Conditions placed on organised events and commercial tours will prohibit vehicular use of Kilprotay Road in wet conditions.

Bushwalking

- 3.9.4 Allow bushwalking throughout Baalijin and Jobs Mountain nature reserves (where permission to access Jobs Mountain has been obtained from reserve neighbours). In New England National Park, only allow off-track bushwalking in areas outside the Point Lookout area.
- 3.9.5 Maintain the current network of walking tracks in New England National Park to the standards given in Table 2.
- 3.9.6 Monitor the use of the New England Wilderness Walk between Point Lookout and Brinerville. If required to assist navigation, install minimal route marking.
- 3.9.7 Encourage walkers to contact NPWS before entering the wilderness area and promote minimal impact bushwalking practices.

Cycling

- 3.9.8 Allow cycling on all park roads and management trails within Baalijin Nature Reserve and New England National Park, including within the New England Wilderness Area.
- 3.9.9 Monitor cycling use and assess its impacts on park and wilderness values and the risks to visitor safety associated with cycling. Implement measures to limit impacts as necessary.
- 3.9.10 Encourage cyclists to contact NPWS before entering the wilderness area.

Horse riding

3.9.11 Allow horse riding only on the designated horse riding routes shown on Figure 2, and under consent for 'traditional cultural activities' in Burrel Bulai Aboriginal Place as appropriate.

Day use and camping areas

3.9.12 Improve the utility and visitor amenity of the major shelter shed at Point Lookout consistent with the conservation management plan.

3.9.13 Reconfigure Thungutti Camping Area, within the existing camping area footprint, to accommodate small campervans and camper trailers, but not to accommodate large caravans and motor homes.

3.9.14 Provide a walk-in camping area at Woods Creek. Install a toilet if necessary to limit impacts.

3.9.15 Subject to agreement with relevant Elders groups, including development of conditions of use, permit cultural camps at Petroi via consent and install a toilet and fire ring.

3.9.16 Continue to provide firewood for the fireplace in the Point Lookout shelter and at Toms Cabin. Elsewhere, phase out supply of firewood at camping areas and encourage visitors to bring their own wood. Prohibit the collection of firewood within these parks.

3.9.17 Allow self-reliant bush camping in areas more than 500 metres from roads in Baalijin Nature Reserve and in areas more than 1 kilometre from facilities (including park roads) in New England National Park. Monitor impacts and implement measures to limit impacts as necessary. Camping is not allowed in Jobs Mountain Nature Reserve.

Built accommodation

3.9.18 Maintain the Chalet, the Residence and Toms Cabin in New England National Park for visitor accommodation.

3.9.19 Subject to a feasibility assessment, the Diamond Flat House may be adaptively re-used for visitor accommodation or for park management purposes.

Group activities

3.9.20 Issue licences for all commercial operations within the parks.

3.9.21 Appropriately authorise non-commercial and other group activities, events and functions in the parks.

3.9.22 Consider requests for use of the Brinerville area as a venue for events and functions, including Aboriginal culture camps and group activities that have a clear relationship to park management.

4. Threats

4.1 Pest species

Pest species are animals (including invertebrates), plants and pathogens that have negative environmental, economic and social impacts and are most commonly introduced species. Pests may have impacts across the range of park values, including impacts on biodiversity, cultural heritage, catchment and scenic values.

NPWS prepares regional pest management strategies that identify pest species across that region's parks and priorities for control, including actions listed in the *Priorities Action Statement* (see Sections 3.2 and 3.3), threat abatement plans, and other strategies such as the *NSW Biodiversity Priorities for Widespread Weeds* (NSW DPI & OEH 2011) and the *NSW Biosecurity Strategy 2013–2021* (DPI 2013).

The NPWS regional pest management strategy (OEH 2012a) identifies pest species and priority programs for these parks. The overriding objective of the pest management strategy is to minimise adverse impacts of introduced species on biodiversity and other park and community values while complying with legislative responsibilities. The strategy also identifies where other site- or pest-specific plans or strategies need to be developed to provide a more detailed approach.

4.1a Weeds

A weed is defined in this plan as any plant species not native to these parks. Weeds can be listed noxious weeds, Weeds of National Significance and environmental weeds. The invasion of native vegetation by some weeds is identified as a key threatening process under the Threatened Species Conservation Act. The *Noxious Weeds Act 1993* places an obligation on public authorities to control noxious weeds on land that they occupy to the extent necessary to prevent such weeds spreading to adjoining lands. Major weed species known to occur in the parks are listed in Table 6.

Mistflower (*Ageratina riparia*) has emerged as a major threat to New England National Park's understorey and riparian communities in the past 20–30 years and its presence is associated with previous logging disturbance in the catchments of Nulla Nulla Creek, Sunday Creek, Briggs Creek and the Bellinger River. Mistflower also co-occurs with crofton weed along various trails in the eastern part of the park. Mistflower control is currently occurring in three areas in the park: Sunday Creek – Bellinger River, Nulla Nulla Creek, and along trails. The aim of the current control program is to stop mistflower's linear progression along trails, to prevent the species reaching the escarpment edge and to prevent it spreading into adjacent catchments. While some populations may eventually be eradicated, eradication is not currently considered feasible along the Bellinger River below Scraggy Creek due to the current openness of adjacent cleared paddocks. Management will encourage and support research into biological control options, including the mistflower mildew which is now present on the east coast of Australia. A separate infestation of mistflower in Baalijin Nature Reserve has been controlled, and is subject to annual monitoring and follow up.

Lantana occurs at lower elevations in the southern and eastern parts of New England National Park and Baalijin Nature Reserve. Infestations are mostly associated with previous forestry disturbance and clearing for agriculture. No areas within any of these parks are identified as high priority for control under the national *Plan to Protect Environmental Assets from Lantana* (Biosecurity Queensland 2010).

Soon after purchasing the Brinerville addition to New England National Park, NPWS conducted a weed survey of the area and commenced a major weed control program targeting all noxious and significant environment weed species. Due to the level of weed infestation, this

area will require active management for at least 5–10 years to restore the site, including follow-up control of privet, blackberry and lantana.

Other locations where weed control is undertaken include Petroi Plateau and Misty Valley, where blackberry is targeted and some small-leaf privet is also controlled. Further surveys are required in Jobs Mountain Nature Reserve and new additions to the parks to assess weeds.

Table 6: Major weeds recorded in the parks

Common name	Scientific name	Location in planning area ^a
Blackberry ^A	<i>Rubus fruticosus</i> agg. spp.	NENP: Petroi, Diamond Flat, Brinerville
Broadleaf paspalum ^y	<i>Paspalum mandiocanum</i>	NENP, BNR: along trails
Broad-leaf privet ^{C, D, N}	<i>Ligustrum lucidum</i>	NENP: North-east section (including Brinerville and edge of Dorrigo Plateau)
Cat's claw vine ^{B, y}	<i>Macfadyena unguis-cati</i>	NENP: Brinerville
Crofton weed ^{B, C, K, N}	<i>Ageratina adenophora</i>	BNR & NENP: limited occurrences along watercourses and trails
Firethorn	<i>Pyracantha</i> spp.	NENP: Brinerville
Giant Parramatta grass ^{B, C, D, K, N, y}	<i>Sporobolus fertilis</i>	BNR: scattered along trails NENP: dominates grassy flats at Brinerville, plus along trails
Honey locust ^{B, C, N}	<i>Gleditsia triacanthos</i>	NENP: Brinerville
Lantana ^{A, x, y, z}	<i>Lantana camara</i>	NENP: lower reaches of Bellinger River and southern sections of park
Mistflower ^{B, C, N}	<i>Ageratina riparia</i>	NENP: Sunday Ck, Bellinger River, Nulla Nulla Ck, Briggs Ck and along trails
Moth vine ^y	<i>Araujia sericifera</i>	NENP, BNR: lower reaches of creeks in Bellinger catchment
Ox-eye daisy	<i>Leucanthemum vulgare</i>	NENP: visitor facilities around Point Lookout
Silver-leaved desmodium	<i>Desmodium uncinatum</i>	NENP: Brinerville
Small-leaf privet ^{C, D, N}	<i>Ligustrum sinense</i>	NENP: North-east section (including Brinerville and edge of Dorrigo Plateau)
Whiskey grass	<i>Andropogon virginicus</i>	NENP, BNR: along trails
White passionflower ^y	<i>Passiflora subpeltata</i>	NENP, BNR: lower reaches of creeks in Bellinger catchment
Willow ^A	<i>Salix</i> spp.	NENP: Upper reaches of Bellinger River and Sunday Creek
Yorkshire fog grass ^y	<i>Holcus lanatus</i>	NENP: visitor facilities around Point Lookout, Diamond Flat

^a Location in planning area as follows: NENP New England National Park; BNR Baalijin Nature Reserve.

Noxious weed declarations are as follows:

^A Weed declared noxious under *Noxious Weed Act 1993* for all of New South Wales.

Declarations for individual local government areas as follows:

^B Bellingen Shire, ^C Clarence Valley, ^D Armidale, ^K Kempsey Shire, ^N Nambucca Shire.

^x Declared Weed of National Significance.

^y Key threatening process under Threatened Species Conservation Act.

^z Threat abatement plan (either draft or final).

The Misty Valley area of New England National Park, added to the park in the early 2000s, contains a 20-hectare plantation of hardwood species. The plantation includes white gum (*Eucalyptus nobilis*) and shining gum (*E. nitens*), which are indigenous to the area, and also Dunn's white gum (*E. dunnii*), which is not native to the immediate area. This plantation was established in 1998 by the previous owners in collaboration with Greening Australia, primarily as a wood lot but also as a trial for potential plantation species. None of the trees are large enough to harvest. The trees could provide a canopy for rainforest regeneration but will require under-plantings of rainforest species to initiate the process and develop the understorey. Dunn's white gum needs to be controlled to prevent its establishment in the area.

Some sections of the Misty Valley addition outside the plantation are slowly regenerating through natural processes but there is an extensive area of pasture dominated by introduced and invasive species such as kikuyu grass (*Pennisetum clandestinum*) and cocksfoot (*Dactylis glomerata*). This area will require active regeneration (e.g. planting of trees) as well as grass control.

An emerging weed threat on the high altitude sections of the western part of the park is Yorkshire fog grass, which is spreading into tussock grasslands and grassy woodlands. Another emerging weed threat in and around the woodlands of the Point Lookout area is ox-eye daisy.

4.1b Introduced animals

Introduced animals within the parks are of concern because they have the potential to have detrimental effects on native animal communities through competition for resources, predation, disturbance and transmission of diseases. Pest animals can also impact native vegetation and have the potential to have an adverse economic impact on neighbouring properties.

Wild dogs

Wild dogs (*Canis lupus* subsp.) include any wild-living dog in New South Wales, including dingos (*Canis lupus dingo*), feral dogs (*Canis lupus familiaris*) and their hybrids. Wild dogs have been recorded in New England National Park. Wild dogs are declared pest animals throughout New South Wales under the *Local Land Services Act 2013*. Hence, NPWS has a statutory obligation to control wild dogs on its estate. However, as discussed in Section 3.4, some public lands (including New England National Park and Baalijin Nature Reserve) have been identified as potential areas for conserving dingos under the *Pest Control Order for Wild Dogs*, and high levels of dingo purity have been identified in the western parts of New England National Park.

A draft regional wild dog management plan (North Coast LLS 2014) has been prepared, which covers the majority of New England National Park, in particular, those parts of the park within the North Coast Local Land Services area. This provides for some strategic aerial baiting for wild dogs in the southern parts of the park, as well as reactive mound baiting and soft-jaw trapping on the boundaries of the park. A wild dog management plan has also been prepared for the areas covered by the Jeogla Wild Dog Association, which covers the north-west of New England National Park.

Foxes

Foxes suppress native animal populations, particularly medium-sized, ground-dwelling and semi-arboreal mammals, ground-nesting birds and freshwater turtles. Foxes have also been implicated in the spread of a number of weed species such as blackberry. As foxes are known to prey on domestic stock, including lambs and poultry, the European red fox is a declared pest throughout New South Wales under the *Local Land Services Act*.

Predation by the European red fox is a declared key threatening process under the Threatened Species Conservation Act and Environment Protection and Biodiversity Conservation Act (NSW SC 1998; TSSC 2000b). The NSW fox threat abatement plan (OEH 2011c) was initiated in 2001 and revised in 2010, with the primary objective of establishing long-term control programs to protect priority threatened animal species and populations.

Fox baiting has occurred in New England National Park on the edge of the Dorrigo Plateau in cooperation with neighbours and North Coast Local Land Services. Fox baiting has also occurred on private property in the Bellinger Valley downstream of New England National Park and Baalijin Nature Reserve as part of the recovery of the Bellinger River emydura (a turtle previously listed as threatened under both the Threatened Species Conservation Act and Environment Protection and Biodiversity Conservation Act), in accordance with the original threat abatement plan.

Pigs and deer

There are reports of pigs on the tablelands south-east of Ebor and there is a long-standing program of pig control in nearby Cathedral Rock National Park. However, there have been few sightings of pigs in these parks, and they are not known to be a problem.

Deer are an emerging problem in the surrounding districts, both in the coastal hinterland and the tablelands, however, they are not known to occur in these parks at this stage.

Common (Indian) myna

The common (Indian) myna (*Sturnus tristis*) occurs in the Brinerville additions to New England National Park, and has been observed in this area since the early 1990s. The range for the species is continuing to spread into rural, forested and semi-forested habitats. The common myna has been rated by the International Union for the Conservation of Nature as one of the world's 100 most invasive species (Lowe et al. 2000). They are aggressive birds and can out-compete both native birds and mammal species for food and tree hollows that are used for nesting. Hollow-dependent native animals (including threatened species such as the glossy black-cockatoo, yellow-bellied glider and several insectivorous bats) are impacted by the species. Community efforts to control the species via trapping are occurring off-park, coordinated by Bellingen Shire. No control has so far occurred on-park. The breeding colony in the park is a high priority for control but this control is hampered due to the remoteness of the site.

Stray cattle

As identified in Section 3.4, lack of boundary fencing has allowed grazing by stock in sections of the parks. Of key concern are the high altitude plateau areas of New England National Park which contain significant vegetation communities and rare and threatened species. Boundary fencing is required in this area. Stray cattle also enter the park in some river valleys in the lower altitude parts of the park, such as along Five Day Creek. Boundary fencing along these boundaries is likely to be impractical.

Feral fish

Brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*) are known to occur in Five Day Creek. These populations were initially established as part of a deliberate stocking program but are now likely to be breeding. These species prey on native fish, tadpoles and aquatic invertebrates, and may have been implicated in the disappearance of Booroolong frog from New England National Park. The introduction of fish to fresh waters within a river catchment outside their natural range is listed as a key threatening process under the *Fisheries Management Act 1994*.

4.1c Dieback

Bell miner associated dieback

Populations of bell miners (*Manorina melanophrys*) are known to occur throughout the parks. In large numbers, bell miners may be a threat to biodiversity as they appear to be associated with eucalypt dieback, which has been listed as a key threatening process under the Threatened Species Conservation Act (NSW SC 2008). Bell miner associated dieback is currently spreading rapidly through sclerophyll forests in New South Wales.

There are a number of isolated areas affected by bell miner associated dieback along Postmans Trail, Nulla Range Road and Kilprotay Road in New England National Park. The affected areas are mostly blue gum forest, but more comprehensive understanding of the extent and significance of this threat is required for other sections of these parks.

Bell miner associated dieback is generally characterised by trees that are stressed and dying in response to high populations of psyllids and other sap-sucking insects, the over-abundance of bell miners and the alteration of the forest structure. Affected areas often have depleted canopies and mid-storeys, and dense shrubby understoreys are often replaced by lantana or vine thickets. Bell miners aggressively protect their territories, driving away insectivorous birds that would otherwise help to control insect numbers.

In a number of areas on the NSW north and south coasts, NPWS and other land managers are investigating appropriate methods, such as intensive lantana removal and the strategic application of fire, to control the damaging environmental impacts of bell miner associated dieback.

Phytophthora

The root-rot pathogen, *Phytophthora cinnamomi*, has been confirmed as occurring in New England National Park around the main visitor areas at Point Lookout and also along Robinsons Knob Trail. Dieback caused by phytophthora is currently listed as a key threatening process under the Threatened Species Conservation Act (NSW SC 2002) and Environment Protection and Biodiversity Conservation Act (TSSC 2000a). At this stage it is not suspected to have caused dieback of native species in these parks. The pathogen infects a large range of plant species and in some circumstances may contribute to plant death where there are other stressors present, such as waterlogging, drought and perhaps wildfire (NSW SC 2002).

Scientific knowledge about phytophthora at high altitudes is limited but it is known to be a problem at high altitudes in Barrington Tops National Park where mortality of broad-leaved pepperbush (*Tasmannia purpurascens*) and coral heath (*Epacris microphylla*) has been observed. In Tasmania and Victoria a close relative of Antarctic beech, myrtle beech (*Nothofagus cunninghamii*), is severely affected by phytophthora.

The pathogen spreads through the movement of spores through water or by soil or mud carried by machinery, animals and walkers. At present there is no simple method for controlling phytophthora. Hygiene protocols to reduce the spread of phytophthora are one of the few practical control measures available (OEH 2012a).

Myrtle rust

Myrtle rust is a plant disease caused by the exotic fungus, *Uredo rangelii*. It was first detected on the NSW Central Coast in 2010 and has established through coastal New South Wales north from the Shoalhaven River and into Queensland. Myrtle rust infects young actively growing shoots, leaves, flower buds and fruits of plants in the family Myrtaceae. The spores of myrtle rust are spread by wind, animals and human activity.

Myrtle rust is present in the Bellingen Local Government Area. While evidence of myrtle rust has not been identified within these parks, it is considered to pose a significant threat to

biological values given the extent of eucalypt forests and the presence of several other genera in the Myrtaceae family in the parks' rainforests.

A plan outlining how myrtle rust will be managed on national park estate has been developed (OEH 2011a), which incorporates strategies to limit the spread of myrtle rust and minimise impacts to threatened species and ecological communities.

4.1d Other pathogens

Chytrid fungus

Chytrid fungal disease (chytridiomycosis) is caused by a waterborne pathogen, *Batrachochytrium dendrobatidis*. Chytridiomycosis is suspected to occur in these parks, however, further surveys are required to confirm its presence. It is listed as a key threatening process under the Threatened Species Conservation Act (NSW SC 2003) and Environment Protection and Biodiversity Conservation Act (TSSC 2002) due to its impacts on a number of native amphibians, particularly populations in high altitude areas above 400 metres elevation. It is implicated in the population declines that have been reported from the New South Wales uplands for frog species, such as the Booroolong frog and the tusked frog. If found in these parks, hygiene protocols may reduce its spread, but extant populations of frogs are likely to have developed an immunity to the disease.

Turtle virus

The Bellinger River snapping turtle suffered a mortality event from a suspected virus in early 2015 (Section 3.4). The virus is a major threat to the turtle, which has since been listed as critically endangered under the Threatened Species Conservation Act (NSW SC 2016).

Issues

- Weeds are a particular issue in previously farmed or logged areas in the parks. Areas of key concern include former state forests logged in the last 40 years, the fertile river flats in Brinerville that were used for cropping and grazing, and areas of improved pasture at Diamond Flat.
- Stock from neighbouring properties are currently grazing subalpine woodland along the top of the escarpment in the north-west corner of New England National Park. These sections of park boundary are mostly unfenced because the escarpment edge has traditionally been regarded as a practical barrier to cattle. However, the park boundary is more than a kilometre back from the escarpment edge in some sections and, as such, fencing along the private property boundary is required to protect these endangered woodland areas.
- Wild dog attacks on private property to the south and east of New England National Park are a continuing problem for neighbours. As wild dog control is most effective when carried out in cooperation with neighbours, a landscape-based approach to wild dog control is required to limit these attacks. The core of the park can, however, be managed as a dingo conservation area in accordance with the *Pest Control Order for Wild Dogs* (see Section 3.4).
- Phytophthora has been recorded in New England National Park and poses a threat to a range of endemic and threatened species. Further information is required on the extent of this pathogen in the parks and which species are most at risk.
- Bell miner associated dieback poses a threat to eucalypt forests in the east and south-east of New England National Park. Control of lantana in these sections of the park may reduce the extent of bell miner associated dieback.

Desired outcomes

- The impacts of pest species on the natural and cultural values of the parks are reduced.
- There is improved understanding of the extent and impacts of phytophthora and its spread in the parks is limited.

Management responses

- 4.1.1 Monitor, control, and where possible, eradicate pest species in accordance with the priorities of the regional pest management strategy and other strategies as relevant, and in cooperation with neighbours, the North Coast Local Land Services, councils, Forestry Corporation of NSW and other stakeholders. In particular, continue existing weed control programs for mistflower, blackberry, privet, lantana, firethorn and moth vine.
- 4.1.2 Undertake weed surveys in Jobs Mountain Nature Reserve.
- 4.1.3 In accordance with NPWS policy, provide assistance to neighbours to establish effective boundary fencing that prevents domestic stock entering the parks, with the priority being the subalpine woodland in the vicinity of Point Lookout and along the escarpment edge.
- 4.1.4 Undertake or encourage research regarding the impacts of pest species on the conservation values of the parks and appropriate control methods.
- 4.1.5 Monitor natural regeneration of pasture areas. If required, undertake revegetation works, weed control or fire management.
- 4.1.6 Assist in the implementation of the relevant local wild dog management plans.
- 4.1.7 Carry out further sampling to identify the extent of phytophthora, bell miner associated dieback and myrtle rust in the parks.
- 4.1.8 Implement appropriate actions to reduce/contain bell miner associated dieback once a strategy is developed.
- 4.1.9 Introduce quarantine zones or hygiene protocols (e.g. boot and vehicle wash-down stations) to limit the spread of phytophthora and myrtle rust if required.

4.2 Inappropriate fire regimes

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. However, inappropriate fire regimes can lead to the loss of particular plant and animal species and communities. Depending on the type of vegetation, inappropriate fire regimes can be fires that occur too frequently (e.g. rainforest) or fires that do not occur frequently enough (e.g. heath). High frequency fire has been listed as a key threatening process under the Threatened Species Conservation Act (NSW SC 2000b).

Rainforest communities in particular are not well adapted to fire and the predominance of rainforest vegetation in parts of New England National Park and Jobs Mountain Nature Reserve indicate a natural low frequency or absence of fire.

For that section of New England National Park in proximity to the escarpment, the height of the escarpment has resulted in a localised climate with a very high rainfall. This has resulted in a moist environment that does not support regular fire. Further away from the escarpment, to the east and south where sclerophyll forest dominates, fires are still restricted by the rainforest vegetation in most of the drainage lines.

Some peripheral parts of New England National Park and Baalijin Nature Reserve contain much drier vegetation types dominated by species that require fire for regeneration. However, our knowledge of fire ecology for most species is minimal, and there is a high level of uncertainty regarding the appropriateness of any prescribed fire (Clarke et al. 2000). It is thought that in some of the tall open forests, fire return intervals of hundreds of years are likely to be important for their recruitment. Baalijin Nature Reserve has been subject to several fires in the past decade, and this is believed to be too frequent for the long-term maintenance of biodiversity.

In contrast, much shorter fire frequencies are appropriate for the small areas of heath, scrub and mallee around the escarpment rim and at Wrights Lookout. Clarke et al. (2000) identify areas in these vegetation types where shrubs appear to be senescent and may require a fire event to prompt recruitment. Fire has been largely excluded from these communities, partly due to the need to protect assets such as cabins and wooden boardwalks. However, asset protection zones have been established around the cabins and other built infrastructure and these will be maintained. Based on research in Gibraltar Range National Park, it may be that a fire frequency of 10 years may be appropriate for some areas of wet heathland in the parks (Clarke et al. 2000).

Vegetation patterns are likely to change in response to climate change (see Section 4.3), and the fire regimes that are applied will be subsequently modified in response to these changes (Dunlop & Brown 2008). Fire will continue to be excluded from cool temperate rainforest to ensure the continued survival of this rainforest type.

Fire management strategies have been adopted for Baalijin Nature Reserve (DECC 2005), and for a combined area of New England National Park, Jobs Mountain Nature Reserve and part of Cunnawarra National Park (OEH 2016). These outline the parks' recent fire history, key assets within and adjoining the area (including cultural heritage assets), fire management zones, and fire control advantages such as management trails, vantage points, water supply points and helipads. There are two helipads in New England National Park within the wilderness area: one on Five Day Trail and one on Comara Trail (see Section 5.2).

The vast majority of land within these parks is classified as land management zones, with small asset protection zones to protect built assets in the Point Lookout area, Petroi and Misty Valley. Land management zones are managed to conserve biodiversity and protect cultural heritage, and fire is managed consistent with relevant fire thresholds for each vegetation type. In contrast, the objective of asset protection zones is the protection of human life and property, and this has precedence over guidelines for the management of biodiversity so that the overall fuel hazard can be maintained at or below moderate levels.

The small isolated portion of park at Lyrebird Mountain (in the north of New England National Park) is classed as a strategic fire advantage zone. The objective of a strategic fire advantage zone is to reduce fire intensity across larger areas, with overall fuel hazard maintained at or below high levels. Where possible, adherence to guidelines for biodiversity will take precedence.

The fire management strategies for these parks were prepared in consultation with local bush fire management committees (listed in Table 7), and are consistent with the relevant bush fire risk management plans. Hazard reduction programs, ecological burning proposals and fire trail works, carried out as part of the implementation of these strategies, are submitted annually to the relevant bush fire management committee.

Table 7: Bush fire management committees relevant to these parks

Name	Section of park
Clarence Valley	Escarpment rim in extreme north-west of New England NP (area within Clarence Valley Local Government Area)
Mid North Coast Team	Northern third of New England NP plus Baalijin NR (area within Bellingen Shire Local Government Area)
Lower North Coast Team	South-east portion of New England NP plus north-east corner of Jobs Mountain NR (area within Nambucca and Kempsey shires)
New England	Western rim and south-west corner of New England NP, plus majority of Jobs Mountain NR (area within Armidale Local Government Area)

Issues

- Fire has been excluded from some plateau communities (namely wet heathland and mallee) for too long, resulting in a senescing shrub layer. Prescribed fire needs to be introduced in these communities to restore vegetation health and vigour.
- Based on vegetation types and patterns, prescribed fire is generally not required in the core of New England National Park or in Jobs Mountain Nature Reserve. This is consistent with wilderness management principles (see Section 2.2) and fire risk zoning. Fire suppression efforts will also be reduced in these areas, unless there is a risk of fire escaping onto neighbouring lands.
- Baalijin Nature Reserve has been burnt too frequently in recent times.

Desired outcomes

- Life, property and natural and cultural values are protected from fire.
- Fire regimes (frequency and intensity) are appropriate for conservation of native plant and animal communities.

Management responses

- 4.2.1 Review and update reserve fire management strategies as required (e.g. for new additions), and implement the strategies.
- 4.2.2 Participate in the New England, Lower North Coast, Mid North Coast and Clarence Valley bush fire management committees. Maintain cooperative arrangements with Rural Fire Service brigades and fire control officers, other fire authorities (such as Forestry Corporation of NSW) and surrounding landowners in regard to fuel management and fire suppression.
- 4.2.3 Use prescribed fire to achieve a variety of fire regimes that maintain fire thresholds for each vegetation community in accordance with the fire management strategies.
- 4.2.4 Avoid use of heavy machinery and retardants for fire suppression in areas of rare plants, Aboriginal sites, historic places, and near wetlands and watercourses.
- 4.2.5 Encourage research into the ecological effects of fire in the parks, particularly the fire response of significant plant species and the fire requirements of the plateau communities, and the effects of fire intensity and season on recruitment of species across a range of communities.

4.3 Climate change

Human-induced climate change has been listed as a key threatening process under the Threatened Species Conservation Act (NSW SC 2000a) and the associated loss of habitat is listed under the Environment Protection and Biodiversity Conservation Act (TSSC 2001).

The latest information on projected changes to climate are from the NSW and ACT Regional Climate Modelling (NARClim) project (OEH 2014a). The climate projections for 2020–2039 are described as ‘near future’ (or as 2030); and projections for 2060–2079 are described as ‘far future’ (or as 2070). The majority of the parks are in the North Coast NARClim Region; see snapshot in Table 8 (OEH 2014a). The south-west portion of the parks is in the New England North West Region (OEH 2014b).

Table 8: North Coast 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 1.5–2.4°C
Minimum temperatures are projected to increase in the near future by 0.5–1.0°C	Minimum temperatures are projected to increase in the far future by 1.6–2.5°C
The number of hot days will increase	The number of cold nights will decrease
Projected rainfall changes:	
Rainfall is projected to decrease in winter	Rainfall is projected to increase in autumn and spring
Projected Forest Fire Danger Index changes:	
Average fire weather is projected to increase in spring and summer	Severe fire weather days are projected to increase in spring and summer

Source: OEH 2014a.

The projected increases in temperature, number of hot days and severe fire weather days (OEH 2014a) are likely to influence bushfire frequency and intensity across the North Coast Region. Higher rainfalls in autumn and spring (OEH 2014a) are likely to accelerate all forms of soil erosion across the region and increase runoff at these times of year (DECCW 2010b). A particular concern for the parks is the likely increase in heavy rain events and cyclonic winds associated with east coast lows, and the resulting negative impacts on water quality in creeks and streams (DECCW 2010b).

There is anecdotal evidence of a reduced incidence of snow events in the western parts of New England National Park and elsewhere on the Snowy Range outside the park. The higher elevation areas in the parks are projected to see over 40 fewer cold nights (i.e. less than 2°C) by 2070 (OEH 2014a, b). Maximum temperatures in the western parts of the New England National Park are projected to **increase** in the far future by 1.5–2.7°C (OEH 2014a, b), and the number of hot days are also projected to **increase** (OEH 2014b).

The parks, in particular New England National Park, have a very large altitudinal range from lowland (100 metres above sea level in the Bellinger Valley) to subalpine (1563 metres at Point Lookout). This provides the ecosystems in the park the potential to adapt to climate change impacts, except for the high altitude communities whose habitat may be encroached by species that currently occur at lower altitudes.

Climate change may significantly affect biodiversity by changing the size of populations and the distribution of species, and altering the geographical extent and species composition of

habitats and ecosystems. Species most at risk are those unable to migrate or adapt, particularly those with small population sizes or with slow growth rates.

The potential impact of climate change on the parks is difficult to assess since it depends on the compounding effects of other pressures, particularly barriers to migration and pressure from introduced animals.

Issues

- The very large altitudinal range in New England National Park (over a short lateral distance) presents the opportunity for the park to become a 'living laboratory', with the potential for permanent sites to be established to monitor climate change impacts on ecosystems and to measure weather patterns.
- There is the potential for a reduction in biodiversity in the parks (at the genetic, species and community level) due to the impacts of climate change. These impacts are most likely to occur in the currently marginal plateau high altitude communities, due to encroachment by other communities and changes in fire regimes, hydrology and localised weather patterns.
- Programs to reduce the pressures arising from other threats, such as habitat fragmentation, invasive species, bushfires and erosion, will help reduce the severity of the effects of climate change (see Sections 3.1, 3.4, 4.1 and 4.2).

Desired outcomes

- The impacts of climate change on the parks' biota are monitored.
- The persistence of particularly valued and threatened biodiversity elements is assisted.

Management responses

- 4.3.1 Maintain the cool temperate rainforest community at Point Lookout through fire exclusion.
- 4.3.2 Seek to build partnerships with research organisations to increase understanding of climate change impacts on the values of the parks, in particular world heritage values and threatened species, and appropriate management responses.

5. Management operations and other uses

In order to protect park values, to provide opportunities for visitors and to facilitate management operations it is important to build and maintain appropriate infrastructure. Infrastructure may also be provided by other authorities or for other purposes authorised under the National Parks and Wildlife Act.

5.1 Access for management and other purposes

Access for management is generally via two-wheel drive and four-wheel drive public roads that run through or along the boundary of New England National Park and Baalijin Nature Reserve. There are also a number of management trails (see Figure 2) in the parks including some within the declared wilderness area. In accordance with NPWS policy, vehicle use of management trails is only available for NPWS use or other authorised activities, such as private property access and emergency responses.

Most of the roads within the parks have a natural surface. The main roads and trails, such as Point Lookout Road and Horseshoe Road, have gravelled or sealed sections, with the gravel sourced from quarries outside the parks. The importation of soil or gravel from other areas has the potential to introduce weeds and pathogens (such as phytophthora) into the parks (see Section 4.1). As discussed in Section 3.1, trails within the steeper areas and those with a natural surface are prone to erosion, particularly in the wet.

The most popular road is Point Lookout Road. This road is excluded from the New England National Park, being a council road that is the responsibility of Armidale Regional Council. Although not part of the park, under the National Parks and Wildlife Regulation NPWS can control the movement of animals along this road.

Some public roads that provide access to New England National Park boundary are only maintained on an intermittent basis (if at all) as they are beyond the limit of council maintenance. This is a problem on Nulla Nulla Creek Road and Five Day Creek Road.

Parts of these parks are not accessible via public or park roads, including Jobs Mountain Nature Reserve and some high points on the escarpment edge in New England National Park (such as Barren Mountain). Jobs Mountain can only be accessed on foot across neighbouring private and leasehold property. Management access in the west of New England National Park relies on trails which, in part, cross private property without coinciding with public road reserves (e.g. Diamond Flat Trail and Five Day Trail). In these cases, NPWS access arrangements are subject to agreements negotiated with the relevant property owner.

New England National Park and Baalijin Nature Reserve include a number of roads that are vested in the Minister under Part 11 of the National Parks and Wildlife Act ('ministerial roads'). See Table 8.

These ministerial roads traverse the parks but are not reserved as part of the park. They were designated as ministerial roads to ensure continued access to neighbouring land, including neighbouring state forest and private properties. The primary purpose for these ministerial roads is to provide access for forestry operations in adjacent state forests. All of the roads are, however, open to the public, except Hercules Road and Roses Creek Road which are management trails. Orama and Blackwood roads are used in times of flood to access private properties in the upper Bellinger Valley. Hercules Road, a management trail that is currently dormant, is only maintained when required for fire mitigation or forest access purposes.

Table 9: Ministerial roads within the parks

Reserve	Road name	Length of road in park	Primary purpose
Baalijin Nature Reserve	Blackwood Rd	1.9km	Forestry access ^a
	Horseshoe Rd	8.0km	Forestry access
	Orama Rd	2.4km	Forestry access ^a
	Roses Creek Rd	1.3km	Forestry access
New England National Park	Horseshoe Rd	3.9km	Forestry access
	Hercules Rd	3.5km	Forestry access
	Kilprotay Rd ^b	9.2km	Forestry access

^a These trails are also used in times of flood to access private properties.

^b Only the two sections of Kilprotay Rd north of Sheet O Bark Rd are Ministerial road – the southern section is gazetted as part of the park.

A number of park roads and management trails that traverse the formally reserved part of the parks provide the only practical means of access to a number of private properties, including:

- a very short section of Nulla Nulla Creek Road
- the western section of Botumburra Trail
- Zeepaert Road, which provides access to remaining private inholdings at Brinerville
- E Tree Road and part of Kilprotay Road.

Land owned by TransGrid and AirServices Australia in the Point Lookout Area can also only be accessed through New England National Park. This access is governed by existing licence agreements. Essential Energy also accesses their powerlines for maintenance purposes through the park (see Section 5.3).

The majority of Horseshoe Road and Kilprotay Road lie within state forest. A memorandum of understanding between NPWS and the Forestry Corporation of NSW regarding the joint management of these roads was previously in place but has lapsed. Maintenance is currently carried out on an ad hoc basis.

Most management trails are gated to exclude public vehicular access. With the exception of River Trail and Sirius Road, the management trail network lies mostly within the wilderness area.

There are a number of tracks and trails in the **Burrel Bulai Aboriginal Place** that are used for management purposes and to provide access to the mountain summit for 'traditional cultural activities' (see Section 3.5 of this plan and OEH 2016). This includes a stable, natural surface management trail that runs along a ridge from the west to the base of the summit. Currently this track is not accessible to vehicles from the lower slopes due to a washed-out bridge. It is currently used by Aboriginal people to walk or horse ride to the base of the summit as part of cultural activities. In the future, vehicular access to this track may be enabled and vehicular use of the track would be appropriate for cultural activities and park management purposes. There are other trails that also lead to the saddle at the base of the summit. From this point where the trail ends (at about 600 metres above sea level), there is a cultural pathway that leads to the summit (see Section 3.5).

Currently there is no practical, legal access to Jobs Mountain Nature Reserve. There are road reserves ('paper roads') leading to the nature reserve, however, the practical alignment of existing roads do not follow these reserves. NPWS access to the reserve for management

purposes is by agreement with property owners. Secure, legal practical access is required in the long term, and continued cooperative relationships with the property owners is essential.

Issues

- There are issues surrounding the use and maintenance of roads through private property and state forest that are required for access to New England National Park and Baalijin Nature Reserve.
- There is ongoing illegal use of management trails, particularly by trail bikes. Bike riders, registered and unregistered, use management trails and also create new tracks in the parks.
- There is an ongoing need for private property access through New England National Park and Baalijin Nature Reserve.

Desired outcomes

- Access for management operations is adequate and has limited impact on park values.
- Access for other purposes is managed to minimise impacts on natural and cultural values.

Management responses

- 5.1.1 Maintain all park roads and management trails as shown on the Figure 2 in accordance with this plan.
- 5.1.2 Establish an agreement with Forestry Corporation of NSW regarding management of Kilprotay and Horseshoe roads, and other joint interest roads.
- 5.1.3 Cooperate with Forestry Corporation of NSW and other landholders in maintaining gates on forestry or private roads that are designated as authorised access only (in particular, Blackwood Road and Five Day Trail).
- 5.1.4 Continue to liaise with Armidale Regional Council regarding appropriate and regular maintenance of Point Lookout Road.
- 5.1.5 No pets or stock are permitted to use park roads and Point Lookout Road where it traverses the park. There is no restriction on the movement of animals on Waterfall Way or on Horseshoe Road where they traverse the parks, or on roads that provide the only access to private property, as long as the animal(s) remain in the vehicle. Horse riding through New England National Park or Baalijin Nature Reserve to access private properties will require written consent of NPWS.
- 5.1.6 Seek to make access to private lands using park roads and management trails subject to a formal licence or agreement, with conditions that may include a contribution towards maintenance costs.
- 5.1.7 Continue to license TransGrid and AirServices Australia to access their lands through the park
- 5.1.8 Secure practical legal access to Jobs Mountain Nature Reserve for management purposes.

5.2 Management facilities

Management facilities include a number of structures, helipads, dams and former borrow pits and quarries in New England National Park.

One of the three besser block modules making up the Residence at Banksia Point, which was previously the office and the laundry for the house, is being used as a cleaner's workroom and for storage of equipment for the cabins.

The former dairy bales is the only structure remaining at Misty Valley.

There are currently four structures at Petroi: a besser block garage, a hut, an old tin shed and a pit toilet. It would be appropriate to rationalise buildings in the area and only retain those that are required for ongoing park management purposes. The besser block garage is weather-tight and can be used for management purposes, for example, as a storage shed or a base for park workers and researchers. The hut was installed for use by researchers from NPWS and the University of New England when the area was still freehold. It is now dilapidated and has not been used by university researchers for many years. Neither the hut nor the old tin shed serve any management purpose and should be removed subject to the heritage assessment referred to in Section 3.7. The pit toilet may be replaced if the culture camp is established.

As discussed in Section 4.2, there are two cleared helipads in the declared wilderness area. These are maintained as part of the maintenance program for Comara Trail and Five Day Trail, and are used for emergency and management purposes only.

There are a number of borrow pits on the eastern side of Cunnawarra Trail plus a former quarry. These are regenerating and are not required for management purposes. No other former quarries are known to occur within these parks.

Issues

- There is a need for secure storage space and temporary staff accommodation at Petroi, given its remoteness from the NPWS Depot at Ebor and the potential need to use this site as a staging point for fires in the park. The besser block garage is the only structure that is suitable for these purposes. Existing toilet facilities are inadequate and may pollute groundwater (see Section 3.1).

Desired outcomes

- Facilities for management operations are adequate and have limited impacts on park values.

Management responses

5.2.1 Subject to the recommendations of the heritage assessments (see Section 3.7):

- Retain and manage the besser block garage at Petroi for management purposes.
- Remove the old tin shed in the Petroi area.
- In liaison with the University of New England, review the need for the hut at Petroi. If still required, negotiate a licence agreement for its future use. If not required, demolish this building and permit researchers to use the besser block garage at Petroi if required.

5.2.2 Maintain the two helipads in the wilderness area.

5.2.3 Complete a risk assessment of former quarries and borrow pits, and prepare and implement safety management plans if required. Assist natural revegetation if required.

5.3 Other facilities and uses

Telecommunication facilities

Several telecommunication facilities are located adjacent to New England National Park near Point Lookout. These include towers owned by NRTV (formerly known as Northern Rivers Television), Essential Energy and AirServices Australia. An NPWS repeater is located on the NRTV tower. While the NRTV and Essential Energy towers are located on private property to the west of the park, access to both towers is through the park via management trails. AirServices Australia's air navigation tower is located on an inholding owned by the Commonwealth Government (see Figure 2 inset map). Access to this site is also through park although the access trail lies partly on a public road reserve.

Some infrastructure was installed by Telstra at Brinerville to improve telephone communications for the former owners of the property. This includes a solar panel, radio telephone and aerial, plus some underground cabling.

There is no other telecommunication infrastructure within these parks. The high points of the planning area outside the wilderness, including points along the escarpment edge, Andersons Sugarloaf / *Barralbalayi* and Jobs Mountain Nature Reserve, have been identified as remote natural areas (see Section 3.1). In accordance with the National Parks and Wildlife Act, leases, licences or easements for telecommunications facilities cannot be granted in these areas or in the declared wilderness.

Powerlines

Essential Energy has four powerlines traversing New England National Park. One traverses part of the Misty Valley section of the park at Fernbrook, and three lines go through the Point Lookout area, providing power to the cabins at Banksia Point, the Rangers House at the park's entry, and to the towers on neighbouring lands. Only the powerline to the air navigation tower is covered by a formal easement granted under section 153(1) of the National Parks and Wildlife Act. In accordance with the *Electricity Supply Act 1995*, however, a network operator can operate and use the existing powerlines whether or not there is a formal easement in place.

A major high voltage electricity transmission line crosses the section of New England National Park at Lyrebird Mountain in the north of the park (see Figure 2). This is covered by a formal easement held by TransGrid.

Clearings and vehicle trails along the powerlines have significant environmental and visual impacts. These impacts are minimised for TransGrid lines through a statewide agreement between TransGrid and NPWS for inspection and maintenance of existing transmission lines and infrastructure. No access or maintenance agreement currently exists with Essential Energy but the company must comply with the National Parks and Wildlife Act and Regulation when carrying out any maintenance or replacement work and will require NPWS consent for certain works, including periodic management of vegetation under these lines.

Trig stations

Several trigonometrical (trig) stations are located within New England National Park along the edge of the escarpment (at Majors Point, Point Lookout, Little Murray Trig / Langtons Lookout, and Diamond Flat), on some high points in the south and east of the park (at Andersons Sugarloaf / *Barralbalayi*, Woorong Woorong Mountain, Killiekrankie Mountain and Cockatoo), and in Jobs Mountain Nature Reserve (Jobs Mountain). An agreement between NPWS and the former Central Mapping Authority (now Land and Property Information, part of the Office of Finance and Services) provides continued right of access to the station for survey purposes, subject to environmental impact assessment. Only some sites are accessible by vehicle.

The trig station on Burrel Bulai is in an area of exceptional cultural heritage significance. The removal of the trig station should be pursued in consultation with the relevant government agency.

Issues

- Maintenance of powerlines and easements requires clearing of vegetation. AirServices Australia also periodically clears their inholding.
- There is the potential for current and future facilities to impact views from vantage points within or in the vicinity of the parks (see also Section 3.1).
- The removal of the trig station on Burrel Bulai needs to be pursued.

Desired outcomes

- Non-NPWS uses minimise impacts on park values.

Management responses

- 5.3.1 Continue to license access to the off-park telecommunication facilities in the vicinity of Point Lookout.
- 5.3.2 In liaison with Telstra and the remaining private landholders in the Brinerville area, remove the above-ground telephone infrastructure in the Brinerville additions. The underground cabling will be left in situ to minimise soil disturbance.
- 5.3.3 Continue to liaise with TransGrid regarding access and maintenance needs for their transmission lines in accordance with the agreement.
- 5.3.4 Continue to permit vegetation management to occur under the powerlines, and encourage this management to include the control of noxious and other weeds.
- 5.3.5 Liaise with AirServices Australia to ensure that vegetation management on their land has limited impacts on the visual amenity of the escarpment.
- 5.3.6 Continue to authorise access for use and maintenance of the trigonometrical stations in accordance with formal agreements between NPWS and Land and Property Information.
- 5.3.7 Pursue the removal of Burrel Bulai trig with Land and Property Information in line with the final Burrel Bulai Aboriginal Place management plan.

5.4 Boundary definition and adjustments

The boundary of the parks is ill-defined on the ground in a number of areas, including Jobs Mountain Nature Reserve and the north-west edge of New England National Park.

There are a number of council public road reserves in the Brinerville area, administered by Bellingen Shire Council, which are surrounded by park. For some of them, no road is constructed along their length and most no longer have a purpose in providing access to private land.

A combination of public and private road reserves cross the park in the vicinity of Postmans Trail. However, the existing trail is mostly located outside of these reserves, and instead traverses park.

Issues

- Some of the park boundaries are not obvious and this contributes to the incidence of unauthorised activities.

- There is a need to improve boundary delineation to limit incursions from surrounding lands. In particular, stock-proof fencing is required on the north-west boundary of New England National Park (see Sections 3.3 and 4.1). Some boundary and regulatory signage is required for Jobs Mountain Nature Reserve (see Section 3.8).
- There are some unmade or unnecessary road reserves through the parks, specifically at Brinerville and also across the range in the vicinity of (but not coinciding with) Postmans Trail.

Desired outcomes

- The identification of park boundaries on the ground assists in the implementation of management programs.
- Visitors are aware of the location of park boundaries and the need for appropriate use of the area.

Management responses

- 5.4.1 Liaise with Bellingen Shire Council and Department of Industry – Lands to secure the formal closure of unnecessary or unmade road reserves within New England National Park and their addition to the park.
- 5.4.2 Install signs or totems where appropriate to clearly mark park boundaries.

6. Implementation

This plan of management establishes a scheme of operations for New England National Park, Baalijin Nature Reserve and Jobs Mountain Nature Reserve. Implementation of this plan will be undertaken within the annual program of the NPWS North Coast Region.

Identified activities for implementation are listed in Table 10. Relative priorities are allocated against each activity as follows:

- **High** priority activities are those that are imperative to achieving the objectives and desired outcomes and must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources.
- **Medium** priority activities are those that are necessary to achieve the objectives and desired outcomes but are not urgent.
- **Low** priority activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.
- **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.
- **As required** activities are those that are actioned on an as needs basis.

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 10: List of management responses

Plan reference	Management response	Priority
World Heritage		
3.1.1	Continue to be involved in the appropriate management and interpretation of World Heritage values.	Ongoing
3.1.2	Continue to participate in relevant Gondwana Rainforests intergovernmental management committees; and continue to support community and technical input into the management of the property.	Ongoing
Wilderness		
3.2.1	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, management or environmental protection.	Ongoing
3.2.2	Allow appropriate self-reliant recreation.	Medium
Geology, hydrology, landforms and scenery		
3.3.1	Carry out trail and track maintenance in a manner that limits erosion and siltation of watercourses. Trails or walking tracks may need to be closed or realigned in response to mass movement or landslips.	Ongoing
3.3.2	Monitor sites of known erosion and take action if needed to minimise impacts on water quality.	Ongoing
3.3.3	Monitor the performance of waste water systems in New England National Park and water quality of downstream creeks, and decommission toilets and address pollutants as required.	Ongoing
3.3.4	Determine the location of former tips in Brinerville and assess/address potential for groundwater pollution.	Low

Plan reference	Management response	Priority
3.3.5	Where required, liaise with neighbours and authorities to minimise the impact of adjacent land uses on water quality in the parks.	Ongoing
3.3.6	Where required, liaise with neighbours and authorities to minimise the impact of adjacent land uses on the scenic values of key locations.	Ongoing
3.3.7	Control the regrowth of vegetation to maintain views at designated lookouts.	Ongoing
3.3.8	Designate the following high points as remote natural areas: Majors Point, Darkies Point, Barren Mountain, Mount Woorong Woorong and Andersons Sugarloaf / <i>Barralbalayi</i> in New England National Park; and all of Jobs Mountain Nature Reserve.	High
3.3.9	Ensure information about the New England National Park's key geological and geomorphological features is included in information displays and other interpretation programs.	Ongoing
Native plants		
3.4.1	Encourage or undertake targeted surveys and research for known and predicted threatened plants, and implement other relevant recovery actions in accordance with the <i>Priorities Action Statement</i> .	Medium
3.4.2	Monitor impacts on the silver sword lily along Cascade Walking Track and realign the track if necessary to reduce impacts.	High
3.4.3	Continue vegetation rehabilitation works at Brinerville, Misty Valley and Diamond Flat.	Ongoing
3.4.4	Ensure that threatened plant species at Point Lookout are not promoted other than in advice for visitors to stay on walking tracks.	Ongoing
3.4.5	Monitor the condition of heath plants at Wrights Lookout. Improve the delineation of the walking track as necessary to prevent trampling of plants.	Ongoing
3.4.6	Ensure all field staff are familiar with the identity of and management prescriptions for endemic and threatened plants on escarpment edges (such as the Point Lookout area and Wrights Lookout), particularly for those species occurring on the sides of tracks and trails.	Ongoing
Native animals		
3.5.1	Encourage targeted surveys and research for threatened and other significant animals, monitor populations of key species, including those which are key indicators of ecological health for values associated with world heritage outstanding universal values as well other priority species such as the spotted-tailed quoll and rufous scrub-bird.	Medium
3.5.2	Implement the <i>Priorities Action Statement</i> and other relevant strategies	Medium
3.5.3	Install signage to advise visitors on access restrictions at the old antimony mine to limit impacts on bat populations.	Medium
3.5.4	Liaise with neighbours of Jobs Mountain Nature Reserve to encourage the retention and appropriate management of native vegetation links between the nature reserve and New England National Park.	Ongoing
3.5.5	Encourage research into the genetics, movement, population dynamics and distribution of dingos so as to more clearly delineate core dingo conservation areas.	Medium

Plan reference	Management response	Priority
Aboriginal heritage		
3.6.1	Manage Aboriginal heritage within the parks in partnership with relevant Elders, local Aboriginal land councils and other representatives of the Aboriginal community.	Ongoing
3.6.2	Work with relevant stakeholders to manage access and use of Burrel Bulai Aboriginal Place, including vegetation management to maintain cultural pathways.	Ongoing
3.6.3	Ensure management, use and any access restrictions (particularly to the summit) in Burrel Bulai Aboriginal Place are implemented in line with the final management plan for the place. Install any signage as required and provide interpretive/promotional information in consultation with key Aboriginal stakeholders	Medium
3.6.4	Provide for access to Country for Aboriginal people to maintain, renew or create cultural practice.	Ongoing
3.6.5	Undertake an archaeological survey and cultural assessment before any works are undertaken that have the potential to impact Aboriginal sites and places.	High / As required
3.6.6	Do not publicise the location of Aboriginal sites and places except where the agreement of relevant Aboriginal community organisations has been obtained. Before promoting a site or place, prepare a conservation study and undertake any management work necessary to protect the site or place.	Ongoing
3.6.7	Work with the members of the relevant Aboriginal communities to identify Indigenous names for key sites, places and culturally significant features within and surrounding the parks. Where appropriate, work with the Geographical Names Board to formally use these names.	Medium
3.6.8	Interpret the Aboriginal heritage and contemporary associations of the area in consultation with Aboriginal community representatives. Support Aboriginal community proposals to undertake interpretation of Aboriginal cultural values in the parks.	Medium
Historic heritage		
3.7.1	Prepare and implement a conservation management plan (or heritage action statement) for the Point Lookout structures or any additional sites identified as being of state heritage significance.	High
3.7.2	Collect oral history as well as other information to support the documentation of the history of New England National Park.	High
3.7.3	Document and assess the heritage values of the localities and remaining structures at Brinerville and Petroi. Progressively record other historic places and structures, assess their significance and develop appropriate management strategies including maintenance, demolition or allowing them to decay.	Medium
3.7.4	Ensure protection of historic sites from fire in accordance with the park's fire management strategy through establishment and maintenance of appropriate asset protection zones.	Ongoing

Plan reference	Management response	Priority
Education and research		
3.8.1	Continue to liaise with and support universities and research institutions to encourage appropriate research in the parks, including the environmental impacts of climate change.	Medium
3.8.2	Maintain and renew the following as a priority: <ul style="list-style-type: none"> – orientation signage for the walking track system outside the wilderness – interpretive displays in the Point Lookout area. 	Medium
3.8.3	Support and assist educational use of New England National Park by schools, Thalgarrah Environmental Education Centre, universities and other organisations.	Medium
Recreational opportunities		
<u>Visitor access</u>		
3.9.1	Recreational use of Jobs Mountain Nature Reserve will not be promoted.	Ongoing
3.9.2	Support the concept of a tourist drive along Horseshoe Road to expand on the existing experiences available to visitors to the region.	Low
3.9.3	Close Kilprotay Road to public vehicular use following wet weather. In liaison with Forestry Corporation of NSW, install advisory signs and/or gates at the intersections with the Horseshoe Road, Cockatiel Road, Sheet O Bark Road and Hickeys Creek Road to achieve this closure. Conditions placed on organised events and commercial tours will prohibit vehicular use of Kilprotay Road in wet conditions.	Ongoing / High
<u>Bushwalking</u>		
3.9.4	Allow bushwalking throughout Baalijin and Jobs Mountain nature reserves (where permission to access Jobs Mountain has been obtained from reserve neighbours). In New England National Park, only allow off-track bushwalking in areas outside the Point Lookout area	Ongoing
3.9.5	Maintain the current network of walking tracks in New England National Park to the standards given in Table 2.	Ongoing
3.9.6	Monitor the use of the New England Wilderness Walk between Point Lookout and Brinerville. If required to assist navigation, install minimal route marking.	Medium
3.9.7	Encourage walkers to contact NPWS before entering the wilderness area and promote minimal impact bushwalking practices.	Ongoing
<u>Cycling</u>		
3.9.8	Allow cycling on all park roads and management trails within Baalijin Nature Reserve and New England National Park, including within the New England Wilderness Area.	Ongoing
3.9.9	Monitor cycling use and assess its impacts on park and wilderness values and the risks to visitor safety associated with cycling. Implement measures to limit impacts as necessary.	Ongoing
3.9.10	Encourage cyclists to contact NPWS before entering the wilderness area.	Ongoing

<u>Horse riding</u>		
3.9.11	Allow horse riding only on the designated horse riding routes shown on Figure 2, and under consent for 'traditional cultural activities' in Burrel Bulai Aboriginal Place as appropriate.	Ongoing
<u>Day use and camping areas</u>		
3.9.12	Improve the utility and visitor amenity of the major shelter shed at Point Lookout consistent with the conservation management plan.	Low
3.9.13	Reconfigure Thungutti Camping Area, within the existing camping area footprint, to accommodate small campervans and camper trailers, but not to accommodate large caravans and motor homes.	Medium
3.9.14	Provide a walk-in camping area at Woods Creek. Install a toilet if necessary to limit impacts.	Medium
3.9.15	Subject to agreement with relevant Elders groups, including development of conditions of use, permit cultural camps at Petroi via consent and install a toilet and fire ring.	Medium
3.9.16	Continue to provide firewood for the fireplace in the Point Lookout shelter and at Toms Cabin. Elsewhere, phase out supply of firewood at camping areas and encourage visitors to bring their own wood. Prohibit the collection of firewood within these parks.	Ongoing
3.9.17	Allow self-reliant bush camping in areas more than 500 metres from roads in Baalijin Nature Reserve and in areas more than 1 kilometre from facilities (including park roads) in New England National Park. Monitor impacts and implement measures to limit impacts as necessary. Camping is not allowed in Jobs Mountain Nature Reserve.	Ongoing
<u>Built accommodation</u>		
3.9.18	Maintain the Chalet, the Residence and Toms Cabin in New England National Park for visitor accommodation.	Ongoing
3.9.19	Subject to a feasibility assessment, the Diamond Flat House may be adaptively re-used for visitor accommodation or for park management purposes.	High
<u>Group activities</u>		
3.9.20	Issue licences for all commercial operations within the parks.	As required
3.9.21	Appropriately authorise non-commercial and other group activities, events and functions in the parks.	As required
3.9.22	Consider requests for use of the Brinerville area as a venue for events and functions, including Aboriginal culture camps and group activities that have a clear relationship to park management.	Medium
<u>Pest species</u>		
4.1.1	Monitor, control and, where possible, eradicate pest species in accordance with the priorities of the regional pest management strategy and other strategies as relevant, and in cooperation with neighbours, the North Coast Local Land Services, councils, Forestry Corporation of NSW and other stakeholders. In particular, continue existing weed control programs for mistflower, blackberry, privet, lantana, firethorn and moth vine.	Ongoing
4.1.2	Undertake weed surveys in Jobs Mountain Nature Reserve.	Low

4.1.3	In accordance with NPWS policy, provide assistance to neighbours to establish effective boundary fencing that prevents domestic stock entering the parks, with the priority being the subalpine woodland in the vicinity of Point Lookout and along the escarpment edge.	Medium
4.1.4	Undertake or encourage research regarding the impacts of pest species on the conservation values of the parks and appropriate control methods.	Low
4.1.5	Monitor natural regeneration of pasture areas. If required, undertake revegetation works, weed control or fire management.	Medium
4.1.6	Assist in the implementation of the relevant local wild dog management plans.	Medium
4.1.7	Carry out further sampling to identify the extent of phytophthora, bell miner associated dieback and myrtle rust in the parks.	Low
4.1.8	Implement appropriate actions to reduce/contain bell miner associated dieback once a strategy is developed.	Low
4.1.9	Introduce quarantine zones or hygiene protocols (e.g. boot and vehicle wash-down stations) to limit the spread of phytophthora and myrtle rust if required.	Medium
Inappropriate fire		
4.2.1	Review and update reserve fire management strategies as required (e.g. for new additions), and implement the strategies.	High
4.2.2	Participate in the New England, Lower North Coast, Mid North Coast and Clarence Valley bush fire management committees. Maintain cooperative arrangements with Rural Fire Service brigades and fire control officers, other fire authorities (such as Forestry Corporation of NSW) and surrounding landowners in regard to fuel management and fire suppression.	High
4.2.3	Use prescribed fire to achieve a variety of fire regimes that maintain fire thresholds for each vegetation community in accordance with the fire management strategies.	Medium
4.2.4	Avoid use of heavy machinery and retardants for fire suppression in areas of rare plants, Aboriginal sites, historic places, and near wetlands and watercourses.	Ongoing
4.2.5	Encourage research into the ecological effects of fire in the parks, particularly the fire response of significant plant species and the fire requirements of the plateau communities, and the effects of fire intensity and season on recruitment of species across a range of communities.	Medium
Climate change		
4.3.1	Maintain the cool temperate rainforest community at Point Lookout through fire exclusion.	Medium
4.3.2	Seek to build partnerships with research organisations to increase understanding of climate change impacts on the values of the parks, in particular world heritage values and threatened species, and appropriate management responses.	Medium
Access for management and other purposes		
5.1.1	Maintain all park roads and management trails as shown on the Figure 2 in accordance with this plan	Ongoing

5.1.2	Establish an agreement with Forestry Corporation of NSW regarding management of Kilprotay and Horseshoe roads, and other joint interest roads.	Medium
5.1.3	Cooperate with Forestry Corporation of NSW and other landholders in maintaining gates on forestry or private roads that are designated as authorised access only (in particular, Blackwood Road and Five Day Trail).	Ongoing
5.1.4	Continue to liaise with Armidale Regional Council regarding appropriate and regular maintenance of Point Lookout Road.	Ongoing
5.1.5	No pets or stock are permitted to use park roads and Point Lookout Road where it traverses the park. There is no restriction on the movement of animals on Waterfall Way or on Horseshoe Road where they traverse the parks, or on roads that provide the only access to private property, as long as the animal(s) remain in the vehicle. Horse riding through New England National Park or Baalijin Nature Reserve to access private properties will require written consent of NPWS.	Ongoing
5.1.6	Seek to make access to private lands using park roads and management trails subject to a formal licence or agreement, with conditions that may include a contribution towards maintenance costs.	Ongoing
5.1.7	Continue to license TransGrid and AirServices Australia to access their lands through the park.	Ongoing
5.1.8	Secure practical, legal access to Jobs Mountain Nature Reserve for management purposes.	Medium
Management facilities		
5.2.1	Subject to the recommendations of the heritage assessments (see Section 3.7): <ul style="list-style-type: none"> - Retain and manage the besser block garage at Petroi for management purposes. - Remove the old tin shed in the Petroi area. - In liaison with the University of New England, review the need for the hut at Petroi. If still required, negotiate a licence agreement for its future use. If not required, demolish this building and permit researchers to use the besser block garage at Petroi if required. 	Ongoing As required Medium
5.2.2	Maintain the two helpads in the wilderness area.	Ongoing
5.2.3	Complete a risk assessment of former quarries and borrow pits, and prepare and implement safety management plans if required. Assist natural revegetation if required.	Medium
Other facilities and uses		
5.3.1	Continue to license access to the off-park telecommunication facilities in the vicinity of Point Lookout.	Ongoing
5.3.2	In liaison with Telstra and the remaining private landholders in the Brinerville area, remove the above-ground telephone infrastructure in the Brinerville additions. The underground cabling will be left in situ to minimise soil disturbance.	Low
5.3.3	Continue to liaise with TransGrid regarding access and maintenance needs for their transmission lines in accordance with the agreement.	Ongoing
5.3.4	Continue to permit vegetation management to occur under the powerlines, and encourage this management to include the control of noxious and other weeds.	Ongoing

5.3.5	Liaise with AirServices Australia to ensure that vegetation management on their land has limited impacts on the visual amenity of the escarpment.	High / Ongoing
5.3.6	Continue to authorise access for use and maintenance of the trigonometrical stations in accordance with formal agreements between NPWS and Land and Property Information.	Ongoing
5.3.7	Pursue the removal of Burrel Bulai trig with Land and Property Information in line with the final Burrel Bulai Aboriginal Place management plan.	Medium

Boundary definition and adjustments

5.4.1	Liaise with Bellingen Shire Council and Department of Industry – Lands to secure the formal closure of unnecessary or unmade road reserves within New England National Park and their addition to the park.	Medium
5.4.2	Install signs or totems where appropriate to clearly mark park boundaries.	Low

Appendix A: Rare or threatened plant species recorded in the parks

Threatened plant species recorded in the parks

Scientific name	Common name	Status ^a		Presence ^b		
		TSC Act	EPBC Act	NENP	BNR	JMNR
<i>Arthraxon hispidus</i>	Hairy jointgrass	V	V	X		
<i>Asperula asthenes</i>	Trailing woodruff	V	V	X		
<i>Callistemon pungens</i> (syn. <i>Melaleuca williamsii</i>)	Prickly bottlebrush	-	V	X		
<i>Callitris oblonga</i>	Pygmy cypress pine	V	V	X		
<i>Cynanchum elegans</i>	White-flowered wax plant	E	E	X		
<i>Diuris venosa</i>	Veined doubletail	V	V	X		
<i>Eucalyptus approximans</i>	Barren Mountain mallee	V	-	X		
<i>Gaultheria viridicarpa</i>	Green waxberry	V	V	X		
<i>Gingidia montana</i>	Mountain angelica	E	E	X		
<i>Marsdenia longiloba</i>	Slender marsdenia	E	V	X		
<i>Neoastelia spectabilis</i>	Silver sword lily	V	V	X		
<i>Niemeyera whitei</i>	Rusty plum	V	-	X		
<i>Oberonia titania</i>	Red-flowered king of the fairies	V	-	X		
<i>Parsonsia dorrigoensis</i>	Milky silkpod	V	E	X	X	
<i>Sarcochilus fitzgeraldii</i>	Ravine orchid	V	V	X		
<i>Tasmannia glaucifolia</i>	Fragrant pepperbush	V	V	X		
<i>Tylophora woollsii</i>	Cryptic forest twiner	E	E	X		

^a V = vulnerable; E = endangered.

^b Park names abbreviated as follows: NENP = New England National Park; BNR = Baalijin Nature Reserve; JMNR = Jobs Mountain Nature Reserve. X = Occurs in the reserve.

Rare and poorly known ^a plant species recorded in the parks

Scientific name	Common name	Presence ^b		
		NENP	BNR	JMNR
<i>Acacia tessellata</i>		X		
<i>Acianthus apprimus</i>	Mosquito orchid	X		
<i>Agiortia cicatricata</i>		X		
<i>Alloxylon pinnatum</i>	Dorrigo waratah	X		
<i>Austrobuxus swainii</i>	Pink cherry	X		
<i>Callerya australis</i>	Native wisteria	X		
<i>Carex capillacea</i>		X		
<i>Coronidium elatum</i> subsp. <i>minus</i> (syn. <i>Helichrysum</i> sp. 2)	Mountain everlasting daisy	X		
<i>Cryptandra lanosiflora</i>		X		
<i>Cryptocarya dorrigoensis</i>	Dorrigo laurel	X		
<i>Cryptocarya nova-anglica</i>	Mountain laurel	X		
<i>Cryptocarya williwilliana</i>	Small-leaved laurel	X		
<i>Denhamia moorei</i>	Mountain denhamia	X		
<i>Euphrasia orthocheila</i> subsp. <i>orthocheila</i>		X		
<i>Euphrasia ramulosa</i>		X		
<i>Goodenia fordiana</i>		X	X	
<i>Grevillea acanthifolia</i> subsp. <i>stenomera</i>		X		
<i>Lastreopsis silvestris</i>	Mountain shield fern	X		
<i>Marsdenia liisae</i>	Large-flowered milk vine	X	X	
<i>Melaleuca tortifolia</i>	Barren Mountain paperbark	X		
<i>Ozothamnus whitei</i>		X		
<i>Persoonia procumbens</i>		X		
<i>Sarcochilus aequalis</i>	Boulder orchid	X		
<i>Schistotylus purpuratus</i>		X		
<i>Wahlenbergia glabra</i>		X		
<i>Wahlenbergia</i> sp. 4		X		

^a Based on the criteria of Briggs and Leigh (1996).^b Park names abbreviated as follows: NENP = New England National Park; BNR = Baalijin Nature Reserve; JMNR = Jobs Mountain Nature Reserve. X = Occurs in the reserve.

Appendix B: Significant animal species and populations known from the parks

Common name	Scientific name	Status ^a		Presence ^b		
		TSC Act	EPBC Act	NENP	BNR	JMNR
<u>Amphibians</u>						
Booroolong frog	<i>Litoria booroolongensis</i>	E		X	p	p
Giant barred frog	<i>Mixophyes iteratus</i>	E	E	X	p	
Glandular frog	<i>Litoria subglandulosa</i>	V		X		
Pouched frog	<i>Assa darlingtoni</i>	E		p		
Sphagnum frog	<i>Phyloria sphagnicolus</i>	V		X		p
Stuttering frog	<i>Mixophyes balbus</i>	E	V	X	p	
Tusked frog	<i>Adelotus brevis</i>	EP		X		
<u>Reptiles</u>						
Bellinger River emydura	<i>Emydura macquarii</i> (Bellinger River Form)	#	#	p	X	
Bellinger River snapping turtle	<i>Myuchelys georgesii</i>	CE		X		
Stephen's banded snake	<i>Hoplocephalus stephensii</i>	V		X		p
<u>Birds</u>						
Barking owl	<i>Ninox connivens</i>	V		X		
Black bittern	<i>Ixobrychus flavicollis</i>	V		p	p	
Brown treecreeper	<i>Climacteris picumnus</i>	V		X		
Eastern osprey	<i>Pandion cristatus</i>	V		X		
Flame robin	<i>Petroica phoenicea</i>	V		X		
Glossy black-cockatoo	<i>Calyptorhynchus lathami</i>	V		X	X	p
Little lorikeet	<i>Glossopsitta pusilla</i>	V		X	X	
Masked owl	<i>Tyto novaehollandiae</i>	V		p	X	
Olive whistler	<i>Pachycephala olivacea</i>	V		X		
Powerful owl	<i>Ninox strenua</i>	V		X		p
Regent honeyeater	<i>Anthochaera phrygia</i>	CE	E	X		
Rose-crowned fruit-dove	<i>Ptilinopus regina</i>	V		X		
Rufous scrub-bird	<i>Atrichornis rufescens</i>	V	E	X	X	
Scarlet robin	<i>Petroica boodang</i>	V		X		
Sooty owl	<i>Tyto tenebricosa</i>	V		X		p
Superb fruit-dove	<i>Ptilinopus superba</i>	V		p	p	
Varied sittella	<i>Daphoenositta chrysoptera</i>	V		X	X	
Wompoo fruit-dove	<i>Ptilinopus magnificus</i>	V		X	X	

Common name	Scientific name	Status ^a		Presence ^b		
		TSC Act	EPBC Act	NENP	BNR	JMNR
<u>Mammals</u>						
Brush-tailed phascogale	<i>Phascogale tapoatafa</i>	V		X	p	
Eastern pygmy-possum	<i>Cercartetus nanus</i>	V		X	p	
Greater glider	<i>Petauroides volans</i>		V	X	X	
Grey-headed flying-fox	<i>Pteropus poliocephalus</i>	V	V	p	p	
Hastings River mouse	<i>Pseudomys oralis</i>	E	E	p	p	p
Koala	<i>Phascolarctos cinereus</i>	V	V	X	X	p
Long-nosed potoroo	<i>Potorous tridactylus</i>	V		X	p	
Parma wallaby	<i>Macropus parma</i>	V		X	p	
Red-legged pademelon	<i>Thylogale stigmatica</i>	V		X	p	
Rufous bettong	<i>Aepyprymnus rufescens</i>	V		X	p	
Spotted-tailed quoll	<i>Dasyurus maculatus</i>	V	E	X	X	
Squirrel glider	<i>Petaurus norfolcensis</i>	V		X	p	
Yellow-bellied glider	<i>Petaurus australis</i>	V		X		p
<u>Micro-bats</u>						
Eastern bentwing-bat	<i>Miniopterus schreibersii oceanensis</i>	V		X	p	p
Eastern false pipistrelle	<i>Falsistrellus tasmaniensis</i>	V		X		
Eastern freetail-bat	<i>Mormopterus norfolkensis</i>	V		p	p	p
Golden-tipped bat	<i>Kerivoula papuensis</i>	V		p	p	p
Large-eared pied bat	<i>Chalinolobus dwyeri</i>	V		p	p	
Little bentwing-bat	<i>Miniopterus australis</i>	V		X	X	
Southern myotis	<i>Myotis macropus</i>	V		X	p	
Yellow-bellied sheath-tail-bat	<i>Saccolaimus flaviventris</i>	V		X		
Greater broad-nosed bat	<i>Scoteanax rueppellii</i>	V		p	p	

Source: Atlas of NSW Wildlife July 2010 for records.

X = Occurs in the park; p = predicted to occur (NPWS 1999).

^a Status: CE = critically endangered species; E = endangered species; EP = endangered population;

V = vulnerable species; # = previously considered threatened but now delisted.

^b Park names abbreviated as follows: NENP = New England National Park; BNR = Baalijin Nature Reserve; JMNR = Jobs Mountain Nature Reserve.

References

- Adam P 1987, *New South Wales Rainforests: The nomination for the World Heritage List*. National Parks and Wildlife Service of NSW, Sydney.
- Belshaw J 1978, Population distribution and the pattern of seasonal movement in northern New South Wales, pp. 65–81 in McBryde I (ed) *Records of Times Past: Ethnohistorical essays on the culture and ecology of the New England tribes*, Australian Institute of Aboriginal Studies, Canberra.
- Biosecurity Queensland on behalf of the National Lantana Management Group (2010), *Plan to Protect Environmental Assets from Lantana*, Department of Employment, Economic Development and Innovation, Yeerongpilly, Queensland.
- Birds Australia 2009, *Important Bird Areas of Australia*, viewed 6 July 2010, www.birdsaustralia.com.au/ibas.
- Briggs JD & Leigh, JH 1996 *Rare or Threatened Australian Plants*, revised edition, CSIRO, Melbourne.
- CERRA 2000, *Strategic Overview for Management of the World Heritage Central Eastern Rainforest Reserves of Australia*, Department of the Environment and Heritage, Canberra.
- Clarke PJ, Copeland LM, Noble NE, Bale CL & Williams, JB 2000, *The Vegetation and Plant Species of New England National Park*, Botany Department, University of New England, Armidale.
- Creamer H & Shepherd, V 1975, *Three Stone Arrangement Sites in New England*, unpublished report to NPWS.
- Creamer H 1981, *Berarngutta to Gulgarng: Investigations of Aboriginal Sites of Significance from Point Lookout to South-west Rocks*, unpublished report from the NSW Aboriginal Sites Survey, 1973–1981.
- DASET 1992, *Nomination of Central Eastern Rainforests of Australia for Inclusion on the World Heritage List by the Government of Australia*, Department of the Arts, Sport, the Environment and Territories, Canberra.
- DECC 2005, *Reserve Fire Management Strategy: Baalijin Nature Reserve*, viewed 24 January 2011, www.environment.nsw.gov.au/resources/parks/baalijin.pdf.
- DECC 2007, *Introducing the NSW Threatened Species Priorities Action Statement (PAS)*. Department of Environment and Climate Change, Sydney, www.environment.nsw.gov.au/threatenedspecies/.
- DECCW 2010a, *Northern Rivers Regional Biodiversity Management Plan, National Recovery Plan for the Northern Rivers Region*, Department of Environment, Climate Change and Water NSW, Sydney, viewed 24 January 2014, www.environment.gov.au/resource/northern-rivers-regional-biodiversity-management-plan.
- DECCW 2010b, *NSW Climate Impact Profile: The impacts of climate change on the biophysical environment of New South Wales*, Department of Environment, Climate Change and Water NSW, Sydney, <http://climatechange.environment.nsw.gov.au/Impacts-of-climate-change/2010-NSW-climate-impact-reporting>

- DPI 2013, *NSW Biosecurity Strategy 2013–2021*, Department of Primary Industries, a division of NSW Department of Trade and Investment, Regional Infrastructure and Services, Orange, www.dpi.nsw.gov.au/_data/assets/pdf_file/0005/467699/NSW-biosecurity-strategy-2013-2021.pdf.
- DSE 2010, *Australian Walking Track Grading System Discussion Paper*, Victoria Department of Sustainability and the Environment, <http://catalogue.nla.gov.au/Record/4975401>
- Dunlop M & Brown, PR 2008, *Implications of Climate Change for Australia's National Reserve System: A preliminary assessment*, Department of the Environment, Water, Heritage and the Arts, Canberra.
- DWR 1987, *Wild and Scenic Rivers in New South Wales: Identification, classification and inventory*, Department of Water Resources, North Sydney.
- FCNSW 1988, Burrell Bulai Aboriginal Place Management Plan, unpublished report.
- FCNSW 1989, *Forest Preservation in New South Wales*, Forestry Commission of NSW, Pennant Hills.
- Floyd AG 1979, *Vegetation of the Upper Bellinger Valley*, unpublished report for NPWS Northern Region, Grafton.
- Floyd AG 1990, *Australian Rainforests in New South Wales - Volume 1*, Surrey Beatty & Sons Pty Ltd, Chipping Norton.
- Gojak D 2005, Heritage Assessment of Buildings in New England National Park, unpublished report for NPWS, Dorrigo Plateau Area.
- Harden RH 1985, The ecology of the dingo in north-eastern New South Wales I. Movements and home range, *Australian Wildlife Research*, vol. 12(1), pp. 25–37.
- Helman PM 1981, *Wild and Scenic Rivers: A preliminary study of New South Wales*, Occasional Paper No. 2, NSW National Parks & Wildlife Service, Sydney.
- Hudson I & Henningham P 1986, *Gift of God, Friend of Man: A story of the timber industry in New South Wales, 1788-1986*, Australian Forest Industries Journal Pty Ltd, Sydney.
- Hunter RJ 2003, *World Heritage and Associative Values of the Central Eastern Rainforest Reserves of Australia*, NSW National Parks and Wildlife Service, Hurstville.
- Kohn J 2006, Longing to Belong: Judith Wright's Poetics of Place, *Colloquy* vol. 12, pp. 114–124, viewed <http://arts.monash.edu.au/ecps/colloquy/journal/issue012/kohn.pdf>.
- Lawrance C 2009, *Brinerville: Inspection report, stabilisation works and management recommendations*, internal unpublished report, Cultural Heritage Division, Department of Environment and Climate Change NSW.
- Lea DAM, Pigram JJJ & Greenwood L 1977, *An Atlas of New England - Volume 2 - The Commentaries*, Dept of Geography, University of New England, Armidale.
- Lean JR 2009, *Settlers of the Never Never*, Bellinger Valley Historical Society, Bellingen.
- Lissarrague A 2007, *Dhanggati Grammar and Dictionary with Dhanggati Stories*, Muurrbay Aboriginal Language and Culture Cooperative, Nambucca Heads.
- Low T 1989, *Bush Tucker: Australia's wild food harvest*, Angus & Robertson, North Ryde.

- Lowe S, Browne M, Boudjelas S & De Poorter M 2000, *100 of the World's Worst Invasive Species: A selection from the global invasive species database*, The Invasive Species Specialist Group of the World Conservation Union (IUCN), www.eea.europa.eu/data-and-maps/indicators/invasive-alien-species-in-europe/100-of-the-worlds-worst
- Marquis-Kyle P & Walker M 2004, *The Illustrated Burra Charter: Good practice for heritage places*, Australia ICOMOS.
- McAdam L 2009, *Archaeological and cultural heritage inspection of the Darkwood addition – Stage 1*, unpublished report to Cultural Heritage Division, Department of Environment and Climate Change NSW.
- McArthur WM 1964, *Soils and Land Use in the Dorrigo-Ebor-Tyringham Area, NSW*, CSIRO, Melbourne.
- McBryde I 1974, *Aboriginal Prehistory in New England - an archaeological survey of northeastern New South Wales*, Sydney University Press.
- McFarland DC 1986, Seasonal changes in the abundance and body condition of honeyeaters (Meliphagidae) in response to inflorescence and nectar availability in the New England National Park, New South Wales, *Australian Journal of Ecology*, vol. 11, pp. 331–340.
- McIntyre-Tamwoy S 2005, Indigenous Heritage Values of the Central Eastern Rainforest Reserves of Australia (CERRA) Region, report to the Department of Environment and Heritage, Canberra.
- Milford HB 1996, *Soil Landscapes of the Dorrigo 1:100,000 Sheet* (Glenreagh, Bellingen, Dundurrabin, Deer Vale), Department of Conservation and Land Management, Sydney.
- Morelli S 2008, *Gumbaynggirr Bijaarr Jandaygam, Ngaawa Gugaarrigam (Gumbaynggirr Dictionary and Learner's Grammar)*, Muurrbay Aboriginal Language and Culture Cooperative, Nambucca Heads, NSW.
- Neil MH 1972, *Valley of the Macleay: The history of Kempsey and the Macleay River District*, Wentworth Books, Sydney.
- North Coast LLS 2014, *Draft Regional Wild Dog Management Plan*, North Coast Local Land Services, Grafton.
- NSW DPI & OEH 2011, *Biodiversity priorities for widespread weeds*, report prepared for the 13 Catchment Management Authorities (CMAs) by NSW Department of Primary Industries and Office of Environment and Heritage, Orange.
- NSW SC 1998, *Final Determination to List Predation by the European Red Fox *Vulpes vulpes* (Linnaeus, 1758) as a Key Threatening Process on Schedule 3 of the NPW Act*, New South Wales Scientific Committee, www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=20015.
- NSW SC 2000a, *Final Determination to List Anthropogenic Climate Change as a Key Threatening Process on Schedule 3 of the NPW Act*, New South Wales Scientific Committee, www.environment.nsw.gov.au/threatenedspecies/HumanClimateChangeKTPListing.htm.
- NSW SC 2000b, *Final Determination to List High Frequency Fire Resulting in the Disruption of Life Cycle Processes in Plants and Animals and Loss of Vegetation Structure and Composition as a Key Threatening Process on Schedule 3 of the NPW Act*, New South Wales Scientific Committee, www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=20014.

- NSW SC 2002, *Final Determination to List Infection of native plants by *Phytophthora cinnamomi* as a Key Threatening Process on Schedule 3 of the NPW Act*, New South Wales Scientific Committee,
www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=20026.
- NSW SC 2003, *Final Determination to List Infection of Frogs by Amphibian Chytrid Causing the Disease Chytridiomycosis as a Key Threatening Process on Schedule 3 of the NPW Act*, New South Wales Scientific Committee,
www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=20009.
- NSW SC 2008, *Final Determination to List Forest Eucalypt Dieback Associated with Over-abundant Psyllids and Bell Miners as a Key Threatening Process on Schedule 3 of the NPW Act*, New South Wales Scientific Committee,
www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=20108.
- NSW SC 2016, *Final Determination to List the Bellingen River Snapping Turtle *Myuchelys georgesi* (Cann, 1997) as a Critically Endangered Species in Part 1 of Schedule 1A of the NPW Act*, New South Wales Scientific Committee,
www.environment.nsw.gov.au/resources/threatenedspecies/determinations/FDBellRiverSnapTurtleCR.pdf
- NPWS 1999, *Modelling areas of habitat significance for vertebrate fauna and vascular flora in north-east NSW: A project undertaken as part of the NSW Comprehensive Regional Assessments*, NSW National Parks and Wildlife Service, Hurstville, viewed 24 January 2014, www.agriculture.gov.au/SiteCollectionDocuments/rfa/regions/nsw-north-east/eviroment/nsw_ne_na23eh.doc
- NPWS 2003, *North Coast Region Cultural Heritage Management Strategy 2003–2007*, unpublished report, NSW National Parks and Wildlife Service, Hurstville.
- NSW Scientific Committee 2002, *Infection of native plants by *Phytophthora cinnamomi* – key threatened process declaration, final determination*, viewed 24 January 2011, www.environment.nsw.gov.au/determinations/PhytophthoraKTPListing.htm.
- OEH 2011a, *Management Plan for Myrtle Rust on the National Parks Estate*, Office of Environment and Heritage NSW, Sydney, viewed at www.environment.nsw.gov.au/resources/pestsweeds/110683myrtlerustmp.pdf.
- OEH 2011b, *Sustainable Mountain Bike Strategy*, Office of Environment and Heritage, Sydney, www.environment.nsw.gov.au/parkmanagement/SustainableMtBStrategy.htm%20.
- OEH 2011c, *Threat Abatement Plan for Predation by the Red Fox (*Vulpes vulpes*)*, Office of Environment and Heritage NSW, Sydney, viewed at www.environment.nsw.gov.au/resources/pestsweeds/110791FoxTAP2010.pdf.
- OEH 2012a, *Regional Pest Management Strategy 2012–17, North Coast Region: A new approach for reducing impacts on native species and park neighbours*, www.environment.nsw.gov.au/resources/pestsweeds/20120366ncrpms.pdf.
- OEH 2012b, *Strategic Directions for Horse Riding in NSW National Parks*, Office of Environment and Heritage, Sydney, www.environment.nsw.gov.au/policies/HorseRideStrat.htm.
- OEH 2013a, *Living with Fire in NSW National Parks: A strategy for managing bushfires in national parks and reserves 2012–2021*, revised reprint May 2013, Office of Environment and Heritage, Sydney,
www.environment.nsw.gov.au/resources/firemanagement/120690LiveFire.pdf.
- OEH 2013b, *Saving our Species*, Office of Environment and Heritage, Sydney,
www.environment.nsw.gov.au/savingourspecies/about.htm.

- OEH 2014a, *New England North West Climate Change Snapshot*, Office of Environment and Heritage, Sydney, www.climatechange.environment.nsw.gov.au/Climate-projections-for-NSW/Climate-projections-for-your-region/Metro-Sydney-Climate-Change-Downloads
- OEH 2014b, *North Coast Climate Change Snapshot*, Office of Environment and Heritage, Sydney, www.climatechange.environment.nsw.gov.au/Climate-projections-for-NSW/Climate-projections-for-your-region/Metro-Sydney-Climate-Change-Downloads
- OEH 2016, New England National Park, Cunnawarra National Park (part), Jobs Mountain Nature Reserve, Pee Dee Nature Reserve Fire Management Strategy, Office of Environment and Heritage, www.environment.nsw.gov.au/firemanagement/FireManagementPlans.htm.
- Reis T 2005, A Bibliography for the World Heritage Central Eastern Rainforest Reserves of Australia: Incorporating information assessment and development of a research strategy, Department of Environment and Conservation NSW, Sydney South.
- Robertshaw JD & Harden RH 1985a, The ecology of the dingo in north-eastern New South Wales. 2. Diet, *Australian Wildlife Research*, vol. 12(1), pp. 39–50.
- Robertshaw JD & Harden, RH 1985b, The ecology of the dingo in north-eastern New South Wales. 3. Analysis of macropod bone fragments found in dingo scats, *Australian Wildlife Research*, vol. 12(2), pp.163–171.
- Robertshaw JD & Harden RH 1986, The ecology of the dingo in north eastern New South Wales. 4. Prey selection by dingos, and its effect on the major prey species, the Swamp Wallaby, *Wallabia bicolor* (Desmarest), *Australian Wildlife Research*, vol. 13(2), pp.141–163.
- Scotts D 2003, *Key Habitats and Corridors for Forest Fauna: A landscape framework for conservation in North-east New South Wales*, Occasional Paper 32, NSW National Parks and Wildlife Service, Hurstville.
- Stanley H 1982, A History of the Establishment and Administration of New England National Park, NSW National Parks & Wildlife Service, Sydney.
- TSSC 2000a, *Commonwealth Listing Advice on Dieback Caused by the Root-rot Fungus (Phytophthora cinnamomi)*, Threatened Species Scientific Committee, www.environment.gov.au/cgi-bin/sprat/public/publicshowkeythreat.pl?id=2.
- TSSC 2000b, *Commonwealth Listing Advice on Predation by European Red Fox*, Threatened Species Scientific Committee, www.environment.gov.au/cgi-bin/sprat/public/publicshowkeythreat.pl?id=1.
- TSSC 2001, *Commonwealth Listing Advice on Loss of Terrestrial Climatic Habitat Caused by Anthropogenic Emissions of Greenhouse Gases*, Threatened Species Scientific Committee, www.environment.gov.au/cgi-bin/sprat/public/publicshowkeythreat.pl?id=7.
- TSSC 2002, *Commonwealth Listing Advice on Infection of Amphibians with Chytrid Fungus Resulting in Chytridiomycosis*, Threatened Species Scientific Committee, www.environment.gov.au/cgi-bin/sprat/public/publicshowkeythreat.pl?id=12.
- UNESCO 1972, *Convention Concerning the Protection of the World Cultural and Natural Heritage*, United Nations Educational, Scientific and Cultural Organization General Conference, Paris.
- Wright PA n.d., A History of the New England National Park, undated and unpublished report compiled by Peter A. Wright.

