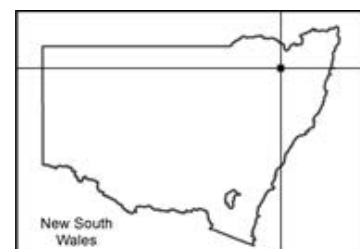


Plan of Management



Butterleaf National Park and Butterleaf State Conservation Area



Butterleaf National Park and Butterleaf State Conservation Area Plan of Management

NSW National Parks and Wildlife Service

July 2013

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This plan of management was adopted by the Minister for the Environment on 16 July 2013.

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This plan of management is based on a draft plan prepared by staff of the Northern Tablelands Region of NPWS, part of the Office of Environment and Heritage. NPWS would like to thank those people who took the time to make a submission on the draft version of this plan.

For additional information or any inquiries about these parks or this plan of management, contact the NPWS Glen Innes Area Office at 69 Church Street Glen Innes or by telephone on 02 67390700.

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Foreword

Butterleaf National Park and Butterleaf State Conservation Area are located 40 kilometres north-east of Glen Innes on the New England Tableland. Butterleaf National Park covers 3003 hectares and was gazetted in 1999, while Butterleaf State Conservation Area covers 712 hectares and was gazetted in 2003.

Butterleaf National Park and State Conservation Area contain extensive areas of high elevation tableland old-growth forest and significant areas of mallee woodland and mixed heath on granite outcrops. Two vulnerable plant species and 16 threatened animal species are found in the parks.

The NSW *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each national park and state conservation area. A draft plan of management for Butterleaf National Park and State Conservation Area was placed on public exhibition from 28 October 2011 to 30 January 2012. The submissions received were carefully considered before adopting this plan.

The plan contains a number of actions to achieve the *NSW 2021* goal to protect our natural environment, including implementation of strategies to assist the recovery of threatened species, control of weeds and pest animals, and continued research into the ecological effects of fire in the parks. The plan also provides enhanced recreational opportunities by allowing driving, cycling and horse riding on roads within the parks, and bushwalking throughout the parks.

This plan of management establishes the scheme of operations for Butterleaf National Park and Butterleaf State Conservation Area. In accordance with section 73B of the *National Parks and Wildlife Act 1974*, this plan of management is hereby adopted.



Robyn Parker MP
Minister for the Environment

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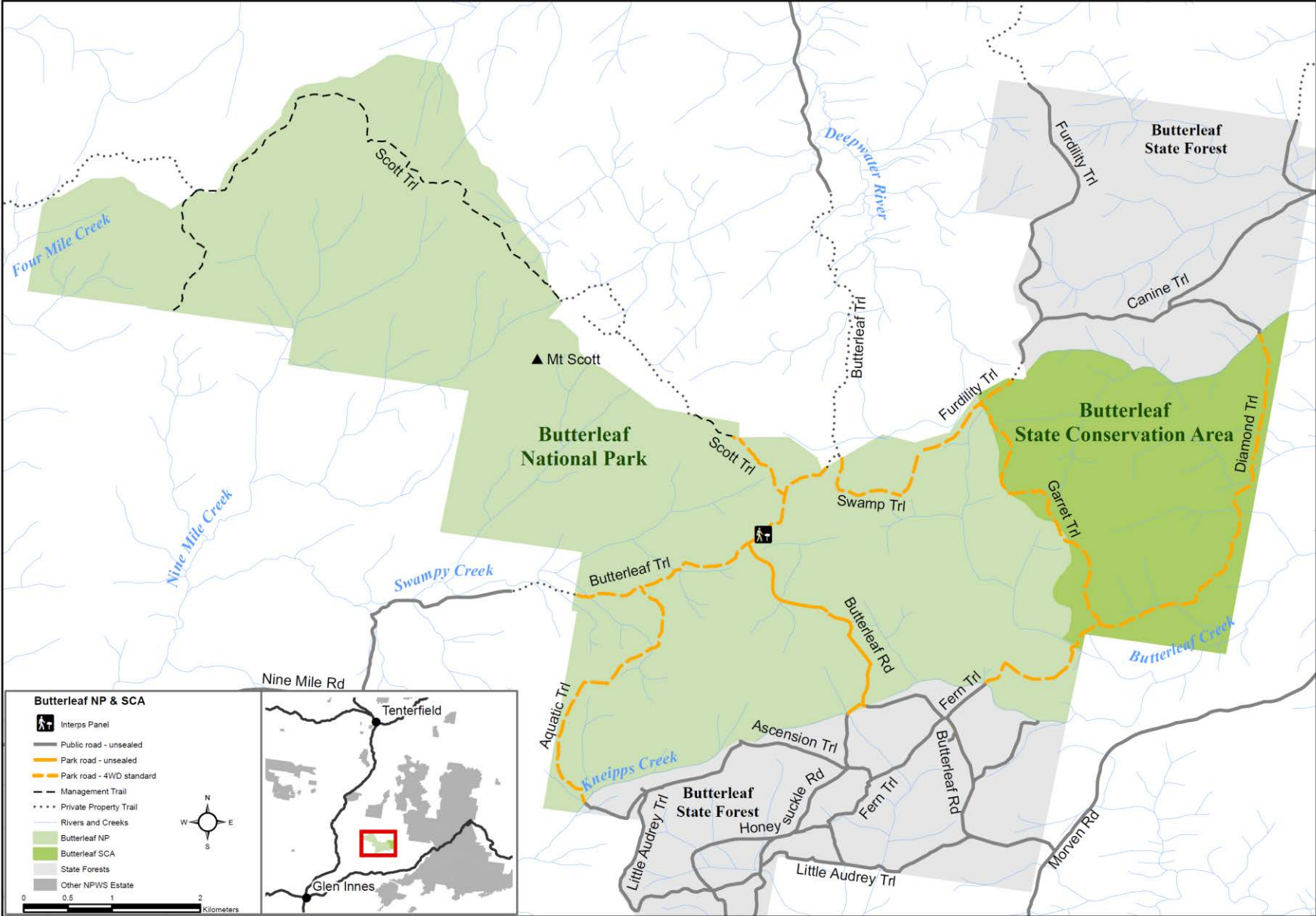
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Map 1. Butterleaf National Park and State Conservation Area



1. Location, gazettal and regional context

This plan of management applies to lands reserved as Butterleaf National Park and Butterleaf State Conservation Area (referred to as 'the planning area').

The planning area is located 40 kilometres north-east of Glen Innes on the New England Tableland. Butterleaf National Park covers 3003 hectares and was gazetted in 1999, while Butterleaf State Conservation Area covers 712 hectares and was gazetted in 2003. Both parks were part of Butterleaf State Forest prior to reservation.

The NSW North East Regional Forest Agreement (RFA) covers Butterleaf National Park and State Conservation Area and provides for, amongst other things, ecological sustainable forest management. RFAs are one of the principal means of implementing the *National Forest Policy Statement* of 1992, under which the Commonwealth, state and territory governments agreed to work towards a shared vision for Australia's forests. The North East RFA provided for major additions to the park system, including the establishment of these two parks.

The planning area straddles the Great Dividing Range with rugged granite landscapes in the west and more fertile metasedimentary geology to the east characterised by taller blackbutt, gum and stringybark forests. There are also areas of high altitude rainforest which are rare on the tablelands. The planning area protects old-growth forest that supports high numbers of spotted-tailed quolls (*Dasyurus maculatus*) as well as glossy black-cockatoos (*Calyptorhynchus lathami*), powerful owls (*Ninox strenua*) and yellow-bellied gliders (*Petaurus australis*). The planning area is linked by corridors to nearby Washpool, Gibraltar Range and Capoompeta national parks.

Forestry operations still occur in the remaining sections of Butterleaf State Forest, contiguous with the planning area, while cattle grazing is the primary activity in surrounding properties along with some private native forestry.

The planning area is within the geographical area of the Glen Innes Severn Local Council, the Border Rivers – Gwydir and Northern Rivers catchment management authorities, the New England Livestock Health and Pest Authority, and the Glen Innes and Moombahlene local Aboriginal land councils.

2. Management context

2.1 Legislative and policy framework

The management of national parks and state conservation areas in New South Wales is in the context of a legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act) and Regulation, the *Threatened Species Conservation Act 1995* (TSC Act) and the policies of the NSW National Parks and Wildlife Service (NPWS).

Other legislation, strategies and international agreements may also apply to management of the area. In particular, the *Environmental Planning and Assessment Act 1979* may require the assessment of environmental impacts of works proposed in this plan. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) may apply in relation to actions that impact on matters of national environmental significance, such as migratory and threatened species listed under that Act.

A plan of management is a statutory document under the NPW Act. Once the Minister has adopted a plan, the plan must be carried out and no operations may be undertaken in relation to the lands to which the plan relates unless the operations are in accordance with the plan. This plan will also apply to any future additions to the planning area. Should management strategies or works be proposed in future that are not consistent with this plan, an amendment to the plan will be required.

2.2 Management purposes and principles

National parks

National parks are reserved under the NPW Act to protect and conserve areas containing outstanding or representative ecosystems, natural or cultural features or landscapes or phenomena that provide opportunities for public appreciation, inspiration and sustainable visitor or tourist use and enjoyment.

Under the Act (section 30E), 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 reuse) of any buildings or structures or modified natural areas having regard to conservation of natural and cultural values
- provide for appropriate research and monitoring.

The primary purpose of national parks is to conserve nature and cultural heritage. Opportunities are provided for appropriate visitor use in a manner that does not damage conservation values.

State conservation areas

State conservation areas are reserved under the NPW Act to protect and conserve areas that:

- contain significant or representative ecosystems, landforms or natural phenomena or places of cultural significance

- that are capable of providing opportunities for sustainable visitor or tourist use and enjoyment, the sustainable use of buildings and structures, or research
- are capable of providing opportunities for uses permitted under other provisions of the Act.

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

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

Land is reserved as a state conservation area primarily where mineral values preclude reservation as another category. The NPW Act requires a review of the classification of state conservation areas every five years in consultation with the Minister administering the *Mining Act 1992*. A review was undertaken in November 2008 in which the status of Butterleaf State Conservation Area remained unchanged.

In the long term, the intention is for Butterleaf State Conservation Area to be added to Butterleaf National Park, and therefore management of the state conservation area will also be guided by the management principles for national parks as far as possible.

2.3 Statement of significance

Butterleaf National Park and Butterleaf State Conservation Area are considered to be of significance for their biological values, which include:

- extensive areas of high elevation tableland old-growth forest and high quality habitat for old-growth forest dependent fauna
- Moist Messmate – Gum Peppermint – Mountain/Manna Gum, Dry Open New England Blackbutt and Peppermint forests
- mallee woodland and mixed heaths on rocky granite outcrops which support several rare and restricted plant species
- habitat for a wide range of fauna including 16 threatened species and the most northerly major population of the common wombat.

2.4 Specific management directions

In addition to the general management purposes and principles for national parks and state conservation areas (see Section 2.2) the following specific objectives apply to the management of Butterleaf National Park and State Conservation Area:

- Conserve the extensive high elevation tableland old-growth forest and high quality habitat for old-growth forest dependent fauna.
- Protect natural values in the planning area by allowing forest regrowth and minimising threatening processes such as inappropriate fire regimes and pest species.

- Undertake or encourage research into appropriate fire regimes, habitat values and introduced species.
- Provide nature-based recreation opportunities in the planning area which are ecologically sustainable, and encourage greater public awareness, appreciation and protection of the natural and cultural values of the area.
- Initiate and maintain close liaison, education and participation with reserve neighbours regarding fire, pests, natural and cultural heritage and boundary issues.

3. Values

This plan aims to conserve both natural and cultural values of the planning area. The location, landforms and plant and animal communities of an area have determined how it has been used and valued by both Aboriginal and non-Aboriginal people. These values may be attached to the landscape as a whole or to individual components, for example to plant and animal species used by Aboriginal people.

3.1 Geology, landscape and hydrology

Butterleaf National Park and State Conservation Area are situated on the watershed of the Macintyre River and Clarence River catchments on the New England Tableland. The entire planning area occurs over 1000 metres above sea level and extends to 1358 metres above sea level at the summit of Mount Scott. The Great Dividing Range bisects the planning area and is a line of demarcation in geology.

The planning area occurs on the New England Batholith and has a complex underlying geology composed predominantly of adamellite and metasediments with small areas of monzogranite to the east and Kingsgate leucogranite to the west. The granitic units weather to form siliceous sands and solodic soils, while the metasediments form lithosols and krasnozems.

The planning area straddles the Great Dividing Range with rugged granite landscapes in the west and more fertile metasedimentary geology to the east characterised by taller blackbutt, gum and stringybark forests.

Undulating to hilly terrain drains the annual rainfall of 900 to 1100 millimetres west into the Deepwater River catchment that feeds the Macintyre River and east into the Timbarra River, a subcatchment of the upper Clarence River.

3.2 Native plants and animals

A full floristic vegetation survey of the planning area was completed in 2001 (Hunter 2011) and the vegetation present was broadly mapped into nine communities, including two endangered ecological communities (EEC): Montane Peatlands and Swamps of the New England Tablelands EEC (TSC Act) and New England Peppermint Woodland on Basalts and Sediments in the New England Tableland Bioregion EEC (TSC Act and EPBC Act).

Moist messmate – gum peppermint – mountain/manna gum, dry open New England blackbutt and peppermint forests are the most extensive forest ecosystems in the eastern half of the planning area. Dry open New England blackbutt is the main vegetation in the west of the planning area, along with small areas of moist stringybark and peppermint forests and swamp and rock outcrop communities.

The planning areas also contains the largest reserved area of moist messmate – gum peppermint – mountain/manna gum, dry open New England blackbutt and peppermint forest in north-east New South Wales, and patches of the highest altitude rainforest on the tablelands. Significant occurrences of mallee woodland and mixed heaths on granite outcrops, in the vicinity of Mount Scott, also support several regionally significant plants. Significant plant species which have been identified in the planning area are listed in Table 1.

Table 1. Significant plant species recorded in the planning area

Common name	Scientific name	Status
Mitchell's wattle	<i>Acacia mitchellii</i>	Regionally significant
	<i>Actinotus gibbonsii</i>	Regionally significant
	<i>Agiortia cicatricata</i>	Regionally significant
	<i>Brachyloma saxicola</i>	Regionally significant
	<i>Callistemon pungens</i>	Regionally significant
Port Jackson pine	<i>Callitris rhomboidea</i>	Regionally significant
Barrington Tops ant orchid	<i>Chiloglottis platyptera</i>	Vulnerable*
Woolly cryptandra	<i>Cryptandra lanosiflora</i>	Regionally significant
	<i>Eucalyptus codonocarpa</i>	Regionally significant
	<i>E. retinens</i>	Regionally significant
	<i>Hibbertia villosa</i>	Regionally significant
Rock isotome	<i>Isotoma axillaris</i>	Regionally significant
	<i>Lasiopetalum ferrugineum</i> var. <i>cordatum</i>	Regionally significant
Scrambling lignum	<i>Muehlenbeckia costata</i>	Vulnerable*
	<i>Philothea epilosus</i>	Regionally significant
	<i>Tmesipteris parva</i>	Regionally significant

* Status under TSC Act.

The forest environments of the planning area provide habitat for a wide range of fauna, including several threatened species and the most northerly major population of the common wombat. The planning area is on the boundary of two bioregions (New England Tableland and NSW North Coast), is at the junction of five major regional wildlife corridors, and is identified as key fauna habitat.

The old-growth forest environment of the planning area provides habitat for the threatened and significant fauna species listed in Table 2.

Table 2. Threatened animal species recorded in the planning area

Common name	Scientific name	Legal status
Glossy black-cockatoo	<i>Calyptorhynchus lathami</i>	Vulnerable*
Varied sittella	<i>Daphoenositta chrysoptera</i>	Vulnerable*
Spotted-tailed quoll	<i>Dasyurus maculatus</i>	Endangered# Vulnerable*
Eastern false pipistrelle	<i>Falsistrellus tasmaniensis</i>	Vulnerable*
Little lorikeet	<i>Glossopsitta pusilla</i>	Vulnerable*
Glandular frog	<i>Litoria subglandulosa</i>	Vulnerable*
Square-tailed kite	<i>Lophoictinia isura</i>	Vulnerable*
Eastern bentwing-bat	<i>Miniopterus schreibersii oceanensis</i>	Vulnerable*
Stuttering frog	<i>Mixophyes balbus</i>	Endangered* Vulnerable#
Southern myotis	<i>Myotis macropus</i>	Vulnerable*
Powerful owl	<i>Ninox strenua</i>	Vulnerable*
Yellow-bellied glider	<i>Petaurus australis</i>	Vulnerable*
Scarlet robin	<i>Petroica boodang</i>	Vulnerable*
Flame robin	<i>Petroica phoenicea</i>	Vulnerable*
Masked owl	<i>Tyto novaehollandiae</i>	Vulnerable*
Eastern cave bat	<i>Vespadelus troungtoni</i>	Vulnerable*

* Status under TSC Act.

Denotes species also listed as nationally threatened under the EPBC Act.

The planning area is also potential habitat for the Hastings River mouse (*Pseudomys oralis*) which has been recorded 6 kilometres to the east in Washpool National Park.

A number of state identified key threatening processes (KTPs) are relevant to the management of flora and fauna in the planning area, particularly in relation to its smaller size and the widespread fragmentation of the landscape. These KTPs include:

- competition and habitat degradation by feral goats (*Capra hircus*)
- invasion of native plant communities by exotic perennial grasses
- predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*)
- predation by the feral cat (*Felis catus*), European red fox (*Vulpes vulpes*) and feral dogs (*Canis lupus familiaris*)
- human-caused climate change
- high frequency fire resulting in the disruption of life cycle processes in plants and animals, loss of vegetation structure and composition, and habitat attributes such as logs, bark and litter
- loss of hollow bearing trees
- bushrock removal and removal of dead wood and dead trees.

To respond to threats to native flora and fauna, the NSW Government has prepared the *NSW Threatened Species Priorities Action Statement (PAS)*. The PAS outlines broad strategies and detailed priority actions which will promote the recovery of threatened species, populations and endangered ecological communities and manage key threatening processes. Priority actions and recovery plans will be used to guide management of threatened species in the planning area.

3.3 Aboriginal heritage

Aboriginal communities have an association and connection to the land. The land and water within a landscape are central to Aboriginal spirituality and contribute to Aboriginal identity. Aboriginal communities associate natural resources with the use and enjoyment of foods and medicines, caring for the land, passing on cultural knowledge, kinship systems and strengthening social bonds. Aboriginal heritage and connection to nature are inseparable from each other and need to be managed in an integrated manner across the landscape.

The planning area is within the Glen Innes Local Aboriginal Land Council (LALC) area and is considered the traditional lands of the Ngarabul People. The northern boundary of the planning area is also the boundary between the Glen Innes LALC and the Moombahlene LALC to the north.

Aboriginal sites have not been recorded in the planning area to date, however, the western half of the planning area is located on granite geology where there are exposed granite outcrops and large boulders. This type of landscape has been shown to support human occupation on the Mole Tableland to the west of the planning area, as it provides food from plants and animals, water, stone resources for tool production, and sheltered space for occupation and the painting of art.

There is a grave of an Aboriginal man who was killed in a saw milling accident in the late 1800s located 1.5 kilometres to the south of the planning area in Butterleaf State Forest.

3.4 European heritage

The Glen Innes district was first settled by Europeans in 1838. Although the Butterleaf area was associated with timber and mining it was predominantly a grazing area. Little evidence of past grazing use remains apart from some clearings and sections of the dingo fence along the northern and eastern boundaries of the planning area. This fence illustrates an important aspect of local land use and grazing history and is a significant landscape feature. Butterleaf Road, which bisects the planning area, follows the route of a 19th century bridle track passing to the west of the Great Dividing Range.

The cultural heritage values of Butterleaf National Park and State Conservation Area need further investigation. However, the archaeological survey for the Glen Innes Forest Management Area Environmental Impact Statement in 1992 included parts of Butterleaf State Forest which are now national park. Sites noted in the historical assessment report included Mangleson's sawmill (operated from 1932), Hartley's sawmill, Vendon's sawmill and several saw pits. Items associated with domestic life at mill houses are still present in the Butterleaf area although little evidence has been found within the planning area.

There is a log and earth bridge within the planning area on Fern Trail which has been assessed as regionally significant because it is the only example of this type of construction in the area.

3.5 Visitor use, education and research

Recreational use of a park should be nature-based, present minimal or no threat to the values of the park and be ecologically sustainable. NPWS has a strong focus on increasing the number of people using parks and broadening the range of visitor experiences available by providing a cross-section of recreation opportunities across reserves.

Butterleaf National Park and State Conservation Area currently receive low level visitor use. This is usually limited to low-impact, self-reliant, nature-based recreation such as bird watching and bushwalking. The planning area is a low-key recreation destination where a visitor can expect to experience solitude in a natural area.

Access to the planning area is from the south-east via Butterleaf Road off Morven Road. There are no facilities in the planning area except for an informal car parking area with an interpretation panel on Butterleaf Road. This car park is accessible by two-wheel drive vehicles (see Map 1). There is a network of roads that provide access to the planning area for bushwalking, cycling, horse riding and four-wheel drive vehicles (see Map 1). Access to roads and trails may be restricted for short periods if cycling, horse riding or public vehicle use is shown to be causing damage and erosion, particularly after wet weather.

A walking route to Mount Scott is provided off Scott Trail and is distinguished by trail markers. It is not a fully formed walking track.

The natural features of the planning area make it an excellent resource for research and education, particularly the east–west demarcation in geology, varied vegetation communities, rare plants, significant wombat and quoll populations, and potential habitat for the Hastings River mouse.

4. Issues

4.1 Weeds and pest animals

The control of all pest species within the planning area is undertaken in accordance with the *Northern Tablelands Regional Pest Management Strategy* (NPWS 2007). This strategy identifies appropriate control mechanisms and management strategies for all pest species throughout the region.

Introduced species within reserves are of concern because they have detrimental effects on ecological values and can spread throughout the landscape. The regional pest strategy identifies feral goats, European red foxes, rabbits (*Oryctolagus cuniculus*), feral pigs, feral cats, deer (*Dama* sp.) and feral dogs as priority pest animal species for the planning area and surrounding area (NPWS 2007). Impacts from competition, habitat destruction and or predation by these species are all listed as key threatening processes under the TSC Act. However, these pest animals have not been observed in large numbers and have not been a major problem in the planning area to date.

An annual cooperative wild dog and fox mound-baiting program is undertaken by NPWS, the New England Livestock Health and Pest Authority and neighbours adjoining the planning area.

Pig trapping occurs within the planning area as required. There is an emerging problem with the build-up of feral deer in and around the planning area. Goats are also present in the planning area, especially in the western half where they may have a negative impact on threatened plant species on rock outcrops.

There are no serious weed threats in the planning area.

4.2 Fire

The primary fire management objectives of the NPWS are to protect life, property and community assets from the adverse impacts of fire, whilst managing fire regimes to maintain and protect biodiversity and cultural heritage.

Fire is a natural feature of many environments and is essential for the survival of some plant communities. However, inappropriate fire regimes can lead to loss of particular plant and animal species and communities, and high frequency fires have been listed as a key threatening process under the TSC Act.

Fire frequency also has an impact on fauna habitat and continued disturbance can degrade and fragment ecosystems. Butterleaf National Park's wombat population is at threat because of its small size and isolation, at the northern limit of its distribution. It is one of two small populations in the north of the New England Tableland, and is threatened by predation and food shortage, especially after fire. Most burrows are located in the southern half of the planning area where frequent fire in the past has maintained a grassy understorey. Fire management in this part of the planning area will aim to retain large areas with a grassy understorey, which may mean burning at the lower end of recommended regimes with respect to fire frequency. However, this has to be balanced with the maintenance of other habitat features such as large logs on the ground which provide critical quoll habitat.

The vegetation communities in the planning area have historically had a regime of frequent mosaic burning associated with grazing leases in the former state forest, as well as episodes of wild fires. Fire research has often emphasised species richness as a management goal

and this can be achieved by maintaining vegetation communities at an intermediate stage of development by constant and moderate disturbance. Variability and adaptability in fire regimes is the goal suggested by some research (Bradstock, Keith & Auld 1995; Conroy 1996; Hunter 2000) where such a regime creates a variability in chronosequences and that representative mature systems be maintained even though richness may decline (Bradstock et al. 1995; Hunter 2000). The extremes of the frequency scale of fires should be based on the population extinction risk of taxa, rather than richness and density.

A separate fire management strategy has been prepared for Butterleaf National Park and State Conservation Area (NPWS 2005). The fire management strategy outlines the recent fire history of the planning area, key assets within and adjoining the planning area including sites of natural and cultural heritage value, fire management zones, and fire control advantages such as management trails and water supply points. Hazard reduction programs, ecological burning proposals and fire trail works are submitted annually to the Northern Tablelands Bush Fire Management Committee.

4.3 Isolation and fragmentation

Butterleaf National Park and State Conservation Area are located in a major north–south habitat corridor and have good vegetated links to parks on the escarpment to the east and are within the corridor of the Great Eastern Ranges Initiative which aims to improve the connectivity of mountain ecosystems running the length of eastern Australia. However, the New England Tableland to the west of the planning area is extensively cleared which has resulted in a high loss of biodiversity and fragmentation of habitat in the region. Long-term conservation of biodiversity depends upon the protection, enhancement and connection of remaining habitat across the landscape, incorporating vegetation remnants on both public and private lands.

Nearby vegetated areas contribute to the habitat values of the planning area and provide ecological corridors to other forested areas. Maintaining the integrity of the remaining habitat within the planning area and, where possible, linking this to adjacent areas of bushland to facilitate wildlife corridors is important in ensuring long-term viability of the planning area's biological values. Maintaining and increasing habitat connectivity will increase the resilience and viability of some populations to survive impacts of climate change.

4.4 Climate change

Climate change has been listed as a key threatening process under the TSC Act. The 2007 CSIRO report on climate change in the Border Rivers – Gwydir Catchment notes that since 1950 the region has experienced warming of around 0.8–1.3°C, partially attributable to human activities. In this period there has been little change in rainfall, with data indicating trends in the order of ± 5 millimetres per decade, however, the contribution of human activities to rainfall changes is hard to distinguish from natural variability. The report notes that the future climate of the Border Rivers – Gwydir catchment is likely to be warmer and drier leading to increases in evaporation, heat waves, extreme winds and fire risk. Nevertheless, despite this trend toward drier conditions, there is also potential for increases in extreme rainfall events.

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

Programs to reduce the pressures arising from other threats, such as habitat fragmentation, invasive species, bushfires, pollution and urban expansion, will help reduce the severity of the effects of climate change.

5. Other uses

5.1 Apiary sites

Apiarists maintain honey bee hives seasonally within the planning area, at four sites. These sites are recognised as existing interests under the NPW Act as they pre-date the reservation of the planning area. NPWS policy on bee keeping allows existing sites to continue but does not allow any new or additional sites. The European honeybee (*Apis mellifera*) can have adverse impacts on some native plants and animals (Paton 1996) including poor flower pollination and competition with native nectar feeders.

Sites are limited in size and maintained by mowing or slashing. Access to these apiary sites is via publicly accessible roads and trails. While no problems are currently known in the planning area, hive sites may cause unacceptable environmental impacts or user conflicts in the future. Where needed, NPWS will aim to negotiate relocation of hives to sites that allow the closure of trails or minimise the impact of the honeybees.

6. Implementation

Current situation	Desired outcomes	Management response	Priority*
<p>6.1. On-park ecological conservation</p> <p>Unprotected soils are prone to gully erosion. Swamps and heaths form where there is impeded drainage. As slope gradients increase, erosion problems can develop, particularly along access roads and trails.</p> <p>The vegetation present in the planning area has been broadly mapped into nine communities including some of the highest altitude rainforest recorded on the tablelands and two endangered ecological communities (see Section 3.2).</p> <p>A comprehensive vegetation survey has been undertaken in the planning area.</p> <p>Sixteen threatened animal species have been identified in the planning area along with two threatened plant species. These species and their habitats may be affected by feral goats and deer (see Section 6.4).</p> <p>Climate change has been identified as a key threatening process under the TSC Act.</p>	<p>Native plant and animal species and communities are conserved and species richness is maintained.</p> <p>Negative impacts on threatened taxa are stable or diminishing.</p> <p>Landscape and catchment values are protected.</p> <p>The effects of climate change on natural systems are reduced.</p>	<p>6.1.1 Implement relevant strategies in the <i>Priorities Action Statement</i> and recovery plans for threatened species.</p> <p>6.1.2 Continue existing fire, pest and weed management programs to increase the planning area's ability to cope with future disturbances, including climate change.</p> <p>6.1.3 Undertake all works, such as trail maintenance and fire management, in a manner that minimises erosion and water pollution.</p> <p>6.1.4 Encourage or undertake baseline surveys to improve knowledge of biodiversity e.g. Hastings River mouse surveys, wombat and threatened species surveys and monitor for impacts of climate change.</p> <p>6.1.5 Work with neighbours and catchment management authorities to encourage the retention and appropriate management of key habitat and corridors adjacent to the planning area.</p>	<p>High Ongoing</p> <p>High Ongoing</p> <p>High Ongoing</p> <p>Low Ongoing</p> <p>Medium Ongoing</p>
<p>6.2. Cultural heritage</p> <p>The cultural heritage values of the planning area need further investigation.</p> <p>The planning area is in the traditional lands of the Ngarabul People. No Aboriginal sites have been recorded in the planning area.</p>	<p>Aboriginal places and values are identified and protected.</p> <p>Aboriginal people are involved in management of the Aboriginal cultural values of the park.</p>	<p>6.2.1 Consult and involve the Glen Innes Local Aboriginal Land Council and other relevant Aboriginal community organisations in the management of Aboriginal sites, places and values, including interpretation of places or values.</p> <p>6.2.2 Undertake surveys prior to all works with the potential to impact on Aboriginal or historic sites and places.</p>	<p>High Ongoing</p> <p>Medium Ongoing</p>

Current situation	Desired outcomes	Management response	Priority*
<p>Grazing and logging occurred in the planning area under past tenures. A saw pit, a log bridge and parts of a dingo fence have been recorded in the planning area.</p>	<p>Historic features are appropriately conserved and managed.</p> <p>Understanding of the cultural values of the park is improved.</p>	<p>6.2.3 Record historical sites, assess for heritage value and retain in situ.</p> <p>6.2.4 Undertake or encourage further research into Aboriginal and historic heritage in the planning area, including surveys and documentation of cultural resources, values and locations.</p>	<p>Low Ongoing</p> <p>Low Ongoing</p>
<p>6.3. Visitor use and services</p> <p>Planning area visitation levels are low. The planning area provides for low intensity recreation which has minimal impact on the values of the park.</p> <p>There is an informal car park on Butterleaf Road. An interpretation panel has been erected at this site. This area is accessible by two-wheel drive vehicles. There is a network of roads that provide access to the planning area for bushwalking, cycling, horse riding and four-wheel drive vehicles (see Map 1).</p> <p>Part of Scott Trail is on private property. A walking route to the summit of Mount Scott leads off this trail.</p> <p>Access to roads may be restricted during wet weather to avoid damage to roads and trails and erosion problems.</p>	<p>Visitor use is appropriate and ecologically sustainable.</p> <p>Negative impacts of visitors on park values are stable or diminishing.</p> <p>Visitor use and services encourage appreciation of the park's values.</p>	<p>6.3.1 Allow cycling, horse riding and public vehicle access on the roads and trails shown on the Map 1, excluding the management trail section of Scott Trail. Allow bushwalking throughout the planning area.</p> <p>6.3.2 Camping with horses is not permitted.</p> <p>6.3.3 Provide interpretive and minimal impact use information at the car park on Butterleaf Road.</p> <p>6.3.4. Monitor cycling, horse riding and public vehicle use and condition of roads and trails within the planning area. Access to roads and trails may be restricted, or other mitigation measures implemented, if public use is shown to be causing damage and erosion, particularly after wet weather.</p> <p>6.3.5 Erect signs to identify the private property and management trail sections of Scott Trail.</p> <p>6.3.6 Maintain the walking route markers to Mount Scott.</p>	<p>Medium Ongoing</p> <p>Medium</p> <p>Medium Ongoing</p> <p>Medium Ongoing</p> <p>Medium</p> <p>Low Ongoing</p>

Current situation	Desired outcomes	Management response	Priority*
<p>6.4. Weeds and pest animals</p> <p>Introduced plants and feral animals are not a major problem in the planning area. An annual baiting program is carried out to control wild dogs and foxes; and pig trapping takes place when required.</p> <p>There is an emerging problem with the build-up of feral deer in the region, including in the planning area. Some goats are present in more rugged landscapes in the west of the planning area.</p> <p>There are no serious weed threats in the planning area.</p> <p>The Northern Tablelands Regional Pest Management Strategy provides details of control options and programs for introduced species.</p>	<p>Introduced plants and animals are controlled and where possible eliminated.</p> <p>Negative impacts of weeds and pest animals on park values are stable or diminishing.</p> <p>Pest control programs are undertaken in consultation with neighbours.</p>	<p>6.4.1 Manage introduced species in accordance with the Northern Tablelands regional pest management strategy.</p> <p>6.4.2 Monitor the planning area to determine the presence and extent of introduced species, including noxious and significant environmental weeds. Treat any new outbreaks where possible.</p> <p>6.4.3 As far as possible, undertake integrated pest control programs with the Livestock Health and Pest Authority, Landcare, Forests NSW and neighbours.</p>	<p>High Ongoing</p> <p>Medium Ongoing</p> <p>High Ongoing</p>
<p>6.5. Fire management</p> <p>Fire is a natural feature of many environments but inappropriate fire regimes can lead to loss of particular plant and animal communities. High frequency fires have been listed as a key threatening process under the TSC Act.</p> <p>The planning area was regularly burnt for grazing when the area was managed as state forest. A major wildfire burnt the western half of the planning area in 1980. More recently, wildfires entered smaller areas of the planning area in 2004 and 2007.</p> <p>A fire management strategy was prepared for the planning area in 2005. Most of the planning area is zoned 'Heritage Management', where vegetation communities are managed according to</p>	<p>Life, property and natural and cultural values are protected from fire.</p> <p>Fire regimes are appropriate for conservation of native plant and animal communities.</p> <p>Negative impacts of fire on natural and cultural heritage values are stable or diminishing.</p>	<p>6.5.1 Implement the reserve fire management strategy for the planning area.</p> <p>6.5.2 Participate in the Northern Tablelands Bush Fire Management Committee. Maintain cooperative arrangements with local Rural Fire Service brigades, fire control officers, and surrounding landowners in regard to fuel management and fire suppression.</p> <p>6.5.3 Manage the planning area to protect biodiversity in accordance with the identified fire regimes/thresholds in the fire management strategy.</p> <p>6.5.4 Continue research, and encourage further research, into the ecological effects of fire in the planning area.</p>	<p>High Ongoing</p> <p>High Ongoing</p> <p>Medium Ongoing</p> <p>Low Ongoing</p>

Current situation	Desired outcomes	Management response	Priority*
<p>recommended fire regimes. The plan makes provisions for wombat requirements in relation to fire. It also identifies a system of fire trails and measures to reduce threats to neighbouring land and assets. There are a number of houses close to the western and southern boundaries of the park.</p>			
<p>6.6. Infrastructure and maintenance</p> <p>Public access to the planning area is via Butterleaf Road, through Butterleaf State Forest. Planning area boundaries are identified by signs.</p> <p>There is a network of roads and trails in the planning area. Apart from an interpretive display and signage, there are no other management facilities in the planning area.</p> <p>There are four apiary sites within the planning area.</p>	<p>Management facilities and operations adequately serve management needs and have minimal impact.</p>	<p>6.6.1 Maintain all roads and trails as shown on Map 1.</p> <p>6.6.2 Continue to license and manage the apiary sites within the planning area in accordance with NPWS policy and licence conditions. If the sites significantly compromise the environmental values of the area or lead to user conflicts, they will be relocated in consultation with licensee.</p>	<p>High Ongoing</p> <p>Low Ongoing</p>

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

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

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

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 arises.

7. References

- Bradstock, RA, Keith, DA & Auld, TD 1995, 'Fire and conservation: imperatives and constraints on managing for diversity', pp. 323–333 in RA Bradstock, TD Auld, DA Keith, RT Kingsford, D Lunney & DP Sivertsen (Eds) *Conserving Biodiversity: Threats and Solutions*, Surrey Beatty & Sons, Sydney.
- Conroy, RJ 1996, *To burn or not to burn? A description of the history, nature and management of bushfires within Ku-ring-gai Chase National Park*, proceedings of the Linnean Society of New South Wales, vol. 116, pp. 79–95.
- CSIRO 2007, *Climate change in the Border Rivers-Gwydir Catchment*, report prepared for the New South Wales Government by the CSIRO, Commonwealth Scientific and Industrial Research Organisation, Australia.
- Hunter, JT 2000. 'Vegetation of Capoompeta & Western Washpool National Parks', unpublished report to the NSW National Parks and Wildlife Service.
- Hunter, JT 2011, 'Vegetation and Floristics of Butterleaf National Park, Butterleaf State Conservation Area and Bezzants Lease', unpublished report to the NSW National Parks and Wildlife Service, Glen Innes.
- NPWS 2005, *Butterleaf NP & SCA Fire Management Strategy*, NSW Department of Environment and Conservation.
- NPWS 2007, *Northern Tablelands Region Pest Management Strategy 2008–2011*, NSW Department of Environment and Climate Change.
- Paton, DC 1996, *Overview of Feral and Managed Honeybees in Australia: Distribution, abundance, extent of interactions with native biota*, Evidence of Impacts and Future Research, Australia Nature Conservation Agency, 71

