NSW NATIONAL PARKS & WILDLIFE SERVICE

Barrington Tops National Park, Mount Royal National Park and Barrington Tops State Conservation Area

Plan of Management

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Cover photo: Barrington Tops State Conservation Area. Barry Collier/DPE

This plan of management was adopted by the Minister for Climate Change and the Environment on 16 September 2010. An amendment to this plan of management was jointly adopted on 14 February 2022 by the Ministers responsible for the *National Parks and Wildlife Act 1974* and the *Hunter Water Act 1991*.

Published by:

Environment and Heritage
Department of Planning and Environment
Locked Bag 5022, Parramatta NSW 2124
Phone: +61 2 9995 5000 (switchboard)
Phone: 1300 361 967 (Environment, Energy and Science enquiries)
TTY users: phone 133 677, then ask for 1300 361 967
Speak and listen users: phone 1300 555 727, then ask for 1300 361 967
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

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Acknowledgements

The NPWS acknowledges that these parks are within the traditional country of the Biripi, Worimi, Geawegal and Wonaruah Aboriginal people.

This plan of management is based on a draft plan prepared by staff of Hunter and Central Coast Hunter Range Regions.

During the preparation of this plan of management members of the local Aboriginal community provided assistance, including: Mick Leon (Purfleet-Taree LALC), John Thorpe (Purfleet-Taree LALC), Viola Brown (Maaiangal Aboriginal Heritage Co-Op), Carol Ridgeway-Bissett (Maaiangal Aboriginal Heritage Co-Op), Allen Stuart Paget (Ungooroo Aboriginal Corporation), Gwen Russell (Worimi LALC), Jamie Tarrant (Worimi LALC), Val Merrick (Worimi LALC), Tracey Skene (Upper Hunter Wonnarua Council), Vic Perry (Upper Hunter Wonnarua Council), Luke Hickey (Wonnarua Nation Aboriginal Corporation), Tom Miller (Lower Hunter Wonnarua Tribal Council), Dennis J Cavenag (Wonnarua Nation Aboriginal Corporation), Bev Manton (Karuah LALC), Kevin Manton (Karuah LALC) and Bev Van Vliet (Wanaruah LALC).

For additional information or any inquiries about these parks or this plan of management, contact the NPWS Hunter Regional Office, 12B Teramby Road, Nelson Bay or by telephone on (02) 4984 8200.

Foreword

Barrington Tops and Mount Royal National Parks and Barrington Tops State Conservation Area are located approximately 90 kilometres north-west of Newcastle and cover a combined area of 89,299 hectares.

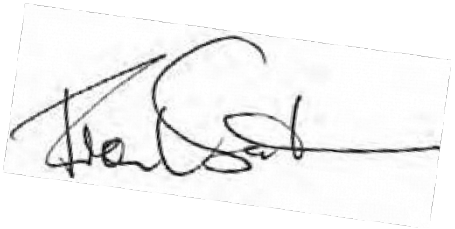
The parks protect rare and threatened species, many of which are highly sensitive such as the sub-alpine swamps and wetlands, as well as the southern-most part of the Gondwana Rainforests of Australia World Heritage Area. They include a large area of wilderness, and Mount Mackenzie, which has been declared an Aboriginal Place. From the early 20th century, recreational use of the plateau became increasingly popular, as did scientific expeditions attracted by the diversity of plants and animals.

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

A draft plan of management for Barrington Tops and Mount Royal National Parks and Barrington Tops State Conservation Area was placed on exhibition from 20 March to 23 June 2008. The submissions received were carefully considered before adopting this plan.

This plan contains a number of actions to achieve the State Plan priority to 'Protect our native vegetation, biodiversity, land, rivers and coastal waterways', including control of introduced plants and animals, strategies to stop the spread of weeds and pathogens, implementation of recovery plans and priority actions for threatened species and fire management. The plan also contains actions to help achieve the State Plan priority to 'Promote our parks', including upgraded interpretive and directional signage, continued 2WD scenic driving, additional trails for 4WD and horse riding, and the upgrading of walking tracks.

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



Frank Sartor MP

Minister for Climate Change and the Environment

Part A: Management context

1. Introduction

1.1 Plan preparation

A draft plan of management for Barrington Tops National Park was placed on public exhibition in June 1989. The draft plan attracted 1438 submissions covering 32 issues. Subsequent wilderness considerations and major additions to the reserve area meant that the draft plan did not progress.

The preparation of the draft plan of management for Mount Royal National Park commenced soon after the park was gazetted in 1997. A draft plan was, however, not placed on public exhibition but rather, being part of the same land unit, it was incorporated with the Barrington Tops National Park plan.

Because of the substantial increase in reserve area, the length of time since the original draft and the controversial issues raised in the original draft it was decided that an entirely new plan would be drafted focusing on the whole landscape of the Barrington Tops – Mount Royal area. In 2001 the planning process was re-initiated to incorporate the Barrington Tops National Park Plan of Management with Mount Royal National Park and the newly gazetted Barrington Tops State Conservation Area (which was known at the time as Polblue and Barrington Tops Crown Reserves). A combined plan covering each of these reserves was recommended as each of the reserves are adjoining, cover a large area and have similar management issues.

1.2 Community involvement

A community planning workshop for Mount Royal National Park was held on 20 June 1998, on park, and was attended by up to 60 people. A wide range of stakeholder groups were represented on the day, including recreational user groups, neighbours, Aboriginal people (Land and Tribal Councils), local government, state government agencies and National Parks and Wildlife Service (NPWS) representatives. The comments received during the consultation process were recorded and have been taken into consideration as part of preparing this draft plan of management. Participants identified what they valued about Mount Royal and management concerns for the park.

The preparation of the combined draft plan of management for Barrington Tops National Park, Mount Royal National Park and Barrington Tops State Conservation Area commenced in January 2001. Three community planning workshops for the planning area were held in Dungog, Gloucester and Scone on 4, 11 and 18 August 2002 with a total of approximately 90 people attending the 3 workshops. There was a wide range of stakeholder groups in attendance, including recreational user groups, neighbours, Aboriginal people, local government, state government agencies and NPWS representatives. Participants identified what they valued about the planning area, management issues that concerned them and potential solutions.

A Scientific Forum was held on 20–21 February 2003 with more than 20 people in attendance. The workshop identified the key scientific values for the area, management issues and explored opportunities for future research.

Additional meetings were held with specific stakeholders, including neighbours, 4WD groups, bushwalking clubs, environmental groups, and Aboriginal people. The purpose of these meetings was to enable people most affected by specific issues (e.g. Phytophthora) to contribute to the decision making process.

The draft plan of management was placed on public exhibition from 7 December 2007 until 31 March 2008, and 45 submissions were received. The plan and these submissions were subsequently reviewed by the Hunter Regional Advisory Committee and the Central Coast Hunter Range Regional Advisory Committee, as well as the National Parks and Wildlife Advisory Council before the plan was submitted to the then Minister for Climate Change and the Environment for adoption.

1.3 Amendment to the plan

An amendment to this plan was adopted in 2022. The amendment enables improvements to visitor facilities at camping and day use areas, improvements to walking tracks and updated general information about the parks.

1.4 Format of the plan

Information in this plan is presented in 3 parts.

Part A documents the history of legislation establishing the reserves, including policies relating to the different categories of reserve, and provides an overview of the nature and values of the planning area as the basis for management.

Part B details the strategic approach to planning for management of the area. It focuses on 7 broad categories:

1. conservation of natural heritage
2. conservation of cultural heritage
3. introduced species
4. fire management
5. visitor use
6. scientific research
7. management operations and other land uses.

For each strategic category, the plan discusses:

- background information including historical data and past management practices
- issues which have been identified as potentially influencing management actions
- desired outcomes in providing sustainable management
- guidelines and actions which are recommended to achieve these outcomes.

The guidelines and actions within each strategy are numbered for reference only. The numbering does not indicate priority.

Part C deals with implementation of the actions identified in Part B and assigns priorities for their execution. A broad outline for the review process of the plan's implementation is also provided.

2. The planning area

2.1 Location and regional context

This plan of management covers Barrington Tops and Mount Royal National Parks (NP) and Barrington Tops State Conservation Area (SCA), known collectively in this plan as 'the planning area'. Barrington Tops State Conservation Area was previously known as Polblue and Barrington Tops Crown Reserves. Barrington Tops National Park is adjacent to Mount Royal National Park at its south-western boundary, while Barrington Tops State Conservation Area adjoins the north-western boundary of Barrington Tops National Park (Figure 1).

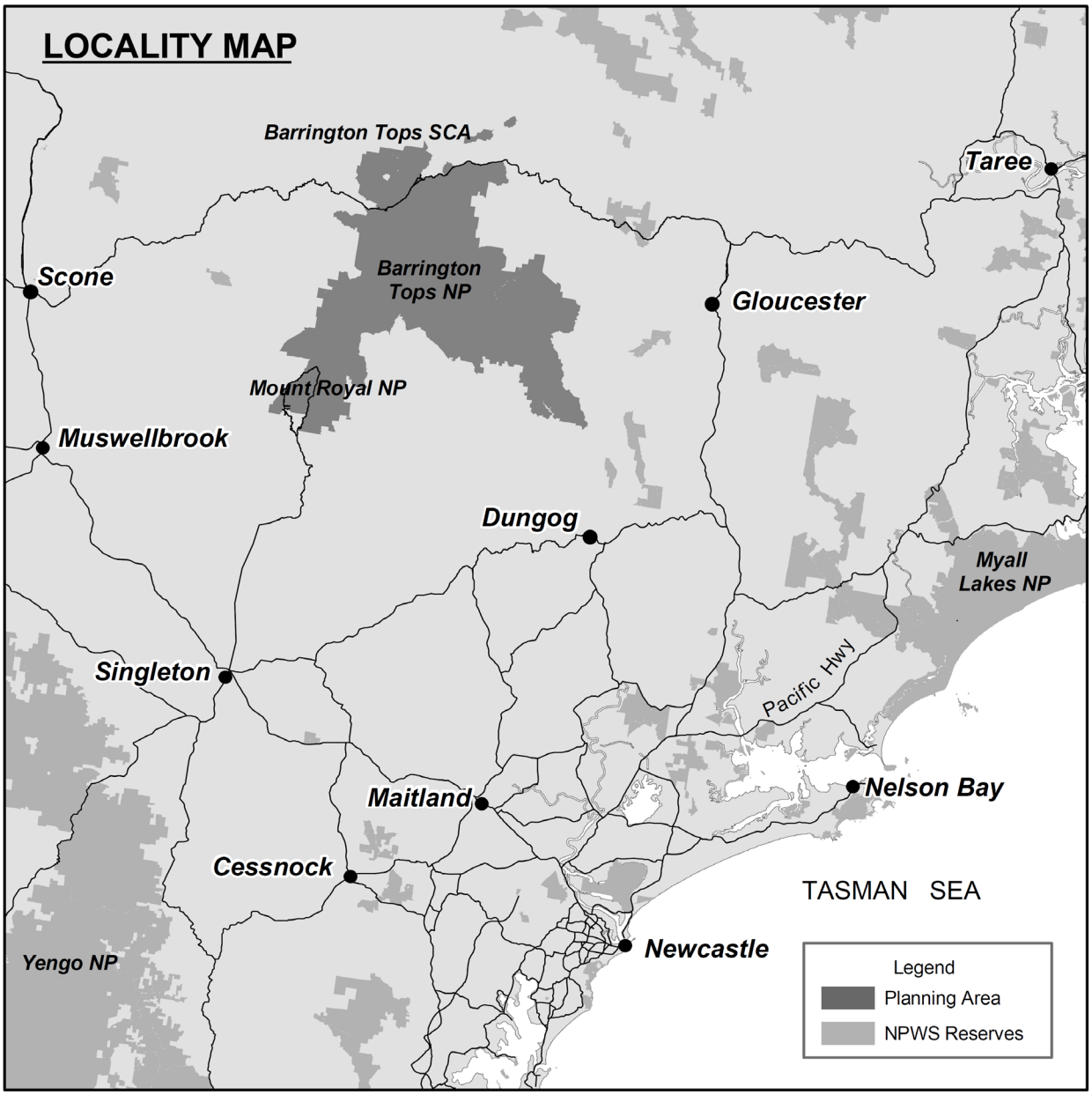


Figure 1 Location of the planning area

The planning area lies within the local government areas of Gloucester, Upper Hunter, Dungog, Singleton and Great Lakes and covers 89,299 hectares of rugged forest and sub-alpine environments approximately 90 kilometres north-west of Newcastle. The planning area is topographically diverse and complex, with altitudinal ranges from less than 200 metres to just under 1600 metres. The dominant feature of the area is the Barrington Plateau situated on the Mount Royal Range with its rugged fall on all sides. The Barrington Plateau separates the catchments of the Upper Hunter and its tributaries in the north-west from the Manning River catchment to the east.

Private property and a number of state forests surround the planning area. In the north both Barrington Tops National Park and Barrington Tops State Conservation Area border Stewarts Brook State Forest and Barrington Tops State Forest. In the south and south-east Barrington Tops National Park borders Chichester, Avon River and Masseys Creek State Forests. The planning area also borders private property. Overall there are over 300 km of park boundary including approximately 119 km bordering state forest, 4.5 km bordering small areas of Leasehold Crown land, 2.6 km of boundary with Vacant and Reserved Crown land and approximately 180 km of boundary with private property.

The planning area also includes 'Ministerial Roads', which are vested in the Minister administering the National Parks and Wildlife (NPW) Act for purposes of Part 11 under the NPW Act. These roads include Barrington Tops Forest Road, Mount Royal Road, Wangat Road and an unnamed road – HU77. Ministerial Roads provide the continued access to neighbouring private land and state forest.

2.2 Area and dedication of the parks

Barrington Tops National Park

Barrington Tops National Park currently covers an area of 74,567 hectares. Following World War II there were 2 opposing views on the future of the Barrington Tops. There was strong public support for creating a national park and equally strong support for developing the area for tourist development. Eventually, in December 1969, Barrington Tops National Park was gazetted over an area of approximately 13,831 ha. The park was initially centred on the plateau, the head of the Williams River Valley and a small section around the Gloucester Tops.

Between 1970 and 1981 2500 ha were added and in 1984 a further 22,782 ha was added to the park as a result of the *Forestry Revocation and National Parks Reservation Act 1984*. The extensions included part of the proclaimed Chichester Catchment Area as well as Mount Royal and the Boonabilla Creek areas in the south-west.

In 1987, 7 ha was added and in 1996, 1333 ha of the Hunter Water Corporation Lands in the Chichester area were included in Barrington Tops National Park. In 1997, as a result of the Interim Forestry Assessment (IFA), an additional 22,225ha were added to park. The Comprehensive Regional Assessment (CRA) led to the dedication of 11,435 ha in 1999 under the *Forestry and National Park Estate Act 1998*. These extensions included large areas of Stewarts Brook State Forest in the west and Barrington Tops State Forest in the east. Other additions include 49 ha in 2003 under the *National Park Estate (Reservation) Act 2002* and 635 ha in 2006.

Mount Royal National Park

Mount Royal National Park was gazetted in January 1997 over 6920 ha of what was previously Mount Royal State Forest. As part of the gazettal of the new Mount Royal National Park, approximately 230 ha of Barrington Tops National Park around Mount Royal was revoked and added to Mount Royal National Park.

Barrington Tops State Conservation Area

On the 1 January 1999, as part of the State Forest Agreements for the Lower North-East Region, Polblue Crown Reserve along with Barrington Tops Crown Reserve (Teagan and Bradley portions) were dedicated under the *Forestry and National Park Estate Act 1998*.

These areas were dedicated for the purpose of protecting natural and cultural heritage, and providing opportunities for sustainable recreation, mineral exploration and mining. On 1 January 2003, these areas which total 8446 hectares were converted to state conservation areas (SCA) and were renamed Barrington Tops SCA in August 2003.

2.3 What is special about the planning area?

The planning area has many outstanding values, which led to each of the reserves' original gazettal and subsequent additions.

World heritage

Barrington Tops and Mount Royal National Parks are the southern-most reserves declared as part of the Gondwana Rainforests of Australia (Gondwana Rainforests) World Heritage Area with 39,845 hectares of the planning area included as Gondwana Rainforests. Gondwana Rainforests contains the largest area of subtropical rainforest in the world and large areas of warm temperate and cool temperate rainforest, all of which occur in the planning area. These ancient forests are remnants of the vast forests that once covered much of the southern continents. They represent a natural heritage of international significance with a great variety of plant and animal species, which are of considerable value to science and the community.

Wilderness

More than 75% of the planning area is declared wilderness. This large wilderness area is essentially unchanged by modern human activity and provides native plant and animal communities with the opportunity to evolve in the absence of significant human interference. The wilderness contains diverse ecosystems which provide areas of high quality habitat for a number of threatened species and pristine rivers featuring waterfalls and steep gorges. It also provides a range of opportunities for self-reliant recreation such as remote area walking and camping.

Natural heritage

The planning area is situated on the Mount Royal Range. The Barrington massif dominates the area, peaking at Brumlow Tops at 1586 metres. The plateau area falls away steeply on all sides, with steep sided valleys which have resulted from erosion following volcanic activity. The area is an important water catchment, with the Hunter River draining the plateau to the north, west and south and the Manning River draining the plateau to the north east and east.

The planning area contains significant habitat for many plants and animals and provides an important habitat node within a fragmented corridor providing linkages to the Great Dividing Range to the north and the Hunter Valley to the south, east and west. The great altitudinal range of the planning area is one of the major influencing factors on the diversity of vegetation communities of the area. There are significant areas of subtropical rainforest, which integrate with and are replaced by warm temperate and cool temperate rainforest according to changes in soils, aspect and altitude.

The sub-alpine environment of the Barrington Plateau is important because it contains a high concentration of rare and threatened species and because of its isolation from similar habitat. There are also a number of other rare and threatened species at lower altitudes in the planning area, including many species, which are either at their southern or northern distributional limit.

The sub-alpine area is also an important indicator for present and future climate change as many of the plant species are susceptible to changing climatic conditions. The presence of fossilised pollen in the swamps or mires in the planning area provides evidence of climate change over a longer period and steps in the earth's evolutionary history.

Aboriginal cultural heritage

The area now covered by Barrington Tops National Park, Mount Royal National Park and Barrington Tops State Conservation Area was the traditional home or country of the Biripi, Worimi, Geawegal, Wonaruah and Ungooroo people. Despite being dispossessed of their land during early European settlement of the region, there is still a deep-felt attachment to the land within and surrounding the planning area and an active interest in the area's management.

Although there are few recorded sites within the planning area, the area is significant as it contains important food and medicinal plant and animal species, territories, important sites, camping areas and prominent landscape features. Mount Mackenzie is of special significance as a site of conflict with early European settlers and has been declared an Aboriginal Place. The area is integral to the cultural learning that links Aboriginal people with who they are and where they belong.

Historic heritage and social value

After the explorations by government surveyors in the 19th century, timber-getting, gold mining and summer grazing of the plateau were the main uses of the area. Small settlements on the plateau established mainly due to grazing opportunities. From the early 20th century recreational use of the plateau became increasingly popular, as did scientific expeditions attracted by the diversity of plants and animals. During the 1920s–1930s there was a strong push to develop Barrington Tops for tourism, however, the difficult access to the area confounded these attempts. There was an equally strong push at the time to declare the area a national park. During the Second World War there was local concern for the preservation of Barrington Tops which led to formal protests over increased logging and road building. Pressure for a national park grew through the 1950s; and in 1959 the government decided to reserve 2 small areas, one on Gloucester Tops and the other in the Williams River area. Finally in 1969 Barrington Tops National Park was created.

Other important heritage and social values of the planning area include past gold mining, recreational fishing and various forms of snow based activities, including hiking and cross country skiing.

Recreational value

The planning area has been a popular recreational area for nearly a century, from the time early adventurers, naturalists and holiday-makers went to the Barrington Tops Plateau for riding, hunting and fishing holidays. This area is a tourist destination for not only first time visitors but also for those with a long-term association with the area. The area provides opportunities for visitors to experience the area by four-wheel driving, two-wheel driving, bushwalking (both on long and short walks), cycling, fishing or relaxing in many of the day use and camping areas throughout the area.

Scientific value

There has been a long history of scientific study or research in the planning area, with the earliest recorded study being undertaken in 1937. These early explorations and investigations into the area focused on the natural heritage long before the area was gazetted as a national park. Since then there have been a number of studies undertaken in relation to management, including threatened species, pest management and recreation management. There remains a strong affiliation by the scientific community with the planning area and a desire to continue scientific study in the area.

Photo 1 Aerial photo of Polblue Swamp, Barrington Tops National Park. John Spencer/DPE

3. Legal and policy context

3.1 Legislative and policy framework

The *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each national park and state conservation area. A plan of management is a legal document which outlines how the area will be managed. Once the Minister has adopted a plan, the plan must be carried out and no operations may be undertaken within the planning area except in accordance with the plan. This plan will also apply to any future additions to Barrington Tops National Park, Barrington Tops State Conservation Area and Mount Royal National Park. Where management strategies or works are proposed for these areas or any additions to them that are not consistent with the plan, an amendment to the plan will be required.

Barrington Tops National Park, Barrington Tops State Conservation Area and Mount Royal National Park are managed in the context of the legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act), the *National Parks and Wildlife Regulation 2002* (NPW Regulation), the *Threatened Species Conservation Act 1995* (TSC Act) and the policies of the National Parks and Wildlife Service (NPWS). The policies are based on the legislative background and internationally accepted principles of park management. They relate to nature conservation, Aboriginal and historic heritage conservation, recreation, commercial use, research and communication.

Other legislation, international agreements and charters may also apply to the management of the area. In particular, the *Environmental Planning and Assessment Act 1979* (EP&A Act) requires the assessment and mitigation of the environmental impacts of any works proposed in this plan. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) also applies in relation to actions that may impact on threatened species listed under that Act and on World Heritage values.

Other legislation requiring consideration includes but is not limited to:

- *Catchment Management Authorities Act 2003*
- *Dividing Fences Act 1991*
- *Fisheries Management Act 1994*
- *Heritage Act 1977*
- *Local Government Act 1993*
- *Mine Inspection Act 1901*
- *Mining Act 1992*
- *Noxious Weeds Act 1993*
- *Pesticides Act 1999*
- *Protection of the Environment Operations Act 1997*
- *Rural Fires Act 1997*
- *Rural Lands Protection Act 1998*
- *Surveying Act 2002*
- *Water Management Act 2000*
- *Wilderness Act 1987*

3.2 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 and inspiration and sustainable visitor use and enjoyment.

Under the Act (section 30E) national parks are to be managed in accordance with the following principles:

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

State Conservation Areas

State conservation areas are reserved under the NPW Act to protect and conserve areas that contain significant or representative ecosystems, landforms or natural phenomena or places of cultural significance; that are capable of providing opportunities for sustainable visitor use and enjoyment, the sustainable use of buildings and structures, or research; and that are capable of providing opportunities for uses permitted under other provisions of this Act, including uses permitted under section 47J (section 47J of the NPW Act provides for activities such as mineral exploration and mining).

The Minister administering the NPW Act in consultation with the Minister administering the *Mining Act 1992* is required to review the status of all state conservation areas every five years from the commencement of this section, to determine whether or not each area should be reserved as a national park or nature reserve.

Under the Act (section 30G) state conservation areas are to be managed in accordance with the following principles:

- the conservation of biodiversity, the maintenance of ecosystem function, the protection of natural phenomena and the maintenance of natural landscapes
- the conservation of places, objects and features of cultural value
- provision for the undertaking of uses permitted under other provisions of this Act in such areas (including uses permitted in relation to mineral exploration and mining, under section 47J) having regard to the conservation of the natural and cultural values of the state conservation area

- provision for sustainable visitor use and enjoyment that is compatible with the conservation of the state conservation area's natural and cultural values and with uses permitted under other provisions of this Act in such areas
- provision for the sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to the conservation of the area's natural and cultural values and with uses permitted under other provisions of this Act
- provision for appropriate research and monitoring.

It is the intent to manage Barrington Tops SCA as far as practical as a national park, having regard to the requirements of section 47J of the Act.

World Heritage

The International Convention for the Protection of the World Cultural and Natural Heritage was adopted by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in 1972, and ratified by Australia in 1974. It provides a framework for international cooperation in the recognition and protection of cultural and natural heritage of outstanding universal value.

In 1986 the majority of Barrington Tops National Park was inscribed on the World Heritage List as the southern-most part of the Subtropical and Temperate Rainforest Parks of Eastern Australia (Adam 1987). In 1994, this World Heritage property was extended to include more of Barrington Tops National Park and the then Kerripit Beech Flora Reserve and Jerusalem Creek Flora Reserve, and renamed as the Central Eastern Rainforest Reserves of Australia (CERRA). In 2007 CERRA was renamed by the World Heritage Committee as Gondwana Rainforests of Australia (Gondwana Rainforests). Following the reserve boundary changes with the creation of Mount Royal National Park in 1997 (described in section 2.2), part of Mount Royal National Park is also now part of Gondwana Rainforests. Both flora reserves are now incorporated into Barrington Tops National Park.

Gondwana Rainforests is a series of rainforest parks and reserves in north east NSW and south east Queensland, and includes the major stands of rainforest located between Newcastle and Brisbane. Gondwana Rainforests contains the largest area of subtropical rainforest in the world and large areas of warm temperate and cool temperate rainforest.

These forests are remnants of the vast forests that once covered much of the southern supercontinent of Gondwana. They represent a natural heritage of international significance with a great variety of plant and animal species, some of which are considered Gondwanan relicts, and many which are of considerable value to science and the community. Their outstanding universal natural values were recognised by their inscription on the World Heritage List under the following three criteria:

- as an outstanding example representing major stages of the earth's evolutionary history
- as an outstanding example representing significant ongoing geological processes and biological evolution
- as sites containing the most important and significant habitats for the in situ conservation of biological diversity.

In the planning area, these values are concentrated in the rainforest communities, particularly the coachwood rainforest in Jerusalem Creek and the extensive stands of cool- temperate rainforest dominated by Antarctic beech (*Nothofagus moorei)* and in the tall open forests. The World Heritage Area within the planning area is shown in Figure 2.

The Australian World Heritage management principles are established under regulations to the EPBC Act. These principles state that the primary purpose of management of a World Heritage property is to identify, protect, conserve, present and, if appropriate, rehabilitate the World Heritage values of the property so they may be transmitted to future generations. The regulations also list provisions for planning and impact assessment, and require opportunities be provided for

continuing community and technical input in the management of a World Heritage property. While these regulations do not legally apply to the management of the state-managed areas within World Heritage properties, the NPWS has agreed that management of the World Heritage listed sections of the planning area will be consistent with these principles. Management will also be consistent with the Strategic Overview for the Management of the World Heritage Central Eastern Rainforest Reserves (Australia) (CERRA 2000) which has been endorsed by the New South Wales, Queensland and Commonwealth Governments.

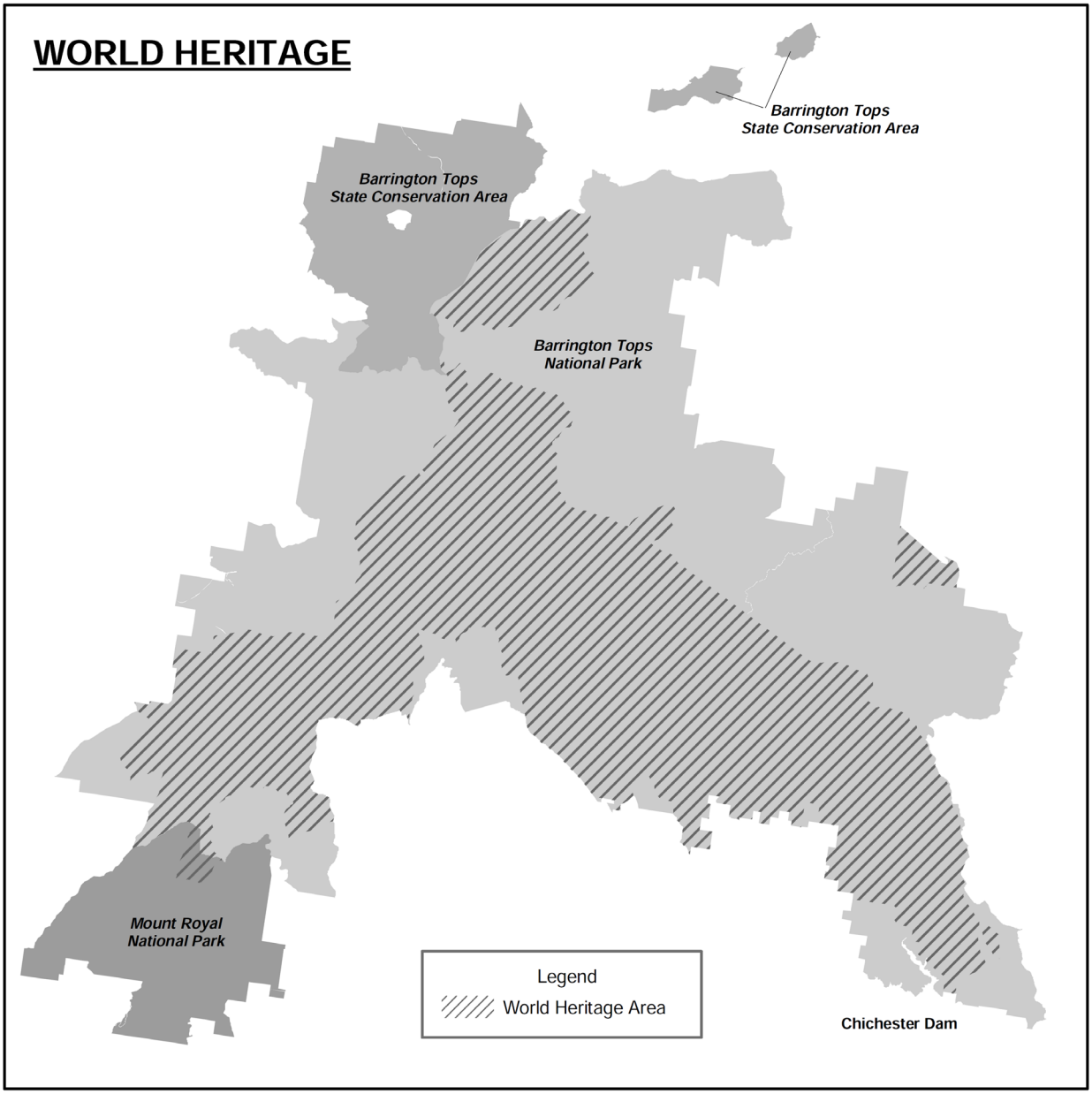


Figure 2 World Heritage Area lands in the planning area.

Wilderness

In 1996 32,033 ha of Barrington Tops National Park was declared the Barrington Wilderness. In 1997 a further 21,750 ha in Barrington Tops and Mount Royal National Parks was added to the Barrington Wilderness. Subsequent smaller additions followed in 1999 and 2002 to make up the total area in 2007 of 58,455 ha. This represents 79% of the planning area (see Figure 3). Wilderness areas are large natural areas of land that, together with their native plant and animal communities, are essentially unchanged by modern 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.

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

In accordance with section 9 of the *Wilderness Act 1987*, 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.

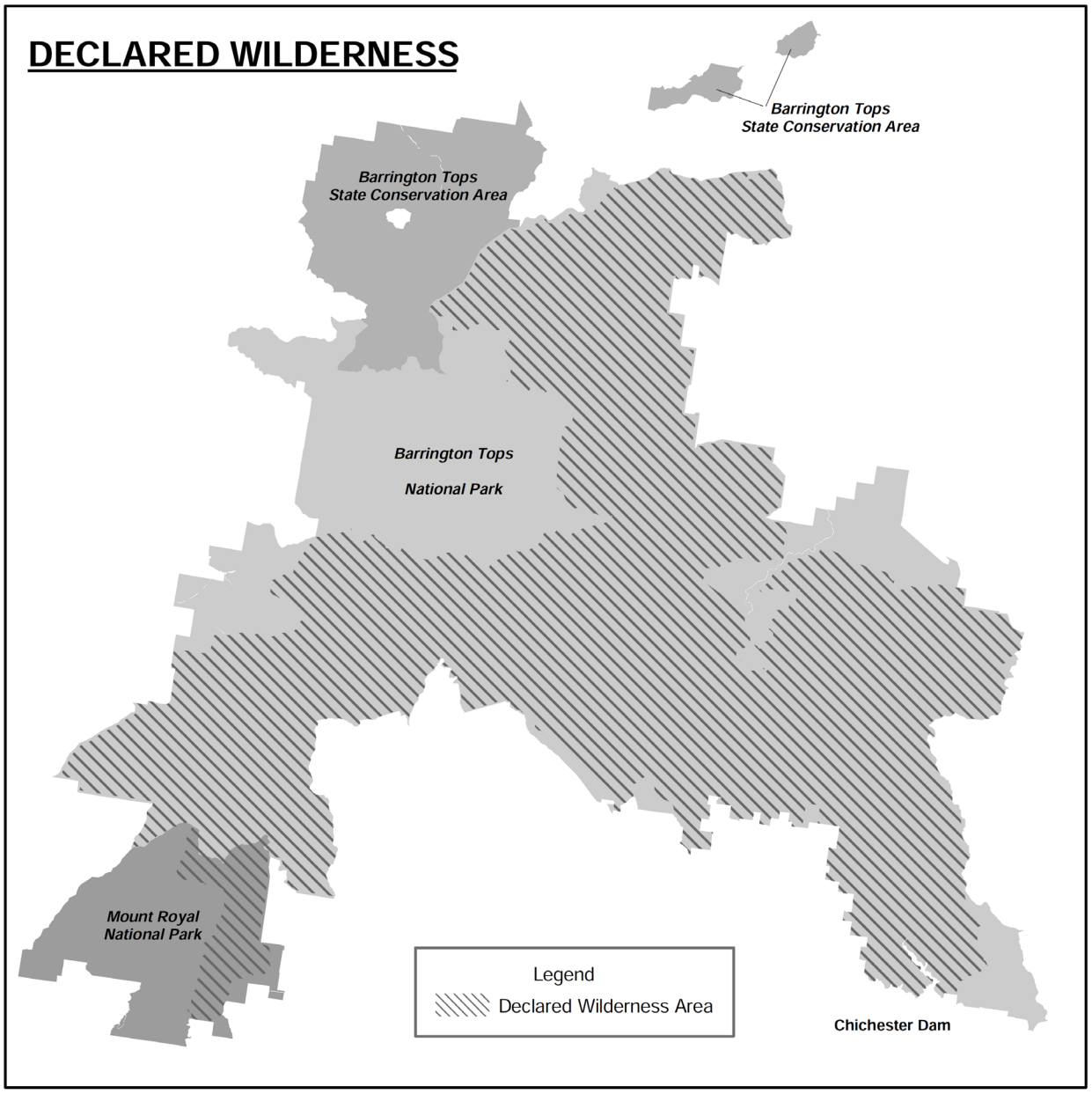


Figure 3 Declared Wilderness area of the planning area.

Photo 2 Honeysuckle Forest track, Barrington Tops National Park. John Spencer/DPE

Aboriginal Place

On 11 October 2002, 153 ha of Barrington Tops National Park was declared an Aboriginal Place (see section 6.1 Aboriginal Heritage). An Aboriginal Place is an area of special significance to Aboriginal culture and 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. Aboriginal Places are protected under section 90 of the NPW Act and cannot be damaged, defaced or destroyed without the consent of the Environment Agency Head of the Department of Planning and Environment. This declaration does not change the status of the land but may limit use or activities with the potential to destroy, damage or deface the Aboriginal Place.

4. Management objectives and strategies

The primary management objective of the planning area is to conserve the natural and cultural values. The provision of sustainable visitor opportunities that are compatible with and promote the understanding and enjoyment of the park values is a secondary objective.

The Barrington Tops Plateau area has a great diversity of plants and animals, including a high proportion of rare or threatened species, many of which are highly sensitive, especially the montane peatland and swamp communities (also referred to as sub-alpine swamps and wetlands, see Section 5.6). Within these areas, notably within close proximity of the sensitive montane swamps, there is a high concentration of introduced plants and animals and the greatest concentration of visitors, visitor facilities and roads, which are threatening the long-term survival of these communities. Consequently, management will focus on the Barrington Tops Plateau to minimise these impacts.

The key management objectives will be achieved through:

- recognition and protection of the natural values of the planning area through managing introduced species, fire, threatened species habitat and populations and visitor use
- recognition and protection of the world heritage and wilderness values through managing fire, introduced species, catchments, threatened species habitat and populations and visitor use
- protection and enhancement of scenic values through the management of visual infrastructure, park facility design and location and the rehabilitation of disturbed sites
- recognition and protection of Aboriginal cultural heritage through the identification, protection and interpretation of cultural resources and the development of long-term community involvement in conservation and management for places and landscapes
- recognition and protection of historic heritage through identification, interpretation and protection of historic resources and the development of long-term conservation and management outcomes for places and landscapes
- protection of water quality in cooperation with other agencies through the management of vegetation, fire, roads, trails and tracks and visitor activities
- protection of significant vegetation communities and threatened plant and animal species through managing introduced species, fire and visitor use
- pest species management through strategic planning, control and research programs in cooperation with other agencies and neighbours
- fire management to protect life, property and biodiversity through fire management planning and control programs in cooperation with other agencies and neighbours
- provision of sustainable public vehicle access to identified visitor destinations through identifying the public road network, setting maintenance standards, implementing road and parking improvements, and cooperative management with adjoining councils and Forestry Corporation of NSW
- management of day use and camping areas in a sustainable and complementary way through designating locations, settings, and capacities of each area, providing infrastructure and services, and integrated planning with other agencies and businesses providing adjoining recreation opportunities
- provision of opportunities for bushwalking, cycling, horse riding and adventure activities through identifying routes and management standards, and implementing codes of conduct and cooperative arrangements with recreational groups
- management of fishing activities in cooperation with Department of Primary Industries (Fishing)

- encouragement of commercial tourism opportunities that are sustainable and compatible with planning area values through a licensing system for appropriate activities, promoting best practices and cooperative planning and management in partnership with tourism agencies
- integration and promotion of interpretative and educational opportunities through strategic planning, signage, publications and programs to assist visitor understanding and enjoyment
- expand knowledge on natural and cultural heritage, corresponding threats and evaluation of management programs through research and monitoring programs
- management of pre-existing non-park uses through licensing, cooperative arrangements and appropriate site management
- development of an adaptive approach to management that focuses on desired outcomes and uses ongoing monitoring and evaluation to assess effectiveness in achieving outcomes and to review guidelines and actions where appropriate.

Photo 3 **Devils Hole lookout walk and picnic area, Barrington Tops National Park. John Spencer/DPE**

Part B: Management strategies

5. Natural heritage

5.1 Climate

Background

Studies have shown that the planning area has been undergoing climate changes for well over 10,000 years, which has resulted in changing vegetation communities throughout the region (Dobson 1986, Turner 1976). The stratification of pollen within the sediments of the many swamps on the plateau shows the changing vegetation communities of the Barrington Plateau over time. There have been 6 major changes over the past 7000 years with the expansion of cool temperate rainforest (6500 – 3500 before present (BP) and 1000 BP to present), increase of wet eucalypt forest (7300 – 3200 BP), development of more open eucalypt forest (3500 – 2500 BP), growth of bogs (3500 BP), and the expansion of cypress pine woodland (during last 200 years) which may be a regional or local change only (Dobson et al. 1986a).

The planning area has a temperate climate with sub-alpine influences due to altitudinal variation. There is a strong rainfall gradient across the plateau, from an average 1000 mm/yr in the north-west to about 2000 mm/yr in the south-east (CMPS and F Environmental 1995, Dobson and Myers 1986, Tweedie 1963). Rainfall is dominated by seasonal and topographic influences. The lower rainfall of the Upper Hunter possibly results from the rain shadow effect of the Mount Royal Range. Intense rainfall events may occur during the warmer summer months due to decaying tropical cyclones, whilst late autumn and spring tend to be the driest periods (Forestry Commission 1984, CMPS and F Environmental 1995). Heavy moist fogs develop in the mist belts of the escarpment, and moderate snowfalls above 1100 m result from cold fronts during winter.

Temperatures at lower altitudes in the planning area range from a mean maximum of 24 ºC to a mean minimum of 10 ºC. Temperatures on the plateau may be 5 ºC – 7 ºC lower than in the lower lying areas (CMPS and F Environmental 1995, Heinrich, 2003). Above 1300 m the temperature ranges from -2 to 9 ºC in July to 9 to 23 ºC in January. Cold changes are known to occur at any time of the year on the plateau, bringing very cold winds. There are prevailing westerly winds during July, August and September, which tend to be more northerly from October to December (Zoete 2000).

Climate change is one of the greatest potential threats to the values of the planning area. The last three decades of the twentieth century were the hottest for that century, and it is also anticipated that there will be more severe storm events. Predictive climatic models for the planning area suggest that by the year 2030 temperatures may increase by between 0.5 and 2ºC while rainfall could either decrease by 15% or may increase by 10%. By 2070 there could be a comparative increase in temperature of between 1ºC to 6ºC, with rainfall decreasing by up to 40% or possibly increasing by up to 10%.

It is anticipated that as the earth gets warmer, threatened species such as the broad-toothed rat *(Mastacomys fuscus)*, which are adapted to cold environments, will be placed at an even greater risk of extinction. It is also anticipated that there will be an up-hill migration of biota from lower elevations. The cool temperate rainforest dominated by antarctic beech is predicted to expand its distribution on the plateau with a corresponding contraction of the sub-alpine woodland. Subtropical rainforest of the lower altitude is also predicted to expand its distribution into areas once dominated by temperate or cool temperate rainforest at its lower limits.

Warming in the area has resulted in subtropical rainforest moving into the sub-antarctic or temperate rainforest, which is dominated by Antarctic beech *(Nothofagus moorei)* at its lower limits. Correspondingly, there has been an expansion of the temperate rainforest at its higher altitudinal range and a contraction of the eucalypt forest with a snow grass understorey. Some

existing programs designed to manage threatening processes, such as pest and weed control, may enhance species adaptability or resilience to impacts from climate change.

Issues

- Climate change could result in the possible extinction on the plateau of plant and animal species that are only present at higher altitudes or are at the northern extent of their distribution. Species like the broad-toothed rat and the many rare and threatened plant species of the plateau are particularly at threat.
- More frequent fires may occur on the plateau as a result of higher temperatures and longer dry periods. The montane swamps would be at greatest threat to increased fire, where deep layers of peat could burn for months before heavy rain extinguishes the fire.
- Damage to the sphagnum moss and peat of the wetlands through increased fire activity could impact on the water holding capacity of the swamps which in turn might impact on lower lying areas which depend on this water supply (Hughes 2003, Heinrich 2003).

Desired outcomes

- Improve knowledge and understanding of the implications of climate change on the values of the planning area to enable more informed management decisions.
- Management actions support species adaptability and/or resilience to impacts from climate change.

Guidelines

5.1.1 Give priority to the management of species and communities considered under threat from climate change, including the montane swamps and the broad-toothed rat through pest and fire management programs.

5.1.2 Investigate and implement appropriate fire regimes for fire sensitive plant communities and individual species and their habitats, in particular the montane swamps.

Actions

5.1.3 Investigate, and if feasible install, a weather station at Mount Barrington in partnership with other organisations as part of monitoring climate change.

5.2 Geology, soils, landforms and scenic values

Background

The planning area is centred on the Barrington massif, which is part of the Mount Royal Range merging with the Great Dividing Range to the north. The Barrington massif is topographically diverse and complex with altitudinal ranges from less than 200 metres to just under 1600 metres. Around a third of the planning area is higher than 1200 metres in elevation (NPWS 2003a).

The Barrington Plateau extends north approximately 22km from Mount Barrington and Careys Peak through to the Barrington Tops SCA, state forest and private property. The Gloucester Tops plateau is connected via a ridge running south east from Careys Peak. Between both plateaus there is approximately 33,600 ha above 1200 m and 10,000 ha of this is above 1400 m, with Brumlow Top at 1586 m being the highest point. The area is characterised by a rugged fall on all sides. The Barrington Plateau separates the catchments of the Hunter River and its tributaries from those of the Manning River. A small section of the planning area drains into the Karuah

River. The Karuah River is the major river system in the south east of the planning area. The oldest rocks in the planning area are Devonian-Carboniferous (410-290 million years old) sedimentary rocks of various lithologies (siltstones, mudstones, minor conglomerates and limestones), with the Bowman Beds of the north-east being the most ancient. Together these old rocks outcrop extensively in the valleys (NPWS 1993). During the Permian (290 – 250 million years ago), granitic magma was intruded into the sediments resulting in a relatively low relief with a number of granite hills rising above (NPWS 1993).

During the Tertiary (44 – 55 million years ago), there was volcanic activity at Mount Barrington and Mount Royal. The steep sided straight valleys that are up to 1000 m deep, with narrow ridges and marked scarps and benching along the Barrington massif resulted from erosion following this volcanic activity (NPWS 1993). Associated with the Barrington volcano was the formation of gemstones (ruby, sapphire and zircon) which occur in alluvial deposits. Barrington Tops contains the largest commercial ruby deposit in Australia. The Barrington Tops basalts contain the only location for the mineral barringtonite, and the only recorded locality in New South Wales for the rare zeolite, cowlesite. However, the main mineralisation in the area was gold, particularly in the Upper Hunter and Copeland-Barrington areas. Fossicking is not permitted in the planning area (refer to section 11.3 Mining and Exploration).

Weathering of the basalts has produced fertile red and black soils, particularly on lands to the north-west of the planning area where the soil supports extensive grazing. The Barrington Plateau area consists of deep structured red clay loams, while the southern and eastern parts of the planning area have well-structured red brown earths. The western fall area around the Upper Moonan Brook catchment area has shallow loam soils, while under the escarpment and around Gloucester Tops there are podzolic soils.

Most of the roads within the planning area have a natural surface. The main roads and trails such as Barrington Tops Forest Road and part of the Barrington Trail have gravel, which has been sourced from the 4 quarries within the planning area. Trails within the steeper areas and those with a natural surface are prone to erosion, particularly in the wet.

The landforms, soils and geology combine to form a variety of attractive and distinctive scenery. The plateau and forested slopes provide a dramatic landscape of mountains, which can be seen from the Hunter Valley. The snowgums and swamps on the plateau occur in contrast to the rainforests and eucalypt forests at lower altitudes.

Issues

- The maintenance of the scenic qualities of the planning area.
- Erosion is a naturally occurring process, however, recreational and other uses of roads, walking tracks and management trails, and fires within and adjoining the planning area, have the potential to accelerate levels of erosion.
- The importation of soil or gravel from other areas has the potential to introduce weeds and pathogens (especially Phytophthora) into the planning area.

Desired outcome

- Geological features and scenic values are protected.

Guidelines

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

5.2.2 Gravel and soils that are imported into the planning area will be guaranteed to be free of weeds and other contaminants.

5.2.3 Manage recreational and other uses to minimise erosion, changes to soil structure and degradation of catchment values (see sections 5.3, 9.2-9.8).

5.2.4 Prohibit the extraction of clay, rock, and gravel from the planning area, except from designated quarries for essential management work (see section 11.1).

5.2.5 Implement strategies to minimise erosion arising from prescribed burns and wildfires in fire planning and management programs (see section 8).

5.2.6 Maintain prohibition of fossicking in the planning area (refer to section to 11.3 Mining and Exploration).

5.3 Catchment management

Background

The planning area is entirely within and part of the area of the Hunter – Central Rivers Catchment Management Authority (CMA). The CMA aims to identify practical and achievable ways of maintaining and improving the condition of the natural resources of the catchment.

The Barrington Plateau separates the catchments of the Upper Hunter in the north-west from the Manning to the east. The planning area includes a substantial proportion of the catchments of the Chichester, Wangat, Glennies Creek, Hunter and Manning Rivers (including major tributaries to these rivers), which supply the majority of the Hunter/Newcastle, Manning Valley/Great Lakes and Singleton regions' domestic water supplies. The Barrington River is a major contributor to flows in the Manning River catchment due in part to its capacity to slowly release water, long after rainfall has ceased in the catchment. The catchment of Chichester Dam is within Barrington Tops National Park and is managed by the NPWS in cooperation with Hunter Water.

There are numerous major rivers and their tributaries, including the Manning, Dilgry, Cobark, Barrington, Kerripit and Gloucester Rivers which flow to the north and east, and the Wangat, Chichester, Williams, Allyn and Paterson Rivers and their tributaries in the south of the planning area. In the northwest of Barrington Tops State Conservation Area the headwaters of the Hunter River drain to the north off the Barrington Plateau. The major river systems in the western part of the planning area are Moonan Brook and Stewarts Brook, and the major river systems within Mount Royal National Park in the south west of the planning area are Fal Brook and Carrow Brook.

Under the NPW Act, 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, may be declared a wild river. Wild rivers are managed to maintain these natural processes. The Wangat, Chichester, Williams, Paterson and Allyn Rivers and Boonabilla Creek within Barrington Tops National Park are likely to meet the criteria for declaration as wild rivers under section 61 of the NPW Act.

Issues

- Maintenance of unpolluted water flowing from catchments in the planning area used for domestic water supply.
- Maintenance of water quality and quantity to maintain ecological health of the waterways.
- Impact of vertebrate pests (e.g. feral horses, feral pigs) on water quality (see section 7.2).
- Maintenance and enhancement of key habitats and corridors (see section 5.5).

Desired outcome

- The catchment values, water quality and health of waterways in the planning area are maintained, and where possible improved.

Guidelines

5.3.1 Work with the Hunter–Central Rivers Catchment Management Authority to protect the catchment's water quality and health.

5.3.2 The potential to impact on water quality and discharge levels will be considered when undertaking any activity within the planning area.

5.3.3 Work with Hunter Water Corporation to manage the Chichester Catchment Area which is part of Hunter drinking water supply.

Action

5.3.4 Assess the Wangat, Chichester, Williams, Paterson and Allyn Rivers and Boonabilla Creek for declaration as wild rivers.

5.4 Native plants

Background

There are 3 major vegetation types within the planning area: rainforest, tall open eucalypt forests (including mixed forests), and sub-alpine communities (woodlands, grasslands and swamps) (Groves 1981). These major communities, including the significant and threatened communities and species, and their distribution are described below. There are 40 rare, threatened or uncommon plants known from the planning area, of which 2 are endangered and 5 plants listed as vulnerable under the Biodiversity Conservation Act. Recent plant surveys have recorded a number of new endemic species. More detailed descriptions of the vegetation communities are in Appendix 1, and a list of rare and threatened plant species is in Appendix 2.

The diversity and extent of the largely undisturbed area of rainforest communities principally contributed to its gazettal as a World Heritage Area. The planning area is also significant as it is an important habitat node within a fragmented corridor providing linkages to the Great Dividing Range to the north and the Hunter Valley to the south, east and west.

Under the Biodiversity Conservation Act, a Threatened Species Priorities Action Statement has been prepared, which identifies actions and strategies to promote the recovery of threatened species, populations and ecological communities. Priority actions and recovery plans will be used to guide management of threatened species in the area.

Rainforest communities

The most extensive forest type within the planning area is rainforest, which is estimated to cover 44% of the planning area. Rainforest communities comprise large areas of subtropical and cool temperate rainforest, with relatively smaller areas of warm temperate and dry rainforest. There are also significant areas of tall open forest with well-defined rainforest understoreys, which could be considered as being 'in transition to' rainforest assuming minimal future disturbance.

Rainforest is found over a wide altitudinal gradient, with more than a third occurring above 1000 m altitude. The most extensive areas of rainforest occur north of the Moppy and Cobark Rivers. In the southern and eastern areas there are vast subtropical and cool temperate stands. Rainforest also extends from the Fal Brook and Carrow Brook catchments northwards and

eastwards occupying drainage lines, southerly aspects and occasionally forming large stands. Most of the rainforest communities are relatively free of weeds.

Subtropical rainforest is generally found below 1100 m and is restricted to sheltered areas with easterly and southerly aspects. It is characterised by luxuriant growth, strangler figs, palms, large woody vines, epiphytes and stem buttressing. Three different associations or suballiances of subtropical rainforest (Floyd 1990) have been identified in the planning area (Appendix 1). Within this rainforest type there are a number of species which are at their southern limit, including yellow carabeen (*Sloanea woollsii*), pigeon berry ash (*Cryptocarya erythroxylon*), and thick-leaved laurel (*C. meissneriana*) (NPWS 1993).

The subtropical rainforest in the Boonabilla catchment north of Mount Royal, contains many examples of colonising and late successional secondary species and is markedly different from that of the eastern catchments (Floyd 1983, NPWS 1993). This may be due to the past logging of red cedar (*Toona ciliata)* followed by fire, possibly over 150 years ago. Creek lilly pilly *(Syzygium australe),* black apple (*Pouteria australis)* and whalebone tree *(Streblus brunonianus)* are found in association and probably represent a locally different floristic type of subtropical rainforest. At higher altitudes (up to 1000 m), the subtropical rainforest stands are generally characterised by sassafras (*Doryphora sassafras*), crabapple (*Schizomeria ovata*)*,* soft corkwood (*Ackama paniculata*), and rosewood (*Dysoxylum fraserianum*). These stands contain a large element of warm temperate rainforest species and are best regarded as a transition between warm temperate and subtropical rainforest.

Lowland subtropical rainforest is well developed in the Chichester/Wangat catchments in the east, with a major undisturbed stand occurring on Bangalow Creek. Throughout these forests Sydney blue gum (*Eucalyptus saligna*) forms a discontinuous overstorey with brush box (*Lophostemon confertus*).

Bangalow palms (*Archontophoenix cunninghamiana*) and cabbage palm (*Livistona australis*) are common in the understorey in the Chichester – Wangat catchment, but are scarce in the catchments to the west (Floyd 1983, NPWS 1993).

A single stand of warm temperate rainforest with coachwood and bonewood (*Acradenia euodiiformis*) occurs at the head of Jerusalem Creek on the south-eastern edge of Barrington Tops National Park (Floyd 1983). Warm temperate rainforest mingles with cool temperate rainforest at the heads of the valleys at around 700 to 950 m. The upper Chichester catchment contains an excellent stand dominated by Antarctic beech (*Nothofagus moorei)* with subtropical species in association such as yellow carabeen (*S. woollsii*), brown beech (*Pennantia cunninghamii*), churnwood (*Citronella moorei*) and warm temperate species such as prickly ash (*Orites excelsa*) and soft corkwood. Scattered emergent eucalypts, including messmate *(Eucalyptus obliqua),* brown barrell (*E. fastigata)* and Sydney blue gum tower over the rainforest. There is a marked difference in the species composition of this vegetation type across the granodiorite soils of the east and basalt soils to the west at Carters Brush. Subtropical species such as rosewood, giant stinging tree (*Dendrocnide excelsa),* socketwood *(Daphnandra apatela)* and brown beech mix with temperate elements like Antarctic beech, sassafras, prickly ash, and mountain walnut (*Cryptocarya foveolata).* Sydney blue gum and white-topped box (*Eucalyptus quadrangulata*) are also scattered through the stand. One of the unique features of the area is the almost virtual absence of coachwood (*Ceratopetalum apetalum*) which is normally a major species of warm temperate rainforest. Natural disturbance at the Carters Brush stand may also account for the differences in this forest type (Floyd 1983, NPWS 1993).

Cool temperate rainforest in the planning area is dominated by Antarctic beech and tree ferns. There are extensive stands found on the upper valley slopes and at sheltered sites on the plateau. Within the cool temperate rainforest antarctic beech reaches its southern geographic limit along with mountain tree heath (*Trochocarpa sp.*), mountain pepperbush (*Tasmannia stipitata*), black olive berry *(Elaeocarpus holopetalus),* broad-leaved pepperbush (*T. purpurascens*), mountain walnut (*Cryptocarya foveolata)* and marara (*Vesselowskya venusta*). A local variation

also occurs on Mount Royal where, despite suitable habitat, Antarctic beech is absent, instead being replaced by warm temperate rainforest species (NPWS 1993).

Significant stands of river oak (*Casuarina cunninghamii)* occur as a gallery forest in a narrow band along the lower parts of Boonabilla Creek and the Allyn River. The understorey varies considerably as Boonabilla Creek has a grassy understorey while the Allyn River community has a well-developed rainforest understorey. In the Boonabilla Creek stand, giant individuals of River Oak up to 60 metres high occur. These river oaks are densely covered with epiphytic ferns and orchids and are reputed to be among the tallest river oaks in New South Wales. River oak communities have been significantly impacted throughout the Hunter Valley and much of New South Wales by clearing, grazing and weed invasion (Hill et al. 2001).

Eucalypt forest communities

The are 15 main eucalypt forest communities present within the planning area which generally consist of tall moist forest, tall wet forest, higher elevation open forest, low forest and woodland types. Of these, 5 forest ecosystems are classified as either vulnerable or rare under the Comprehensive Regional Assessment process for northern NSW (NPWS 2003a). These significant forest ecosystems include Dry Heathy New England Blackbutt, Snow Gum – Mountain/Manna Gum, Escarpment Red Gum, Dry Open New England Blackbutt and Manna Gum. Most of these communities are poorly represented in the planning area, often consisting of less than 100 hectares.

Many of the tall wet eucalypt forests are dominated by Sydney blue gum (*Eucalyptus saligna*), often occurring on the valley slopes, merging with rainforest (NPWS 1993). Along the western part of the planning area, open silvertop stringybark – Sydney blue gum (*E. laevopinea – E. saligna*) community dominates. At higher altitudes generally on more fertile soils there are tall forests of messmate (*E. obliqua*) and brown barrell (*E. fastigata*).

Old growth eucalypt forests cover over 28,000 ha or approximately 32% of the planning area. About a third of the old growth forest is characterised by a dominant or co-dominant senescing component, while more than half of the mapped old growth is mature forest with a sub-dominant senescing component. Examples of the best stands of old growth forest are found along the Chichester Range, and upper tributaries of the Williams River and Chichester River. Other important old growth stands include those east of the Barrington River and south of the Kerripit River, and along tributaries north of the Moppy and Cobark Rivers.

Past logging practices have resulted in a significant part of the area (approximately 27%) being characterised as disturbed mature forest. In addition, severe wind storms over the last 50 years has caused disturbance to large areas of mature forests.

Sub-alpine communities

There are 3 sub-alpine communities in the planning area: sub-alpine woodland, grassland, and wetland or swamp.

The extensive sub-alpine woodlands on Barrington Tops are considered to be a major, significant and disjunct occurrence within New South Wales (NPWS 1993). The sub-alpine woodlands are dominated by snow gum (*E. pauciflora*). Shrubs and herbs in the woodland understorey include many rare or threatened species, including the threatened broad-leaved pepperbush (*Tasmannia purpurascens)* and the ROTAP (Rare or Threatened Australian Plant) species Barrington Tops wattle (*Acacia barringtonensis*). In cooler areas of the sub-alpine woodland black sally (*E. stellulata*) may dominate while at Gloucester Tops Mountain gum (*E. dalrympleana*) and snow gum dominate (Heinrich 2003).

Sub-alpine grassland is found adjacent to wetlands, near streams and under snow gums in open woodland. Snowgrasses (*Poa sieberiana*) and lomandra (*Lomandra longifolia*) dominate, and

many small shrubs and herbs including some threatened terrestrial orchids, grow amongst the grass or lomandra clumps (see Appendix 1 and 2).

Conspicuous grassy balds occur on some high mountain peaks in the planning area (e.g. Pieries Peak, Mount Cabre Bald, Mount Carrow). These small areas of natural grassland, dominated by red anthered wallaby grass (*Chionochloa pallida*) and poa species, while structurally distinct are floristically similar to the surrounding forest.

The montane swamps (also referred to as sub-alpine swamps) contain many rare and threatened species (Appendix 2). This community has been declared an endangered ecological community under the TSC Act and is referred to as 'Montane peatlands and swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps Bioregions'. This endangered ecological community is addressed in Section 5.6.

The environmental weed, Scotch broom, is widely distributed throughout the sub-alpine community along with a number of other weed species, including blackberry (*Rubus fruiticosis complex*) and Yorkshire fog (*Holcus lanatus*). The water mould (plant pathogen) *Phytophthora cinnamomi* is also present within the sub-alpine community and is causing dieback in a number of native species particularly *Oxylobium arborescens, Lycopodium deuterodensum* and *Tasmannia purpurascens*.

Many of the recreational areas on the plateau (e.g. Polblue, Devils Hole, Junction Pools) are within close proximity to many rare and threatened species (e.g. *Diuris venosa, Euphrasia ciliolata, Pterostylis riparia*). In addition, the history of fire or natural disturbance within the planning area, and in particular on the Barrington Tops Plateau, is limited. There is also little known about the environmental requirements of these communities, and in particular the many rare and threatened species.

Issues

- Global warming is likely to change the habitat of the plateau area, resulting in encroachment of the rainforest communities. It will also potentially impact on species adapted to the cold such as *Tasmannia spp.* or the many small herbaceous species (see section 5.1).
- Scotch broom is threatening the long-term viability of many plateau species by changing the vegetation structure, floristic composition and ecology of the woodland and swamp environments (see section 7.1).
- Invasion by other weed species (e.g. blackberry, Crofton weed) is having a significant impact on plant communities in the planning area (see section 7.1).
- Grazing and rooting behaviour of feral pigs is potentially threatening the long-term viability of the rare and endangered herbaceous plants on the plateau (see section 7.2).
- The trampling and churning up of peaty soils in swamp environments by feral horses is impacting on montane peatland and swamp communities (see sections 7.2).
- Impact of visitors, particularly on the plateau, is potentially detrimental to many of the rare and threatened plant species.
- There is insufficient knowledge of the distribution, ecology and threats to rare plant species.
- Existing fire regimes may threaten the long term survival of some species. In addition, the fire requirements of many rare and threatened species are unknown, and current fire regimes could be placing these species at greater risk (see section 8).
- Infestation by Phytophthora along the Watergauge Trail poses a risk to other vegetation communities in the planning area, in particular, the Antarctic beech (see section 7.3).
- The potential for visitors and feral animals to spread Phytophthora throughout the planning area is a major concern. The potential spread of Phytophthora out of the planning area into other parks and reserves and the landscape in general is also a great concern (see section 7.3).

Desired outcome

- Conservation of significant vegetation communities through active management of threats and the development of an improved knowledge of the plant species and their communities occurring in the planning area, their abundance and threats to their long- term survival.

Guidelines

5.4.1 Avoid herbicide spraying during the flowering times of rare and threatened species.

Actions

5.4.2 Control Blackberry, especially in known locations of rare plants (see section 7.1).

5.4.3 Protect rare plant populations potentially impacted upon by vehicular use and pedestrian traffic at Junction Pools and Devils Hole Camping Areas through fencing and exclusion zones.

5.4.4 Undertake further research and survey into the distribution, ecology and threats to rare plant species, in particular poorly known and potentially threatened orchid species, and implement actions to manage threats where possible.

5.4.5 Implement relevant strategies in recovery plans and priority action statements for threatened species.

5.5 Native animals

Background

The diverse range of vegetation communities supports a correspondingly diverse range and abundance of animals. The planning area provides habitat for more than 325 recorded vertebrate species (more than 5 fish, 30 amphibians, 40 reptiles, 180 birds, 70 mammals) and many invertebrate species. Forty-two animal species that are listed as threatened under the TSC Act and are largely endemic to north-east NSW (Gilmore and Parnaby 1994, Environment Australia 1999) are recorded in the planning area.

A Priorities Action Statement has been prepared which identifies actions and strategies to promote the recovery of threatened species, populations and ecological communities. Priority actions and recovery plans will be used to guide management of threatened species in the area. Recovery plans have been prepared for the barking owl, large forest owls, Hastings River mouse, yellow-bellied glider and the koala. A full list of threatened species is included in Appendix 3.

Amphibians

Frog species recorded throughout the area include the threatened Booroolong frog (*Litoria booroolongensis*), *Litoria daviesae* (a new species only recently distinguished from the glandular frog *L. subglandulosa*), sphagnum frog (*Philoria sphagnicola*) and stuttering frog (*Mixophyes balbus*). High quality habitat exists for frog species in the swamp and alpine woodland areas as well as in the moist forest/rainforest habitats and headwaters of the many creeks in the area.

Reptiles

The highland copperhead *(Austrelaps ramsayi*), mountain dragon *(Tympanocryptis diemensis*), white-lipped snake *(Drysdalia coronoides*), montane sun skink *(Lampropholis caligula*) and alpine water skink *(Eulamprus kosciuskoi*) occur in the high elevation forests and woodlands. The

threatened Stephens banded snake (*Hoplocephalus stephensii)* is recorded in the wet forests. Other species found in the planning area include southern angle-headed dragon (*Hypsilurus spinipes*), orange-tailed shadeskink (*Saproscincus rosei*), rough-scaled snake (*Tropidechis carinatus*), tiger snake (*Notechis scutatus*) and blue-speckled forest skink (*Eulamprus murrayi*).

Birds

There is a large diversity of bird species recorded in the planning area including the endangered bush stone-curlew *(Burhinus grallarius*). The old growth forests are habitat for 4 threatened large forest owls: the masked owl *(Tyto novaehollandiae*), sooty owl *(Tyto tenebricosa*), barking owl *(Ninox connivens*) and powerful owl *(Ninox strenua*). The vulnerable rufous scrub-bird *(Atrichornis rufescens)* is also recorded, and regular monitoring of this species is undertaken around the Gloucester Tops area. Other threatened species occurring include the superb and wompoo fruit-doves *(Ptilinopus superbus* and *Ptilinopus magnificus*), brown treecreeper *(Climacteris picumnus*), olive whistler *(Pachycephala olivacea*), glossy black-cockatoo (*Calyptorhynchus lathami*), gang-gang cockatoo *(Callocephalon fimbriatum)* and speckled warbler (*Pyrrholaemus saggitata*).

Mammals

More than 70 mammal species occur in the planning area including 22 threatened species. Prominent among these are an endangered rodent, the Hastings River mouse (*Pseudomys oralis*), and an endangered population of the vulnerable broad-toothed rat (*Mastacomys fuscus*).

The Hastings River mouse is at its southern limit in the Fal Brook area of Mount Royal National Park and is predicted to be in the north-west in Barrington Tops National Park upslope of Davis Creek (Gilmore and Parnaby 1994, NPWS 1999, NPWS 2003d). The rufous bettong *(Aepyprymnus rufescens)* is thought to be at is southern limit in Mount Royal National Park. The broad-toothed rat is at the northern limit of its range and is listed as an endangered population in Barrington Tops, with the only other NSW population being in the Australian Alps (NPWS 2000c). Regular monitoring of the broad-toothed rat population on the plateau is undertaken as part of the Fox Threat Abatement Plan (FOXTAP).

The spotted-tailed quoll (*Dasyurus maculatus*) has been recorded from numerous locations in the planning area. Several macropods occur in the area, including the parma wallaby (*Macropus parma*), red-legged pademelon (*Thylogale stigmata*), and red-necked pademelon (*Thylogale thetis*). In 1994, there were sightings of 2 brush-tailed rock-wallabies *(Petrogale penicillata)* though there have been no recordings of this species in the planning area since.

The planning area is rich in arboreal marsupials, including the yellow-bellied glider (*Petaurus australis*), squirrel glider (*Petaurus norfolcensis*), eastern pygmy possum (*Cercartetus nanus*) and koala (*Phascolarctos cinereus*). High quality habitat exists for most species throughout the planning area except for the koala where high quality habitat exists only around the Gloucester Tops area and at the lower elevations in the southern moist escarpment forests.

Ten microchiropteran bat species have been recorded in the planning area, including the common bat (*Miniopterus schreibersii)*, little bent-winged bat (*Miniopterus australis*), eastern false pipistrelle (*Falsistrellus tasmaniensis*), eastern horseshoe bat (*Rhinolophus megaphyllus*), golden-tipped bat (*Kerivoula papuensis*), greater broad-nosed bat (*Scoteanax rueppellii*), and large footed myotis (*Myotis adversus*).

The dingo (*Canis lupus dingo*) is a common species recorded and has an important role as a top level predator. One management concern is the recognition that the dingo is becoming endangered through loss of habitat, and from hybridisation with wild and domestic dogs (Menkhorst 2001). The hybridisation of dingoes poses a major threat to the viability of the dingo population in Barrington Tops (Wilton 2004). The planning area has been identified under

Schedule 2 of the *Rural Lands Protection Act 1998* as a key dingo conservation area. A requirement of the Act is the development of a Wild Dog Management Plan (see section 7.2).

Invertebrates

There is a large diversity of invertebrates including a number of species endemic to the planning area such as the rare butterfly subspecies (*Pseudalmenus chlorinda barringtonensis*) and a small isopod crustacean (*Crenoicus harrisoni*) (Williams 2002). NPWS is working cooperatively with Department of Primary Industries (Fishing) to conserve *Crenoicus harrisonii.* Other endemic species recorded include the flightless carabid *(Trichosternus austalasicus),* a tree hopper (*Neocanthuchus barringtonesis*)*,* a dragonfly (*Eusynthemis ursula*), a stonefly (*Dinotoperla monteithi*), several spiders (*Tasmoonops pavinus*, *T. pinus* and *Tarlina* sp.) and 3 undescribed species of velvet worms (Williams 2002). Also a primitive carabid beetle (*Megadromus australicus)* was recorded, which had not been collected for 80 years, and a fly species (*Ceratomerus barringtonesis*) was recorded, which has only been found at the Williams River.

Fish

There are few fish species found in the planning area due to the high altitude and small stream size (Chessman et al. 1995). Four native fish species have been recorded within the planning area, the short-finned eel (*Anguilla australis*), long-finned eel (*Anguilla reinhardtii*), Cox's gudgeon *(Gobiomorphus coxii*), and Australian smelt (*Retropinna semoni*) (Hardwick et al. 1995). Fish are managed by Department of Primary Industries (Fishing).

Issues

- Global warming is likely to change the habitat of the plateau area with an encroachment of the rainforest communities on the sub-alpine area. This will potentially impact on species adapted to the cold like the broad-toothed rat (see section 5.1).
- The long-term protection of some of the area's animal species may be at risk due to the effects of human disturbance (i.e. logging, clearing etc.) adjacent to the planning area.
- Inappropriate fire regimes may be placing the long term survival of some species under threat. For example, inappropriate fire regimes have been found to significantly impact the long-term survival of the Hastings River mouse through loss of habitat.
- Predation by pest species, in particular foxes and wild dogs, is impacting on native animals including threatened species (see section 7.2).
- Degradation of habitat by feral animals, including pigs and horses, is impacting on the habitat of threatened species and may potentially threaten the long-term viability of some species (see section 7.2).
- Invasion of weeds, especially Scotch broom, is impacting on the habitat of significant species, including the broad-toothed rat (see section 7.1).
- Hybridisation with wild dogs poses a risk to the viability of dingo populations.
- Impact of development works and visitor activities (e.g. removal of firewood) in the forest communities may potentially affect some animals.
- Feeding of wildlife, either inadvertently or deliberately by park visitors may result in potential conflicts between visitor safety, enjoyment and wildlife protection.
- Impact of introduced pathogens (e.g. roundworms, mange) from pest species on native animal is causing high mortality rates.

Desired outcome

- Conservation of the animal species and their communities occurring in the planning area through the management of threats.

Guidelines

5.5.1 Give priority to identifying habitats of threatened species and potential threats.

5.5.2 Work with neighbours to encourage the retention and, where possible, improvement of key habitat and wildlife corridors linking the planning area to other large naturally vegetated tracts of land.

5.5.3 Promote the understanding and protection of native animals through interpretation programs (see section 9.1).

5.5.4 Assist the Fisheries section of the Industry and Investment NSW to protect aquatic communities.

5.5.5 Work cooperatively with Fisheries to conserve *Crenoicus harrisonii.*

Actions

5.5.6 Continue monitoring of threatened species, including the Hastings River mouse, rufous scrub-bird, rufous bettong and broad-toothed rat.

5.5.7 Where threats are identified, develop and implement actions for the conservation and protection of rare and endangered animal species.

5.5.8 Implement relevant strategies in priorities action statement and recovery plans for species, communities and populations.

5.5.9 Undertake research to assess the purity of dingo populations, including DNA testing.

5.5.10 Implement threat abatement plans for species or activities listed as a key threatening process.

5.5.11 Continue implementation of signage and information strategies to discourage visitors from feeding wildlife (see section 9.1).

5.6 Montane peatlands and swamps on the Barrington Tops Plateau

Background

The montane swamps (also referred to as sub-alpine swamps and wetlands) of the Barrington Tops Plateau are listed as an endangered ecological community being part of the 'Montane peatlands and swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps Bioregions' (NSW Scientific Committee 2004). This community is associated with the accumulation of peat or organic-mineral sediments on poorly drained flats in headwaters of streams. Montane peatlands and swamps are comprised of a layer of shrubs with soft-leaved sedges, grasses and forbs. It is the only type of wetland that may contain more than trace amounts of *Sphagnum spp.,* the hummock peat-forming mosses (NSW Scientific Committee 2004).

The Barrington Tops Plateau montane peatlands and swamps occur at Polblue, Butchers, Horse, Saxbys, Brumlow, Edwards, Nolans, Black and Little Murray Swamps and cover an area of approximately 370 hectares. There are many different formations to the peatland and swamps

including sod tussock, grassland, fen and bog. All of the montane wetlands in the planning area occur above 1250 metres and have a diversity of plants and animals. Vegetation of the wetlands is uneven with sedge tussocks and sphagnum moss rising up to a metre above the original soil or peat level.

A unique feature of Polblue, Butchers, Edwards, Little Murray and Saxbys Swamps is their narrow but deep channels, with low sediment transport, winding nature and constant stream flow. The channels are on a low gradient with dense bank and floodplain vegetation (Dobson et al. 1986). These swamps are distinctly different from other swamps in Australia and it is thought the vegetation and bank strength may influence the channels formation (R. Nanson pers. comm., 2003). Other special features of these montane peatlands and swamps include the presence of threatened species, geology and associated mineral deposits and the stratification of sediments within the swamps, which shows changing vegetation communities (see section 5.2).

The fragile montane peatlands and swamps are threatened by a range of impacts, including disturbance caused by feral animals and inappropriate recreational activities. The plateau area is a key visitor destination, with many of the recreational areas and activities focused around the peatlands and swamps (e.g. Polblue, Horse Swamp and Edwards Swamp).

Unauthorised and uncontrolled vehicles near the swamps also threaten this sensitive vegetation community.

Issues

- Trampling by feral pigs and feral horses causes channelling of water flow and damage to the channel banks, which may lead to erosion, high sedimentation flow, nutrients and changes in the channel structure of the swamp.
- Movement of feral pigs and horses may also introduce or spread weeds or pathogens (including Phytophthora) into the area.
- Digging and rooting by feral pigs and horses may cause severe damage to vegetation and soils.
- Predation of wild dogs and foxes in the swamps on native animals in particular the Broad-toothed Rat, which is an endangered population.
- Peat gathering, fossicking and other forms of mining activities impact on the hydrology and ecological function of the swamps.
- Invasion of weeds such as Scotch broom and Yorkshire Fog can result in a reduction of native species, including some threatened species.
- The potential spread of Phytophthora and other pathogens into the montane swamps could result in significant loss of species diversity.
- Climate change may threaten the long-term viability of the swamps through alteration of hydrological budgets. Reduced rainfall and increased evaporation are likely to cause drying and contraction of swamps and may also result in higher fire frequencies.
- Frequent or high intensity fires in the swamps alters species found in the swamp, favouring fire-tolerant sedges in preference to woody plants and creating exposed conditions unsuitable for the recovery of sphagnum. Under dry conditions, fires may consume peat resulting in the death of surface vegetation and seed banks, and expose the remaining substrate to further erosion.
- Frequent or high intensity fires in the swamps may also affect the density and type of animals found in the swamps, favouring fire-tolerant species.
- Unauthorised and uncontrolled use by vehicles in close proximity to swamps may damage vegetation and soil around the swamps. This has occurred at Polblue Camping Area, where visitors have made tracks down to the swamp damaging vegetation.

- Potential impact of camping and day use activities within or near the swamps, particularly at Polblue. The encroachment of camping activities near Polblue Swamp has resulted in damage to vegetation, soil compaction and minor erosion.
- Inappropriate human waste disposal at Polblue Day Use Area. The adjacent Polblue Camping Area has limited toilet facilities which are not sufficient to cater for peak periods.
- The location of walking tracks near Polblue and Edwards swamps could, with unacceptable levels of use, result in loss of vegetation, compaction of soils and erosion. The activity of walkers may also spread or introduce weeds and pathogens (e.g. Phytophthora) into the swamps and surrounding environment.
- The uncontrolled activities of cyclists and horse riders may damage vegetation, compact soils, introduce weeds and pathogens and cause erosion.
- Fishing activities in swamp environments has the potential to result in the loss of vegetation and erosion through the movement of people beside the channels.
- Adventure activities like rogaining could result in the trampling of swamps, particularly near channels, damage vegetation, soil and cause erosion. These activities may also introduce weeds and pathogens.
- The often large and cumulative impact of commercial tourism activities, which concentrate around the swamps, may have a detrimental impact through increased waste, compaction of soil and loss of vegetation.
- The montane peatlands and swamps combination of exceptional, complex and often fragile, natural values and high levels of visitation demands special management attention.

Desired outcome

- Protect and enhance the natural values of the montane swamps, by ameliorating environmental impacts associated with pest species, inappropriate visitor use and past land use practice and increase community knowledge and appreciation.

Guidelines

5.6.1 Encourage research to be undertaken on the montane swamps giving priority to research issues identified in section 10.

5.6.2 Give priority to the management of species and communities considered under threat from climate change within the montane swamps (e.g. Broad-toothed rat, threatened orchids).

5.6.3 Prohibit unauthorised vehicle use within close proximity of the montane swamps (see section 9.2).

5.6.4 Prohibit adventure activities in montane swamps and the surrounding area (see section 9.9).

Actions

5.6.5 Implement the priorities action statement and assist with the preparation of the recovery plan for the montane peatlands and swamps.

5.6.6 Install on-site interpretative signage and displays across the Barrington Tops Plateau to increase community understanding and appreciation of the natural values of montane swamps. This will involve developing Polblue Swamp Walk as an interpretative walk.

5.6.7 Monitor the impact of fishing activities on the montane swamps. Areas showing signs of unacceptable damage may be closed to fishing and rehabilitated (see section 9.8).

5.6.8 Monitor all commercial and non-commercial operators with respect to cumulative impacts on the montane swamps (see section 9.10).

5.6.9 Develop a monitoring system to assess the overall condition of the montane swamps.

Photo 4 Black Swamp campground, Barrington Tops National Park. John Spencer/DPE

6. Cultural heritage

6.1 Aboriginal heritage

Background

The planning area was the traditional home of the Biripi, Worimi, Geawegal and Wonaruah people. There are several organisations that represent these groups. Through the consultation process for the plan of management, the representatives of the participating groups have defined what they consider 'Aboriginal cultural heritage' to be and what significance the landscape within the planning area holds for them. These are detailed below.

Aboriginal cultural heritage

'The whole of the NSW landscape is a mosaic of cultural meaning. Aboriginal people are at one with the landscape, and the attachment of Aboriginal people to land makes that land special.

Aboriginal culture is living and ongoing. It is deeply linked to the entire environment – plants, animals and landscape. The land and waterways are associated with dreaming stories and cultural learning that is still passed on today. It is this cultural learning that links Aboriginal people with who they are, and where they belong.

Aboriginal people have lived in New South Wales for up to 120,000 years. There is physical evidence of this occupation everywhere in the landscape that has been managed for thousands of years as part of a cultural and spiritual landscape, in the rock art, stone artefacts and other archaeological sites' (Aboriginal Community Workshops 2004).

The significance of the landscape

'The planning area is highly significant to Aboriginal people. It is part of the broader cultural landscape of a number of Aboriginal groups. It includes important food and medicinal plant species; territories, important sites, good camping areas; and prominent natural features, formed long ago by creation ancestors. It is an integral part of the cultural learning that links Aboriginal people with who they are, and where they belong' (Aboriginal Community Workshops 2004).

Aboriginal people have been in association with this area for centuries and regard the environment as their 'earth mother' (Vi Brown pers.comm. 2007). There is limited historical information on the way in which Aboriginal people used the area before European settlement. Two conflicting theories have been advanced. One is that Aboriginal people only moved into the mountainous areas during summer to escape the heat of the lowlands and coast. The other is that the Aboriginal people only moved into these areas during winter to access resources such as possum pelts, which were thick with winter fur (W. Mayers pers. comm. 2004).

To date 6 Aboriginal archaeological sites have been identified within the planning area, and there are also limited, but important historical and oral records.

The early history of Aboriginal and non-Aboriginal interaction in the region is one of conflict. The rapid European settlement of the land surrounding the planning area, led by timber getters and miners, displaced Aboriginal people from traditional lands and restricted access to food sources. Historical records indicate that by 1840, soon after the arrival of European settlers in the area traditional food sources were almost exhausted. Many Aboriginal people were dispossessed and in some cases there were active attempts to eliminate the local Aboriginal population.

Mount McKenzie Aboriginal Place, in Barrington National Park, is an example of this broader history. In 1835 a group of Aboriginal people were massacred in retaliation for the killing of 5

convict shepherds. A group of local residents, assisted by settlers from Port Stephens, set out to find the Aboriginal people responsible. They found a group of Aboriginal men, women and children camped on the edge of a cliff near the Gloucester River. It was reported that the Aboriginal people leapt to their deaths after being surrounded by settlers. However, oral evidence suggests they were shot and thrown over the cliff edge by the settlers. The Mount McKenzie Aboriginal Place was gazetted in 2002 in recognition of the special significance of this site to the local Aboriginal community.

As a consequence of the past conflict and displacement of Aboriginal people, there was restricted access to their traditional lands. More recently, these links to the planning area have been reinvigorated and are a continuing focus for Aboriginal communities. A few years ago there was a reconciliation between the descendants of both the local Aboriginal people and the European search party involved in the Mount McKenzie massacre. Interpretation signs are displayed at Gloucester River on the history of the events at Mount Mackenzie. The Aboriginal community has requested that the actual site is not promoted and visitation is discouraged.

The NPWS is committed to engaging with Aboriginal communities and building relationships that enable them to take part in the ongoing management decisions for the planning area, and to benefit from this culturally, socially and economically.

Issues

- The need to enhance current relationships and involve the Aboriginal community in the management of their cultural heritage.
- Protection, appropriate interpretation and management of Aboriginal sites should occur in partnership with the Aboriginal community and be culturally appropriate.
- NPWS has a limited understanding of the pre and post European use of the planning area by Aboriginal people.
- Mount McKenzie Aboriginal Place will be managed appropriately in partnership with the Aboriginal community.
- Aboriginal people have expressed a wish to undertake hunting and gathering in the future as part of sustaining the Aboriginal communities' cultural association with the area.
- There is a limited understanding in the broader community of the importance of the planning area to Aboriginal people, both in the past and now.
- Cultural, social and economic benefits should flow to the Aboriginal community from activities within the planning area, including from commercial tour operations.

Desired outcome

- The conservation and enhancement of Aboriginal cultural heritage values and improved involvement by Aboriginal people in the management of the planning area.

Guidelines

6.1.1 Continue to build working relationships with the Aboriginal communities connected with the planning area. Foster their continued involvement in strategic and management planning.

6.1.2 Encourage continued Aboriginal community involvement in park management and investigate new opportunities for involvement. Such opportunities may relate to the promotion of appropriate visitor behaviour (for example, assistance with the development of a camping code of conduct), assistance with the protection and interpretation of heritage sites, assistance with threatened species protection (for example, Broad-toothed Rat) and monitoring impacts on the planning area.

6.1.3 Undertake conservation works in consultation with the local Aboriginal community to protect Aboriginal sites if any are being negatively impacted by visitors, feral animals or any other natural or artificial process.

6.1.4 Only Aboriginal sites or places approved by the Aboriginal community will be open to visitation and will be interpreted in a way that is culturally appropriate, accurate and respects the wishes of Aboriginal people.

6.1.5 Encourage research and recording of the social and cultural history, use and relationship of Aboriginal people to the planning area.

6.1.6 Encourage surveys for unrecorded Aboriginal sites, with a priority given to areas of high recreational use.

6.1.7 The Aboriginal community will be encouraged to visit the planning area and undertake cultural activities consistent with the NPW Act and NPWS policy.

6.1.8 Investigate approval for wild resource use by Aboriginal people in the planning area consistent with any NPWS policy.

6.1.9 Aim to increase community understanding and appreciation of the natural and cultural values of the planning area by emphasising in interpretation the traditional use of the area by local Aboriginal people and the importance of the planning area to local contemporary Aboriginal people.

6.1.10 Commercial tour operators will be encouraged to employ Aboriginal tour guides to enhance the experience of their clients and provide economic, social and cultural benefits for Aboriginal people (see section 9.10).

6.1.11 Encourage Aboriginal organisations to compete for contract work associated with park management programs.

6.1.12 Commercial operators who propose to visit approved Aboriginal sites or places and/or interpret Aboriginal cultural heritage within the planning area must seek the approval of relevant Aboriginal communities and ensure that information provided about an Aboriginal site or place is culturally appropriate, accurate and respects the wishes of Aboriginal people (see section 9.10).

6.1.13 NPWS will work with Aboriginal communities to facilitate the carrying out of community based cultural tours within the planning area (see section 9.10).

Actions

6.1.14 Develop and implement a management plan for Mount McKenzie Aboriginal Place in partnership with the Aboriginal community.

6.1.15 Investigate and if feasible provide culture camp opportunities within the planning area in consultation with the Aboriginal community (refer to section 9.3 Camping).

6.1.16 Conduct a program to upgrade the interpretative and directional signage across the planning area. This will include the provision of up to three interpretation sites dedicated to Aboriginal heritage (see section 9.1).

6.2 Historic heritage

Background

The Hunter region was one of the first areas outside the Sydney basin to be explored and settled after the establishment of the British colony at Sydney. Following the establishment of a penal colony at Newcastle in 1804, free settlers began developing the alluvial plains of the Hunter River

and its tributaries. However, following early exploration of the planning area there was little permanent settlement because of the difficult terrain and climate.

Early settlers used the Barrington Plateau for summer grazing, although a permanent residence was established on the ‘Edwards Plain’ in 1856 and stockyards were erected around this time at Polblue Swamp. Edwards Hut was used for 90 years until the hut was destroyed by fire in 1944. The remains of Edwards Hut have been found, and there are interpretation signs at the site which were compiled with the assistance of the Edwards family. Grazing on the plateau continued until 1969 when Barrington Tops National Park was established. Fencing is the most substantial evidence of this use, although there is also likely to be archaeological evidence associated with former huts and work areas.

During the period 1878 to 1904 gold mining was undertaken in the Wangat, Whispering Gully, and Chichester River valleys. Wangat Village was established as a village servicing mines in the area. Wangat Village also housed a school, a pub, a blacksmith, a cemetery, a cricket pitch and at least one dairy. The cricket pitch can still be seen today. By 1890 the mining effort had shifted to the Whispering Gully area with a number of mines in operation by 1894, with the Mountaineer Mine reported to carry good gold. However, the Wonga mine (to the west of Wangat Village) continued to be worked up until 1904 by tribute miners. Cyanide vats were erected at the site to treat tailings and tramlines were also installed to assist removal of spoil.

By 1907, most gold mining had ceased in the Wangat valley, with only minor prospecting continuing, as it was becoming uneconomical. The resumption of land within the Wangat/Chichester water catchment precluded any further mining operations. The planning area contains the physical remnants of this mining activity, with the Wangat Village a significant historic site. The other remains of mining activity, such as diggings, are mainly contained within the wilderness section of the planning area and are infrequently visited.

At the start of the twentieth century the planning area was recognised for its hardwoods and several large state forests were proclaimed. Youngville Day Use Area within Mount Royal National Park is located on the site of a former forestry hut, with the mature pine trees remaining from this previous use. The heritage significance of the remaining pine trees has not been assessed.

About this time there was an upsurge in scientific interest in the area. Scientific expeditions aimed at studying plants and animals began in earnest in 1914, led by Musgrave and Hedley of the Australian Museum. Other expeditions included Professor Harrison of Sydney University (1925), the Royal Australasian Ornithologists' Union (1926), Dr L Fraser and Ms J Vickery (several times during the period 1937-39) and A Musgrave (1944, 1945, 1946, 1947 and 1948).

From the 1930s, the planning area became a popular tourist destination. In 1930 the Barrington Guesthouse was built to cater for packsaddle trips to Carey's Peak, and later a vehicle track was constructed to the plateau. A concerted political campaign at this time urged development of Barrington Tops as the ‘Kosciusko/Katoomba of the north’, however, the ongoing difficulty of access to the plateau and irregular snow falls eventually led to the abandonment of the proposal.

The plateau has long been recognised as having conservation value. A Bird and Animal Sanctuary of 2685 acres was proclaimed in 1925. In 1948 the Barrington Club was formed to popularise and promote the area's conservation values, and in 1959, after substantial lobbying from conservation groups, the Gloucester Tops State Park was proclaimed around Gloucester Falls. This was extended by the reservation of the plateau and renamed Barrington Tops National Park in 1969. In the late 1970s there was a movement to protect rainforests in New South Wales and this resulted in the major additions in 1984.

A number of huts were constructed on the plateau and in other locations for various purposes during the 20th Century. Heritage Action Statements and work plans have been prepared for Selby Alley, Munro, Careys Peak and Little Murray Huts and the Gloucester River Depot (Randell et al. 2003). Careys Peak, Munro and Selby Alley Huts are of local significance because of their design, and links with early exploration and bushwalking in the area. These huts are also of

regional significance as part of the collection of huts within the planning area. Both Little Murray Hut and the Gloucester River Depot possess some historical significance for their association with park management, but do not require heritage conservation.

The Newcastle Bushwalking Club built the Selby Alley Hut in 1955. It is considered that the Selby Alley Hut has heritage significance as it was built by a group of people dedicated to the conservation of the area. Careys Peak Hut was erected around 1934 by The Barrington Tops League as a day shelter and rebuilt in 1973 by the NPWS. The hut was in very poor condition and required major repairs to return it to its original configuration.

Munro Hut is situated near the start of the Link Trail at Gloucester Tops. The Forestry Commission of NSW granted an Occupational Permit to the Newcastle Bushwalking Club in 1963. The hut was built by the club between 1962 and 1964, and was named after Darby Munro, a long time and dedicated member of the club. In 1998 the remaining state forest compartments of Gloucester Tops were incorporated into Barrington Tops National Park, including Munro Hut.

Many of the surrounding communities still maintain a strong connection to the planning area, with many families having worked and travelled in the area for several generations. One route used by locals was Carters Brush Trail. An oral history project (Wright 1999) conducted by the NPWS at the instigation of and with the support of the local community revealed a rich history of the role of the trail, including maintaining community connections, part of the World War II contingency plan for the Hunter region and as an important transport/travel route in the late 19th and early to mid-20th Century. The desire for this history to be acknowledged remains strong within the community.

Additional historic places which have been identified in the park include the remains of Brumlow Swamp Hut constructed by the Barrington Ski Club, Williams Spur Bridle Trail, Tubrabucca Homestead precinct (which includes Meehan's camp), O'Grady's (Surveyors) Hut site, Crosby's hut ruins, Saxby's Hut site, gem mining areas in alpine swamps and Ward Farm (Gloucester River). A set of yards and a bullock dray at Gloucester River Camping Area are physical reminders of the European history of the area.

A number of aircraft have crashed within the planning area since World War II. This includes a RAAF Mosquito that crashed on Aeroplane Hill in 1945 with the loss of pilot and navigator, and numerous other military and civilian aircraft crashes have occurred since.

Issues

- Historic resources may be threatened by natural events (e.g. fire, natural decay) and the impacts of visitors (e.g. vandalism).
- The Heritage Action Statements developed for Selby Alley, Munro, Carey's Peak, Little Murray Huts and the Gloucester River Depot require implementation.
- There is limited information on the hut at Whispering Gully.
- A number of historic sites and places within the planning area require heritage significance assessment, and the development of appropriate management plans if required, such as items at Gloucester River Camping Area and Carrow Brook logging camp.
- Significant historical archaeological resources are likely to exist in the planning area.
- The rich cultural and social history of the planning area, including Carters Brush Trail, needs to be recognised and promoted through interpretative and educational material.
- The cultural and social history of the planning area is largely unrecorded.
- The walking track over Aeroplane Hill requires interpretation to explain the significance of its naming and the events surrounding it.

Desired outcome

- The protection, maintenance and appropriate presentation of historic heritage values.

Guidelines

6.2.1 No historic structure, place or other historic resource will be altered or destroyed without assessment of its heritage significance.

6.2.2 Encourage research into the social and cultural history of the Wangat River and Whispering Gully mining precincts. Continue to not encourage access to these areas due to safety concerns (see section 10).

Actions

6.2.3 Record and manage all historic places, including those in designated wilderness areas, in a way appropriate to their cultural significance.

6.2.4 Implement the recommendations of the Heritage Actions Statements for Selby Alley, Munro, Careys Peak, Little Murray Huts and the Gloucester River Depot.

6.2.5 Selby Alley and Munro huts will be maintained in association with the Newcastle Bushwalking Club. The impact of recreational use of the huts on the site will be monitored and if necessary appropriate works will be done to protect the site in accordance with the Heritage Action Statements.

6.2.6 Investigate and record the location of the Whispering Gully Hut. Assess the hut's significance and develop a management plan.

6.2.7 Record known hut sites not already investigated, and encourage further research into their history and management.

6.2.8 Interpret the timber-getting history of the planning area at Gloucester River Camping Area.

6.2.9 Develop a management plan and interpretation for the cattle yards and bullock dray located at the Gloucester River Camping Area.

6.2.10 Protect the remains of the Edwards lease fence lines and include them in the fire management strategy for the planning area as a heritage asset.

6.2.11 Conduct a significance assessment of the pine trees at Meehans Camp on the Barrington Trail and Paddys Ridge Trail and undertake works in accordance with the recommendations.

6.2.12 Provide interpretation for the heritage huts across the Barrington Tops Plateau in accordance with the Heritage Action Statements (see section 9.1).

6.2.13 Encourage archaeological investigation into the Tubrabucca homestead (Meehans Camp) precinct (see section 10).

6.2.14 Investigate and record the Carrow Brook logging camp and encourage archaeological investigation.

6.2.15 Conduct an oral history project recording the recollections of past NPWS staff as it relates to the management and history of the planning area. Consider extending the project to include key historical user groups.

6.2.15 Include appropriate references in interpretative material to the long history of scientific research within the planning area and the campaign to conserve the natural values of the planning area within a conservation reserve (see section 9.1).

6.2.16 Include appropriate references in interpretative material to Carters Brush Trail, including its history as it relates to the surrounding communities (see section 9.1).

6.2.17 Provide interpretation signage on Aeroplane Hill to explain the history of the events leading to its naming and the general history of aircraft crashes in the planning area (see section 9.1).

7. Introduced species

Introduced pest species can have serious impacts upon the biodiversity of reserved areas by modifying species richness, abundance, and ecosystem function. They can also have impacts on the economic and social values of neighbouring areas.

The NPWS Hunter and Central Coast Hunter Range Regional Pest Management Strategies provide strategic direction for pest management activities within NPWS managed lands (NPWS 2007 and NPWS 2004a). The strategies establish high, medium and low priorities for introduced plant and animal programs on a regional basis. Considerations in determining priorities for each pest species includes:

- national or state emergency control programs;
- listing of the pest as a key threatening process or identified in a recovery plan of a threatened species under the *Biodiversity Conservation Act 2016*
- whether the community has identified the pest as a high priority for action (this includes pests declared under the *Noxious Weeds Act 1993* and declared pest animals under the *Rural Lands Protection Act 1998*)
- threats posed to the conservation, cultural heritage or recreational values of an area
- pest population with small infestation, but is a problem in other parks
- a pest for which continued management is necessary to maintain advantages gained from previous control programs
- a pest where opportunities exist for effective management (e.g. where an effective bio-control agent is available, or feral pig control during floods or droughts)
- a pest which must be controlled/contained to allow another high priority management program to be effective
- if a pest is within habitat listed under threatened species legislation or under an international protection agreement
- location of the infestation and the potential of an area to regenerate naturally.

7.1 Introduced plants

Background

Introduced plants are plants which are not native to an area. Introduced plant species can have severe impacts on the conservation of local native species, cultural heritage, recreational amenity and on neighbouring lands. The impact of climate change on weed distribution and abundance in the sub-alpine areas of Barrington Tops could further increase their impact on native species. Appendix 4 lists significant introduced plant species that occur in the planning area. (Note: not all weeds are described, only noxious and environmental weeds).

Scotch broom (*Cytisus scoparius*) has become a major weed in the Barrington Tops area since it was first introduced as a garden plant in the 1840s at a property at the northern end of the plateau (Schroder and Howard 2000). By 1964 Scotch broom was recognised as a major weed with its spread associated with grazing, fire and the development of trails throughout the plateau (Waterhouse 1988). The Barrington Tops Plateau has the single largest infestation in Australia at approximately 10,000 hectares (Hosking 1996).

Scotch broom is a large leguminous shrub, which can grow up to 4 m tall and form dense thickets (NPWS 2004a). It flowers from October to December, producing large quantities of seed that have a long viability (up to 80 years), and there can be up to 50,000 seeds per square meter of soil under mature plants (Downey 2002). Plants may live for up to 25 years or more and may

become prostrate in form (Hosking et al. 2000). In Barrington Tops, Scotch broom spreads on average 0.5 m per year (Smith 2000).Scotch broom is an aggressive invader in areas of high soil fertility and has the ability to establish in both disturbed and undisturbed areas, including grassland, woodland or open forest in cool moist areas. It will not grow in heavily shaded places but invades and persists in open woodland and in treeless areas such as sub-alpine grassland and cleared pasture (Hosking et al. 2000).

It competes with native plants, inhibiting their regeneration and growth. Scotch broom is changing the structure, floristic composition and ecology of woodlands in the Barrington Tops area (Smith 2000, Schroder and Howard 2000). Scotch broom thickets also harbour animals such as feral pigs, foxes (Parsons and Cuthbertson 1992) and feral horses. There are 6 threatened plant, 6 threatened mammal species including the endangered population of the Broad-toothed rat, and an additional 24 ROTAP (Rare or Threatened Australian Plant) species, known to occur within the area infested by Scotch broom, all of which are being affected to some extent (Heinrich and Dowling 2000).

Original control work involved experimentation with various techniques including clearing, fire and a range of herbicides. As a result of the failure to successfully control broom (mass recruitment post treatment) the Scotch Broom Council was formed in 1986. The council recognised that the distribution and biology of Scotch broom did not allow for its successful control and eradication. Doing nothing was also not an option, so NPWS, Forestry Corporation of NSW , Department of Agriculture, local government and private landholders developed a coordinated containment program in 1987 (NPWS 2002b).

In 1996 the NPWS developed a formal management strategy for Scotch broom containment in Barrington Tops National Park (NPWS 2002b). The strategy was based on a review of the 1987 containment strategy developed by the Broom Council. The strategy recognises the impact of Scotch broom on the natural ecosystem and aims to ensure annual implementation of an effective containment program without compromising the natural values of the area by causing further impacts on the sensitive sub-alpine environment. This is achieved by:

1. coordination amongst all relevant land managers
2. containing and treating Scotch broom within the existing infestation by treating the weed along trails, camping areas and walking tracks to prevent its spread to other areas
3. identifying and treating isolated infestations outside the main infestation by undertaking surveys
4. supporting the biological control program
5. considering the impact of Scotch broom on threatened plants within the infestation and identifying priority areas for control to protect these populations
6. ensuring there are long term monitoring programs.

Since the implementation of the containment strategy Scotch broom has been generally confined within containment lines within the national park. Mapping of the infestation is undertaken every 10 years; to date this occurred in 1989 and 1999. The last mapping undertaken in 1999 (Figure 4) confirmed successful containment in the south and east of the infestation and treating isolated infestations to the north (NPWS 2002b, Odem et al. 2003). The scattered distribution of Scotch broom plants in isolated areas is consistent with spread by grazing animals. Away from roads and streams it is suspected that feral pigs and horses are primarily responsible for seed spread. The spread of Scotch broom is accelerated along roads and tracks by the passage of vehicles, machinery, animals and pedestrians. It is also dispersed along stream courses. The Careys Peak Trail from Mount Barrington to Careys Peak was closed to prevent the spread of the Scotch broom to the southern catchments of the Barrington Wilderness by four-wheel drive vehicles.

Control techniques currently used include the physical removal of plants, cut and paint technique, and herbicide spraying.

It has been recognised as part of the containment strategy that the long-term solution to reducing the size of the main infestation is the establishment of suitable biological control agents. Through the Broom Council 3 biological controls have been released in the area, the twig mining moth (*Leucoptera spartifoliella*), broom psyllid (*Artainilla spartiophila*) and seed feeding bruchid (*Bruchidius villosus*) (NPWS 2000b). However, these species have not been detected within Barrington Tops National Park since their various releases. A rust fungus (*Uromyces pisi-sativi*) has been detected on Scotch broom since February 2005. It is still unknown what impact it is having on the weed. The source of the rust fungus, which is also in other parts of Australia, remains a mystery (Morin et al. 2006).

Two long term monitoring programs have been established. Monitoring of the demography of broom at Barrington Tops (Downey and Smith 2000) was established in 1985. The other program to monitor for the establishment of biocontrol agents and the impacts of broom on native plant diversity, was established in 2001. Both projects involve annual monitoring.

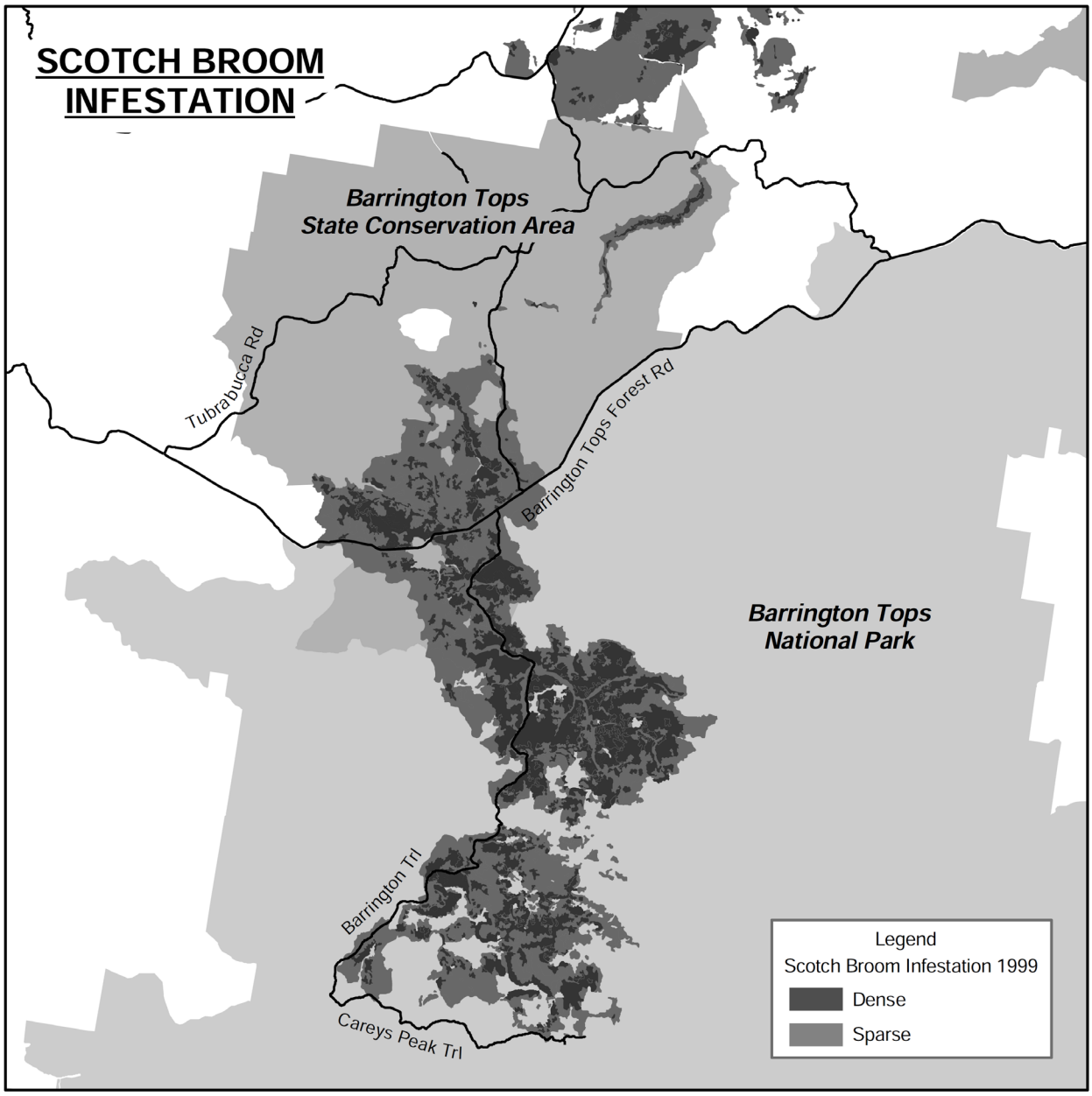


Figure 4 Extent of Infestation of Scotch broom in 1999 within the planning area.

Blackberry (*Rubus fruiticosus* agg.*)* infests a large area along the Barrington Trail south of the Barrington Tops Forest Road growing amongst Scotch broom. The density of blackberry has increased over the last 10 years. Current control methods involve the use of herbicide. A biological control, rust fungus has also become established within this area, but at this stage would appear to have had little effect in reducing the infestations (although it may be inhibiting its spread). Treatment has focused on individual plants and minor/isolated infestations at Edwards Swamp and at Mount Royal, within the Carrowbrook Creek catchment.

Crofton weed and **mist flower** (*Ageratina spp.*) occur in isolated infestations along creek lines flowing east and south from the plateau, along the edges of the Gloucester Tops Road, Williams River, Jerusalem Creek, along the creek lines and roads in Mount Royal National Park and Malumla in the south-western corner of Barrington Tops National Park. The infestation in Mount Royal National Park has undergone extensive control but still remains uncontrolled in some areas including the Carrowbrook Creek catchment. Control programs have also been implemented in the Williams River and Jerusalem Creek catchments reducing the density of the weeds. Control methods have included hand removal for small infestations and infestations occurring adjacent to watercourses or in the case of larger infestations herbicide application.

Tree of Heaven (*Ailanthus altissima*) is found in an isolated infestation along Moonan Brook. Primary treatment began on the infestation in 1999 with regular treatment and follow-up of the infestation annually using herbicide. This infestation is currently under control.

Exotic pines (*Pinus spp.*) are found in Youngville Picnic Area in Mount Royal National Park and in an old plantation of 16 ha near Green Gap trail in Barrington Tops State Conservation Area. There are also some isolated pines at the intersection of Barrington Trail, known locally as Meehans Camp, and along Paddys Ridge Trail. While no control programs have been implemented to date as most of the areas are very small and the pine species are not spreading, there is a need to develop control options.

Nodding thistle (*Cardus nutans*) is found in isolated infestations along the Barrington Trail in Barrington Tops State Conservation Area. Some minor control programs have been undertaken to date. A major infestation exists on the adjacent Tomalla Station.

Lantana (*Lantana camara*) occurs as minor infestations in the tall open forest in the eastern sections of the planning area around the Chichester area. Control is undertaken in conjunction with other weed species.

Oxeye daisy *(Leucantherum vulgare)* has been identified along the Barrington Trail and the Polblue walking trail. This species is an established weed in the Northern tablelands and is a new incursion to Barrington Tops. Programs have been undertaken to remove isolated plants to prevent the establishment of this species.

Yorkshire fog (*Holcus lanatus*) established in disturbed sites along road edges and in wetter areas following disturbance. This species has the potential to compete with many of threatened ground orchids, which occur around the montane peatland and swamps. This species has already established in Nolans and Polblue Swamp and Junction Pools. Control is difficult as it occurs amongst native grasses.

Other weeds, which are currently in low densities but need to be monitored in the future, include St Johns wort (*Hypericum perforatum*) and scotch thistle (*Onopordum acanthium*). St Johns wort has been located on the Barrington Trail in Barrington Tops State Conservation Area, while scotch thistle has been found near Tubrabucca Flats. Also an introduced grass, *Anthox anthum-odoratum* has been recorded at the Little Murray Depot and at Polblue.

Issues

- Lack of coordinated weed management across all land tenures.
- As well as changing the scenic aspect of the planning area, Scotch broom competes with, and in some areas excludes, native plant species, particularly in open areas. Of particular

concern is the potential impact of introduced plants, and in particular Scotch broom, and animals on fragile environments such as the montane peatlands and swamps and the endangered population of the broad-toothed rat, which are particularly dependent on specific habitats.

- A number of endemic plant species may be under threat due to consolidation and spread of Scotch broom both within the infested area and into areas currently broom-free.
- Scotch broom control in Barrington Tops will require a strong commitment in terms of both resources and time.
- The control of Scotch broom is severely hampered by the presence of a number of feral animals (including pigs and horses) and by the existing pattern of human use on the plateau.
- Scotch broom is threatening the long-term viability of threatened and rare plants and animals on the plateau through changing the vegetation structure, floristic composition and ecology of the woodlands and swamp environments (see sections 5.4, 5.5).
- The impact of Scotch broom on the water quality, discharge levels and recreational values of the waterways on the plateau, in particular the Barrington and Manning Rivers, which are major water supplies for nearby townships, is unknown.
- Difficulty of containing Scotch broom in and adjacent to streams.
- Scotch broom provides cover for feral pigs and foxes making the success of control programs for these species more difficult.
- Better education and awareness of weeds and their impacts on the environment is essential to their successful control.
- There is potential for the establishment of introduced pasture grasses and herbs such as Yorkshire fog, scotch thistle and St Johns wort along tracks, trails and watercourses.
- The continued expansion of blackberry within the sub-alpine plateau.
- The impact of crofton weed/mist flower along watercourses, particularly in remote wilderness gorge country.
- Weed species especially Scotch broom, oxeye daisy, crofton weed/mist flower and introduced grasses can be spread by vehicles. Wash-down procedures for vehicles (including heavy machinery) have been developed to help minimise this impact.
- A need to develop control options for exotic pines including removal.
- The transportation of weed seed and propagules by vehicles.

Desired outcome

- Maintenance and enhancement of native plants and animals through the control, and eradication where possible, of introduced plants.

Guidelines

7.1.1 Undertake all weed management and control in accordance with the priorities identified in the Hunter and Central Coast Hunter Range Regional Pest Management Strategies (see Appendix 4).

7.1.2 All pesticides will be used in accordance with best management practices and relevant legislation (i.e. *Pesticides Act 1999*).

7.1.3 Coordinated weed management will be encouraged across all land tenures and in cooperation with neighbours, the North Coast Weed Management Committee and the Upper Hunter Noxious Weeds Council.

7.1.4 The involvement of community groups in weed identification, mapping and treatment will be encouraged.

Actions

7.1.5 The known occurrence, distribution and density of introduced plants causing significant environmental damage will be mapped.

7.1.6 Environments currently free of introduced species will be monitored and any new weed incursions will be added to the regional database.

7.1.7 Implement wash-down procedures for vehicles (including heavy machinery) to stop the spread of weeds, especially Scotch broom, oxeye daisy, crofton weed/mist flower and introduced grasses.

Scotch broom

7.1.8 Contain and treat Scotch broom within the existing infestations areas as prescribed in the Scotch broom Containment Strategy (NPWS 2002 b). This will include:

- focusing control in areas possessing high environmental (i.e. containing threatened species, montane swamps) and water catchment values
- continuing to exclude public vehicle access from the Careys Peak Trail between Mount Barrington and Careys Peak. This trail presents the greatest risk of movement of Scotch broom seed into uninfested southern areas of the planning area and neighbouring lands
- biannual monitoring of the Link Trail
- limiting the spread of Scotch broom at the southern and south-eastern perimeter of its current infestation
- continuing the program of control of Scotch broom along all roads, tracks and trails leading out of the planning area using herbicide
- controlling Scotch broom in public use areas within the planning area using herbicide and bush regeneration techniques
- protecting uninfested catchments and continuing to treat Devils Hole
- encouraging bushwalkers and horse riders to monitor and document new outbreaks of Scotch broom in the planning area
- implementing a hygiene protocol to prevent spread of Scotch broom into non- infested areas.

7.1.9 Investigate and where feasible strategically release biological control agents for Scotch broom in the planning area, taking into consideration where biological control agents have already become established (for example, at Tomalla Station) at lower altitudes.

7.1.10 Investigate and where feasible implement alternative control methods for Scotch broom especially for undertaking work around high conservation areas.

7.1.11 Undertake further research into Scotch broom, in particular biological control and apply where indicated.

7.1.12 Continue aerial mapping of Scotch broom to assess containment strategy and priority areas, every 10 years.

7.1.13 Continue the long term monitoring projects already established.

7.1.14 Identify and treat, and if possible eradicate, any isolated Scotch broom infestation outside the main infestation as a priority.

Blackberry

7.1.15 Assess current distribution of blackberry on the Barrington Tops Plateau.

7.1.16 Continue to undertake blackberry control programs, treating isolated infestations using herbicide.

7.1.17 Undertake appropriate and cost-effective monitoring of biological control agents for blackberries.

Crofton weed/mist flower

7.1.18 Continue control program for crofton weed using herbicide and bush regeneration techniques.

7.1.19 Focus control on wilderness areas (for example Williams River, Jerusalem Creek, Davis Creek, Cross Creek areas) and Mount Royal National Park.

7.1.20 Focus on access roads into infested areas including Mount Royal – Cassels Road for controlling crofton weed/mist flower.

7.1.21 Develop strategies for the control of wind borne species like mist flower/crofton weed, particularly in the top of the catchment.

7.1.20 Liaise with bushwalkers and other clubs regarding monitoring and treatment of infestations of crofton weed/mist flower in remote areas.

Tree of heaven

7.1.23 Monitor and treat tree of heaven infestations using herbicide.

Exotic pine

7.1.24 Undertake regular tree risk assessments of the pine trees in Youngville Day Use Area, Meehans Camp on Barrington Trail and Paddys Ridge Trail in accordance with the NPWS Visitor Safety Policy, with all works (i.e. pruning, removal of trees) undertaken in accordance with recommendations made in the assessments.

7.1.25 The existing exotic mature pine trees in Youngville Day Use Area will remain, however, all juvenile plants will be removed. The trees will not be replaced if they die or become senescent.

7.1.26 Develop and implement a rehabilitation plan for the Green Gap pine plantation within Barrington Tops State Conservation Area.

Lantana

7.1.27 Treat isolated infestations of lantana using a number of methods including herbicide and manual removal.

7.1.28 Monitor other forms of lantana especially red lantana and treat appropriately.

Other weed species

7.1.29 Monitor and treat nodding thistle and scotch thistle infestations appropriately.

7.1.30 Monitor and potentially treat infestations of Yorkshire fog in key sensitive areas such as montane swamps.

7.1.31 Monitor and treat oxeye daisy appropriately.

7.1.32 Monitor for the grass *Anthox anthium.*

7.1.33 Identify and treat any new high risk weed infestations as soon as possible before they become major management problems.

7.2 Introduced animals

Background

Introduced animals, including feral and domestic animal species, are those which are not native to an area. Introduced animals have a detrimental effect upon the natural condition of the planning area by disturbing native vegetation, increasing soil erosion and through competition with, or predation on, native species. Feral animals can also prey on livestock and graze on pastures. The *Rural Lands Protection Act 1998* identifies the feral rabbit, feral pig and wild dog as declared pest animals and other animals may be declared on a local basis. The provisions of the Act bind all government agencies, including the NPWS, local government and private landholders.

Introduced animals are a feature of almost all protected areas in Australia. Their occurrence is a result of a combination of factors, including release and escape or straying from agricultural areas over time. Pest species have been an issue in the planning area for a number of decades, and continue to be a problem for both NPWS and adjacent landholders.

Wild dogs *(Canis lupus familaris)* were a problem in and adjacent to the planning area for many years prior to the declaration of the national park. Wild dogs, including dingoes, can cause substantial losses to livestock as well as having a significant impact upon the distribution and abundance of native wildlife. They can also act as a vector spreading disease to native animals. The NPWS, therefore, has the difficult task of balancing two objectives: preventing attacks on livestock from wild dogs moving out of reserves, and conserving dingo populations within the core of the planning area, including the reduction of hybridisation rates with domestic dogs.

Wild dog problems adjoining the planning area have historically been concentrated to the north-west and west. An annual ground-baiting program has been implemented in this area in coordination with Forestry Corporation of NSW, relevant Wild Dog Associations and the Hunter Local Land Services since 1998. This program has been effective in reducing domestic stock losses. Other reactive wild dog control has been undertaken in coordination with neighbours and the Hunter Local Land Services to the east and south of the planning area following reported stock losses.

The planning area is identified as public land with significant habitat for dingoes listed under Schedule 2 of the Wild Dog Control Order. Under the *Rural Lands Protection Act 1998*, public lands which are identified as a Schedule 2 area require public land managers, such as the NPWS to assist in the preparation and implementation of a local wild dog management plan. Wild Dog plans have been prepared for the Mount Hungerford and Ellerston Wild Dog Associations.

Feral pigs (*Sus scrofa*) occur predominantly throughout the plateau area and are responsible for extensive damage to sub-alpine habitats, including areas containing a number of threatened plant species. Feral pigs have also been listed as a key threatening process under the *Biodiversity Conservation Act 2016*. At greatest risk from pig rooting and wallowing are the high number of threatened species occurring around wetland areas. Most of the rare orchid species are restricted to small populations, which are easily destroyed by pig activity (Heinrich and Dowling 2000).

Pigs are omnivores and obtain their dietary needs by grazing and rooting up plant material. In the Barrington Tops area they are also recognised as a vector for the dispersal of Scotch broom seed. As a result of their habit of rooting and wallowing they remove vegetation which provides ideal conditions for Scotch broom seed to germinate (Smith 2000).

Feral pig trapping programs commenced on the plateau in 1979. The annual program that runs from May to September removed on average 100 animals per year from the plateau. Despite this,

the number of pigs caught and the amount of damage by the feral pigs had not decreased over the years (M. Newton pers. comm. 2004). An aerial shooting program undertaken off park on neighbouring properties in March 2006 removed 700 pigs. This had a significant impact on the number of pigs trapped on park with only 27 trapped in the 2006 program indicating the impact of migration from neighbouring properties.

Pig control is currently a cooperative program involving the NPWS and neighbours of the planning area, members of the Game and Pest Management Advisory Board and adjoining Local Land Services. The prevalence of illegal hunters, many of whom use hunting dogs is hindering pig trapping programs, as well as adding to the wild dog problem when these hunting dogs are either abandoned or lost.

Feral horses (*Equus caballus*) occur as a legacy of historical summer grazing practices on the Barrington Plateau. Feral horses pose a complex management issue for conservation managers. Feral horses can damage the natural environment and are a pastoral pest, but their control poses a significant animal welfare concern (Dobbie et al. 1993, English 2003, NPWS 2002a). Studies of the impact of feral horses on sub-alpine environments in the Southern Alps indicate that they are responsible for significant environmental damage in alpine areas. The susceptibility of sphagnum vegetation to trampling and the churning of peaty soils on the floodplains and the montane peatlands and swamps has been observed both in the Southern Alps and in Barrington Tops. Impact of horse movement on threatened species habitat has been recorded around Little Murray Swamp (Heinrich and Dowling 2000). Feral horses also pose a threat to motorists, and there is a risk of a stallion attacking recreational horse riders.

It is also recognised that feral horses spread weeds and modify floristic composition by selective grazing and trampling. These impacts are particularly important in sensitive environments such as wetlands where there are endemic species of high conservation value (Binns 1995). Horse numbers have increased in the plateau area. Distinct mobs are established in Edwards plain in the south, around Mount Carson and Gloucester Scone Rd, near Little Murray Swamp in the north and in the north towards Tomalla. The current number is estimated to be around 75, and distribution of horses and their relative domesticity means that effective control of horses is feasible.

Foxes (*Vulpes vulpes*) appear to be concentrated on the Barrington Plateau. They do not appear to have established as well in the rainforest and heavily timbered areas on the escarpment and upper slopes. Foxes are known to be a major threat to the survival of native animals, with smaller mammals and ground nesting birds at the greatest risk (Environment Australia 1999).

The fox has been identified as a key threatening process under the *Biodiversity Conservation Act 2016*. A statewide Fox Threat Abatement Plan is currently being implemented (NPWS 2001). A program to control foxes to protect populations of the Broad- toothed rat on the Barrington Tops Plateau and the rufous bettong at Mount Royal began in 2001, and continue to be implemented. Fox control is undertaken twice yearly on the plateau using bait stations. A major fox control program is also undertaken at Mount Royal as part of the Fox Threat Abatement Plan at 6-week intervals using bait stations.

Feral goats *(Capra hircus*) are found to the west of the planning area in Moonan Brook, Omadale Brook, Stewarts Brook, Rouchel and Tomalla Station and potentially pose a threat to the planning area in the future.

Feral deer (various species) are also found in the Stewarts Brook, Moonan Brook and Tomalla area and could be a problem in the future.

Other introduced animals occur in the planning area but in relatively low numbers. The impact of animals such as **rabbits** has not been identified as a major threat at this stage because of the low numbers and/or limited distribution. Rabbit control programs have been undertaken in the past when numbers have been higher. The impact of rabbits is currently being re-assessed in light of the recommendations of the ‘Recovery Plan – Barrington Tops Broad-toothed Rat Endangered Population. Other introduced species which are currently in low abundance but need

to be monitored in the future include the **European honey bee** (*Apis mellifera*) which has been linked to the pollination of Scotch broom, **feral cats** *(Felis catus)* and introduced birds (e.g. **Indian mynas**). Several introduced **fish** species are permitted to be stocked into streams occurring within the planning area under the *Fisheries Management Act 1994* (refer also to section 9.8 Fishing).

Issues

- Introduced animals have an impact on the natural condition of the planning area by disturbing the native vegetation, increasing soil erosion and through predation and competition on native species.
- Introduced animals have severe impacts on threatened and endemic species on the Barrington Tops Plateau.
- Dogs abandoned by illegal hunters pose a significant threat to viable dingo populations due to hybridisation.
- Wild dogs/dingos are a problem on neighbouring properties.
- Wild Dog Management Plans have yet to be written for the planning area.
- Illegal hunting of pigs (especially with dogs) compromises current control programs.
- Illegal pig hunting also impacts on public safety, recreation and wildlife.
- Management of feral horses, in particular the use of appropriate techniques for the humane removal of feral horses from the planning area needs to be investigated.

Desired outcome

- Control, and eradication where possible, of introduced animals.

Guidelines

7.2.1 Undertake all introduced animal management and control in accordance with the priorities identified in the Hunter and Central Coast Hunter Range Regional Pest Management Strategies. Species defined as high priority include the feral pig, feral horse, wild dog and fox (see Appendix 4).

7.2.2 Introduced animals will be controlled, in cooperation with neighbours, Livestock Heath and Pest Authorities and Wild Dog Associations.

7.2.3 Domestic animals and stock will not be permitted in the planning area other than on those roads and areas designated under section 9.2 for transit of pets in vehicles and under section 9.6 those areas designated for horse riding.

Actions

Wild dogs

7.2.4 Undertake cooperative management of wild dogs with neighbouring property owners.

7.2.5 Undertake annual ground-baiting control programs in coordination with the various Wild Dog Associations and Livestock Heath and Pest Authorities.

7.2.6 Undertake wild dog trapping programs around the boundary of the planning area to control wild dogs that are reluctant to take baits.

7.2.7 Undertake reactive programs as required. Where economic loss results from wild dog attacks on properties adjacent to the planning area, control activities along the perimeter

of the planning area will be undertaken. Control programs will be developed with the cooperation and participation of affected landholders and Livestock Heath and Pest Authorities.

7.2.8 Undertake further research into dog distribution throughout the planning area to better facilitate control programs.

7.2.9 Support Wild Dog Associations adjacent to the planning area.

7.2.10 Assist the Livestock Heath and Pest Authorities in the preparation and implementation of Wild Dog Management Plans for each Wild Dog Association area within the planning area.

Feral pigs

7.2.11 Continue to control feral pigs, giving priority to areas near montane swamps and grasslands.

7.2.12 Develop and implement a Feral Pig Management Strategy. This will include:

- assessment of the effectiveness of the trapping program
- assessment of techniques used and investigation of alternative control methods other than those currently used (e.g. 1080 bait stations).

7.2.13 Undertake law enforcement in conjunction with relevant NSW Government agencies, including police, to control illegal hunting of feral pigs, which will also assist the wild dog control program.

7.2.14 Encourage cooperative control programs for feral pigs with neighbours, focussing on annual aerial shooting programs to the north west.

Feral horses

7.2.15 Develop and implement a Feral Horse Management Plan to remove feral horses from the planning area. This will be based on the guidelines outlined in the English Report, (English 2003). The plan will include options for the removal of feral horses, techniques for monitoring the impact and number of feral horses, and the process for community consultation.

Foxes

7.2.16 Implement fox control programs in accordance with the NSW Fox Threat Abatement Plan to limit fox predation on the Broad-toothed Rat on the Barrington Tops Plateau and the Rufous Bettong in Mount Royal.

Other introduced animals

7.2.17 Monitor the number and impacts of other pest animals (e.g. feral goats, feral deer, rabbits, feral cats, introduced birds, European honey bees) in the planning area.

7.2.18 Undertake control programs for rabbits, goats, deer, cats and honey bees as required.

7.2.19 Support further research into the impact of and control methods for species like feral cats, introduced birds species and European honey bees.

7.3 Phytophthora

Background

Phytophthora cinnamomi is a soil borne pathogen belonging to the water mould group (Oomycetes). The reproductive structures that spread *Phytophthora cinnamomi* (sporangia and clamydospores) form on vegetative mycelia in soil and plant roots, and often then spread throughout the plant. *Phytophthora cinnamomi* infects a large range of plant species and susceptible species display a range of symptoms. In some circumstances, *Phytophthora cinnamomi* may contribute to plant death where there are other stresses present such as waterlogging, drought, and perhaps wildfire (NSW Scientific Committee 2002).

Dieback was first observed by NPWS staff in the park in the late 1990s on the shrub *Oxylobium arborescens* in the sub-alpine woodland. Subsequent collaborative research by Royal Botanic Gardens and Domain Trust, University of New South Wales and NPWS since identified the causative organism to be *Phytophthora cinnamomi.* This mould is a serious plant pathogen in Western Australia, Victoria, and Tasmania forest areas. Phytophthora is becoming increasingly more detected in NSW parks, particularly in the coastal regions.

Phytophthora cinnamomi occurs through movement of spores that may swim to new hosts or be dispersed over large distances in flowing water. Some spread within a site may be by mycelial growth from infected roots to roots of healthy plants. Propagules of *Phytophthora cinnamomi* may also be dispersed by movement of soil by vehicles, animals (e.g. feral pigs) and walkers (NSW Scientific Committee, 2002). There are few options for controlling the spread and impact of Phytophthora. Quarantining and the use of chemicals have been used to date, with limited success.Dieback caused by the root-rot fungus (*Phytophthora cinnamomi*) is currently listed as a key threatening process under the Biodiversity Conservation Act and the EPBC Act.

In Barrington Tops, the most obvious physical evidence of infestation is a significant area (in excess of 5 hectares) of dead or dying *Oxylobium* in the vicinity of the Watergauge Trail which is midway between Little Murray and Big Hole. Bushy club-moss *(Lycopodium deuterodensum)* and broad-leaved pepperbush (*Tasmannia purpurascens),* which are threatened species are also being affected by *Phytophthora cinnamomi.* Although eucalypts and southern beech species are known to be susceptible elsewhere, no obvious ill effects on these species have so far been detected in Barrington Tops. Reported upper branch dieback in snow gums in the vicinity of the Watergauge Trail cannot be positively attributed to the organism at this stage and may in fact be fire related.

While *Phytophthora cinnamomi* has not generally been a major problem in sub-alpine areas elsewhere in eastern Australia, there appears to be in the Barrington Tops (where it occurs at or above 1500 metres ASL) an exception to the rule. This is probably due to high soil temperatures coinciding with periods of high soil moisture, which are optimum conditions for Phytophthora activity. The infestation of Phytophthora that occurs at Barrington Tops is severe but thought to be localised (Keith McDougall pers. comm. 2004). There are no known occurrences of Phytophthora in Mount Royal National Park. It has also recently been noticed and recorded that there are significant patches of dead *Epacris microphylla* in many of the alpine swamps within Barrington Tops. It is not known whether this is attributable to Phytophthora or is the result of some other factor.

Issues

- *Phytophthora cinnamomi* spores are spread in mud carried by motor vehicles, bicycles, on walkers' boots, and in the hooves of animals such as feral pigs and horses.
- *Phytophthora cinnamomi* can spread outside the planning area and the potential to infest both other reserves and private property. Of great concern, is the spread to other areas at lower altitudes where climatic constraints on the activity of the fungus are reduced.

- There is the potential for the pathogen to escape via the water table into the antarctic beech (*Nothofagus moorei)* forests of Beean Beean Creek and the Barrington River. In Tasmania and Victoria a close relation of the Antarctic beech, myrtle beech (*Nothofagus cunninghamii*) is severely affected by Phytophthora.
- Scientific knowledge about *Phytophthora cinnamomi* at high altitudes is limited.
- There is the potential for the reduction in species diversity within the planning area.
- The impacts of Phytophthora may reduce aesthetic values and hence recreational opportunities within the planning area.
- There are significant patches of dead *Epacris microphylla* in many of the alpine swamps which may be attributed to Phytophthora.

Desired outcome

- Develop an improved knowledge of *Phytophthora cinnamomi* within the planning area and its threats to the long-term survival of plant and animal species in the area. Control and where possible prevent the spread of Phytophthora to other areas.

Actions

7.3.1 Develop and implement a *Phytophthora cinnamomi* Management Plan. This will include:

- implementing a quarantine area (see Figure 7), and restricting public access along the Watergauge Trail from Beean Beean Plain to Black Swamp to limit further spread of Phytophthora to other areas
- implementing an education and interpretation strategy to inform the public of the problem and how it is being dealt with
- installation of hygiene facilities at entry points to the quarantine area which are to be used by NPWS, contractors, researchers, firefighters and anyone entering or operating in the vicinity of the quarantine area
- investigation and if feasible installation of cleaning stations for bicycles and other vehicles using management trails in the vicinity of the infestation
- investigation and if feasible installation of boot cleaning stations on all walking trails in the vicinity of the infestation
- increased law enforcement of the area
- consideration of the impacts of feral animals on Phytopthora management
- incorporation of appropriate hygiene measures in any pest management operations where there is the risk of Phytophthora being spread
- ongoing monitoring, including undertaking regular soil analysis in cooperation with the department and Royal Botanic Gardens and Domain Trust (Sydney).

7.3.2 Investigate the potential for allowing public access back through the quarantine area once strategies (e.g. boot washing stations, Phosphite application) are in place and shown to be successful in preventing the spread of the pathogen to other areas.

7.3.3 Undertake further research into the extent of infestation at Barrington Tops, impact of fire on areas of dieback, impact of *Phytophthora cinnamomi* on sub-alpine environments, and potential impact of the application of chemicals (such as Phosphite) to phosphorous deficient soils within the park and its usefulness to control the pathogen.

7.3.4 If *Phytophthora cinnamomi* is found outside of the quarantine area shown on Figure 7, investigate and if necessary expand the quarantine area to cover all areas of known infestation.

8. Fire management

8.1 Background

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

Wildfires are common in the planning area at lower elevations on north to west facing slopes. This area experiences a comparatively warm, dry climate and is covered in highly flammable vegetation types including dry open forests and heaths. This contrasts to areas at higher elevations where generally cool, moist climate and low flammability vegetation, such as bogs and herblands, result in wildfires being uncommon. Wildfires in these areas are typically only associated with extended periods of drought and are often started by lightning. Extensive areas of rainforest in gullies, protected valley sites and other high altitude and rainfall areas contribute to the comparatively low frequency of fire across much of the planning area.

NPWS fire history records for the planning area date back to the 1968–69 fire season, but these records are considered incomplete. In the last 32 years there have been 15 years in which fires have been recorded, with more than 80% occurring between October and February. Although oral history indicates a severe fire season occurred in 1963, the most severe fire season recorded by the NPWS was in 2002–03 during which nearly 11,000 ha were burnt in the north west of the planning area. Extreme fire behaviour, including crown fires and long distance spotting, occurred during the 2002–03 fire season and is reported to have also occurred during the 1963 and 1968 seasons.

While steep terrain and lack of trails limit access in some parts of the planning area, the large areas of rainforest and wet eucalypt forest form natural fire control advantages to help contain bushfires under all but very high fire danger conditions. Many of the planning area boundaries are not aligned with any natural or constructed features and are located along mid slopes where it is difficult to prevent fires spreading into or out of the planning area. While the areas surrounding the planning area contain a large number of capital assets including huts, houses, sheds, yards and private pine plantations, the majority of these are located downhill from the planning area and many are surrounded by cleared country and therefore are less susceptible to all but the most intense fires.

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 (NPWS, 2005).

Cooperative fire management involving the community is critical to the achievement of both life and property protection, as well as natural and cultural heritage management objectives in the planning area. An important part of this is NPWS's participation in the Gloucester and Liverpool Plains Bush Fire Management Committees which aim to coordinate fire management and fire control on a district basis.

Table 1 outlines the fire protection guidelines for broad vegetation communities. A Reserve Fire Management Strategy (RFMS) for the planning area has been completed. The RFMS identifies bushfire threats and requirements for the conservation of native plants and animals and cultural values, and provides the basis for management strategies and burning prescriptions. A detailed analysis of the fire thresholds is contained within the RFMS for the planning area. The RFMS also includes operational and environmental guidelines, maps with vehicle water points, fire trails and helipads.

Table 1 Fire interval guidelines for protection of vegetation communities.

Vegetation type	Minimum interval (yrs)	Maximum interval (yrs)	Notes
Rainforest	n/a	n/a	Fire should be avoided
Alpine complex	n/a	n/a	Fire should be avoided
Wet sclerophyll forest	25	60	Crown fires should be avoided in the lower end of the interval range
Semi-messic grassy forest	10	50	Crown fires should be avoided in the lower end of the interval range
Sclerophyll grassy woodland	5	40	Minimum interval of 10 years should apply in the Southern Tablelands region
Grassy dry sclerophyll forest	5	50	
Shrubby dry sclerophyll forest	7	50	
Heathland	7	30	

Source: Bradstock et al. 2003

Issues

- Plants and animals have adapted to a particular range of fire regimes (defined by the season, frequency, intensity and spatial extent of fires). Fire regimes outside the range to which a species is adapted may result in the local extinction of that species. In general, the open forests and heaths which are found at lower elevations and on north to west facing slopes are able to tolerate comparatively frequent fires, while many of the vegetation types at higher elevations, including sub-alpine woodlands and herblands, are only able to tolerate infrequent fires.
- Fires often occur from escaped rural burns, arson and lightning strikes.
- It is likely that inappropriate fire regimes are a threat to vegetation communities such as rainforest and high elevation communities.
- There is limited information about the effects of fire on plant or animal communities, on individual species and, in particular, on rare and threatened plant species.
- Inappropriate fire regimes may introduce and/or increase the distribution of weed species (e.g. Scotch broom and blackberries).
- Both Aboriginal and historic heritage sites may be damaged by fire management activities, such as prescribed burning and the use of machinery, as well as by fire.
- Fire management activities may compromise other values such as water catchment and wilderness values.
- Global warming may result in more frequent and intense fires. This is of particular concern in wetland areas where peat and sphagnum moss may burn for months. This may affect the water holding capacity of the wetlands and the water supply for surrounding areas (see section 5.1).

Desired outcome

- Management of fire to achieve both ongoing protection of life and property within and adjacent to the planning area and the long-term conservation of natural plant and animal communities and cultural values.

Guidelines

8.1.1 Wildfires will be suppressed as quickly as possible if they are likely to threaten biodiversity or neighbouring assets. As far as possible, fire will be completely excluded from areas of rainforest.

8.1.2 The use of heavy machinery for fire suppression will be avoided as far as possible in the vicinity of threatened species, rainforest, cultural heritage sites, water catchment areas and wilderness areas.

8.1.3 Encourage research into the ecological fire requirements of the plant and animal communities within the planning area, particularly the response of significant plant species to fire (see section 5.1, 5.2).

8.1.4 Maintain close contact and cooperation with Rural Fire Service bush fire brigades and continue to actively participate in the relevant Bush Fire Management Committees.

8.1.5 The use of chemical retardants during wildfires will take into consideration the potential significant impacts on the plants and animals of the planning area and particularly the montane swamps.

8.1.6 The use of surfactants will be restricted in the montane wetlands and swamps.

Actions

8.1.7 The Reserve Fire Management Strategy will be implemented for the planning area, and reviewed and updated in response to fire history, and changes in operational and environmental circumstances.

8.1.8 Areas disturbed by fire suppression operations will be rehabilitated as soon as practical after the fire.

8.1.9 All fires will be mapped and records maintained.

8.1.10 Manage fire within vegetation communities according to the appropriate fire thresholds to assist long-term maintenance of biodiversity as part of the ecological management strategy for fire management.

9. Visitor use

The Barrington Tops/Mount Royal area is a well-known feature in the landscape of the Hunter Valley and has been a draw card for visitors for over 100 years. Early tourists came in small numbers on horseback and since the improvements to roads there has been a steady increase in the number of visitors to the area. It is thought that visitor numbers currently exceed 100,000 people each year. Many of these visitors also shop in the surrounding towns, which is important to the regional economy. The busiest periods are around the school holidays and on the long weekends, especially at Easter (Gorrell 2001).

The planning area is an important destination for a range of visitors from the Hunter region and New South Wales. It is important in a statewide context given its iconic status as part of the Gondwana Rainforests of Australia World Heritage Area, and the large proportion that is declared wilderness. It also provides a unique opportunity to experience high altitude environments, including occasional snow falls on the plateau. Key activities that attract visitors to the planning area are the camping and vehicle based touring opportunities available adjacent to the wilderness area, and the remote walking opportunities.

The planning area offers a wide range of visitor opportunities including camping, bushwalking, vehicle touring, cycling, fishing and horse riding. In particular Barrington Tops National Park has been a popular destination for bushwalkers for well over 50 years. The planning area also includes a section of the Bicentennial National Trail (BNT). The BNT stretches from Cooktown in North Queensland to Healesville in Victoria and is available for trekkers using various forms of non-motorised transport, including walkers, horse riders and cyclists (see section 9.6). The BNT is shown on Figure 8.

Most of the roads and visitor facilities within the camping and day use areas of the planning area were established prior to gazettal when Forests NSW managed much of the area. Many of these roads remain and the facilities within the camping and day use areas still contain state forest infrastructure.

Visitor use is mainly concentrated on the Barrington Tops Plateau area. A recreation management strategy was undertaken in 2001 to develop options for the future recreation use of the Barrington Tops Plateau. This strategy investigated different recreational uses including camping, day use, bushwalking and vehicle based recreation with the aim of providing a wide range of recreational uses which were compatible, and ecologically sustainable (Gorrell 2001). This strategy has been used to guide decision making in relation to recreation management in this plan of management. The Cooperative Research Centre for Sustainable Tourism also conducted research into visitor use and satisfaction in 2001 (Archer and Griffin 2004), the results of which have informed the development of this plan.

There is increasing pressure to promote the planning area, locally, regionally and nationally, as a key visitor destination as many of the local communities of Gloucester, Scone and Dungog are relying more heavily upon the tourism industry. One of the great concerns is that current or increased visitation levels will not be sustainable with the existing level of facilities provided in the planning area, particularly in and around the more sensitive areas of the Barrington Tops Plateau. It is not known whether the current levels of visitation are sustainable. There is a need to better define what levels of visitation are appropriate in the planning area.

In the context of current visitation and the emphasis on the planning area as a key tourism destination, visitor use must be managed to ensure the natural and cultural values are maintained. Clear communication about the natural and cultural heritage values, appropriate use and enjoyment, the purpose of management, and provision of appropriate access and facilities provide the basis for managing visitor use in the planning area.

The goal of this plan is to ensure the planning area continues to provide for a diverse range of visitor experiences while protecting the natural and cultural values of the area. This will primarily

be achieved by consolidating existing visitor opportunities coupled with management to protect against impacts.

9.1 Interpretation, education and information

Background

The origin, characteristics and number of visitors to the planning area is not well recorded or known. From a number of recent studies it has been confirmed that a large proportion of visitors come from the Sydney and Hunter regions (Gorrell 2001, Archer and Griffin 2004). A smaller percentage of visitors come from country NSW and interstate, with international tourists representing a minor proportion of the overall market.

Vehicle based touring of the planning area is extremely popular. Other recreational pursuits, including bushwalking, mountain bike touring, and fishing, are often undertaken in conjunction with vehicle touring.

Information may be provided through signage, interpretative displays, education programs, self-guided walks, contact with staff, Discovery programs, links with educational institutions, and the publication of information sheets, books and brochures.

The main current methods of public contact are through:

- the provision of visitor information such as brochures and displays at tourism outlets e.g. tourist information centres, local businesses and NPWS offices
- contact with NPWS staff in the planning area
- interpretation signs
- general national park information points (for example, the NPWS web page, and the NPWS information centre).

There is a need to improve communication about the values, management and appropriate use of the planning area. Research has shown that visitors to the planning area are enjoying a relatively high degree of satisfaction with their experience, but that improved interpretation on the values, and road and track network of the planning area were needed (Archer and Griffin, 2004). The need for improved and consistent information about the planning area generated from external sources, such as tourism brochures and the internet was also identified.

Discovery and education programs have been conducted with varying degrees of success and popularity in the planning area. Priorities for promotion of this area have included encouraging appreciation and understanding by visitors of:

- the relationship of this area to other conservation areas in New South Wales
- the importance of the World Heritage listing
- wilderness values
- the importance of this area in protecting remnants of sub-alpine plant and animal communities
- Phytophthora containment strategy.

In addition to visitors, many people have expressed concern for the future of the planning area and a desire to actively participate and contribute to the management of the area. The NPWS will continue to improve communication and the involvement of the community in park management.

Issues

- The community and visitors have suggested an upgrade and increase in interpretative signage along walking tracks and in visitor areas. Of particular interest was interpretation of

plants and animals, local history, geographical and geological features, visitor safety and guidelines for visitor behaviour.

- There is a need for clear and accurate maps and directional signage for visitors.
- There is a lack of signs designating Barrington Tops National Park as a World Heritage Area.
- Educational messages that need to be promoted by NPWS include:
  - continuing to promote the importance and values of the planning area
  - the benefits of fire as an essential land management tool
  - the importance and meaning of World Heritage and wilderness areas including differing regulations
  - the dangers of and possible harm caused through feeding wildlife
  - the potential impacts of recreational activities and appropriate visitor behaviour
  - safety messages for visitors including information on equipment, clothing, emergency procedures.
- The need for clear direction for visitors on appropriate behaviour and for active enforcement of regulations and codes of conduct.
- Improved notification of closures for reasons such as snow, road works, etc.
- The need to develop cooperative solutions to boundary issues and other management problems.
- Importance of the planning area as a regional tourism destination.

Desired outcome

- Enhancement of visitor understanding and appreciation of natural and cultural values of the planning area, with visitors well-informed about appropriate use of the area and about recreational opportunities available within the planning area and across the region.

Guidelines

9.1.1 Aim to increase community understanding and appreciation of the outstanding natural and cultural values of the planning area by placing emphasis on:

- the Gondwana Rainforests of Australia World Heritage Area
- the significance of the Barrington Wilderness
- the diversity of plants and animals, in particular the sub-alpine environment
- traditional use of area by local Aboriginal people and the value to contemporary Aboriginal people
- history of the early settlement and use of the planning area and the strong historical association that many people have today
- the importance of the area to regional tourism and its popularity
- minimal recreation impact, including appropriate visitor behaviour.

9.1.2 Encourage continued community involvement in reserve management and investigate new opportunities for involvement. Such opportunities may relate to the promotion of appropriate visitor behaviour (for example, camping code of conduct), assistance with the protection and interpretation of heritage sites, assistance with threatened species protection (for example Broad-toothed rat) and monitoring impacts on the planning area.

9.1.3 Continue active participation with local and regional tourism authorities and economic development organisations in the development and implementation of regional tourism strategies, to ensure the promotion of appropriate ecologically sustainable tourism in the planning area.

9.1.4 Encourage relevant authors and publishers to liaise with NPWS staff regarding park information and encourage the promotion of appropriate use and minimal impact recreational use in publications.

Actions

9.1.5 A program to upgrade the interpretative and directional signage across the planning area will be implemented. This will include:

- upgrading existing signage to incorporate information and maps for clearer orientation for visitors, relevant interpretative information about the surrounding landscape and guidelines for appropriate visitor behaviour
- assessing the need for additional signage in some areas, for example, at primary entry points, popular walking tracks and visitor use areas
- continuing to update and improve brochures and other publications
- providing an interpretation site dedicated to Aboriginal heritage
- involving the local Aboriginal communities in the interpretation of Aboriginal cultural heritage.

9.1.6 Install signage in strategic locations which designate Barrington Tops National Park as a World Heritage Area.

9.1.7 Develop and implement a public contact and interpretation plan. This plan will:

- emphasise key themes (as identified above), particularly the conservation values of the planning area, and key messages to encourage appropriate visitor expectations and behaviour
- provide an inventory and assessment of existing interpretation material including brochures, guidebooks, interpretative displays, information on the internet and park signage
- identify gaps/weaknesses in information of this plan.

9.1.8 Hold local community days to encourage community involvement and provide information to neighbours and the surrounding community on park management issues.

9.1.9 Liaise with other organisations which provide information to park visitors to ensure all information is accurate, consistent, up to date and promotes appropriate visitor expectations and behaviour.

9.2 Vehicle access

Background

Barrington Tops and Mount Royal National Parks and Barrington Tops State Conservation Area are geographically placed within a 2-hour drive of Newcastle. There are 5 main access routes to the major visitor areas of the planning area. The Barrington Plateau is a one and a quarter hour drive from either Gloucester or Scone along the Barrington Tops Forest Road. Gloucester Tops is approximately one hour drive from Gloucester along the Gloucester Tops Road, while the Williams River area is one hour from Dungog and is accessed via Salisbury and Williams Top Forest Roads. Mount Royal National Park is approximately one hour from Singleton and is accessed by Mount Royal Road.

The road network of the planning area was initially established to meet the demands of the timber industry, summer grazing and exploration. Early development of the Barrington Plateau was confounded by the steep southern fall on the plateau making road access difficult. During World War II concern for the preservation of the Barrington Tops led to formal protests over increased

logging and road building. In 1978 Barrington Tops Forest Road, the first all-weather access road across the plateau linking the Hunter and Manning Valleys was established, giving a boost to both the tourism and timber industries.

The 1989 draft plan of management, which foreshadowed the closure of some roads and the declaration of three wilderness areas in Barrington Top National Park, sparked public debate over four-wheel drive access in the park. Many roads in the planning area had been used for approximately 50 years, including the Careys Peak Trail (also called the Corker) and Carters Brush Trail. Many people believed these trails were of historical value and should continue to be used as access routes through the Barrington Tops and in particular the plateau, while others believed these roads should be closed. In 1996–97, a review of the environmental, social and public safety issues relating to these roads was undertaken as part of the wilderness assessment. These roads were found to have local and regional heritage values, however, in order to protect wilderness values and public safety, the closure of these roads to public vehicle access was necessary.

Currently Forestry Corporation of NSW , Shire Councils and the NPWS all maintain roads providing access to the planning area. All roads leading to and in the planning area are unsealed and range from all-weather two-wheel drive to dry weather four-wheel drive standard.

Seasonal closures of some roads and trails occur on the plateau during winter (1 June to 30 September) to prevent damage to erosion prone soils. Roads subject to seasonal closure are shown in Figure 5. When undertaking seasonal and or occasional closures the access requirements of those undertaking activities not restricted by the seasonal and or occasional closure (e.g. horses, cyclists and walkers) will be considered. A management plan has been prepared to deal with seasonal and temporary road closures needed for incidents such as severe weather events. The occasional closure of other roads on the plateau also occurs during heavy snow events, which may include the Barrington Tops Forest Road (Gloucester – Scone Rd), Pheasant Creek Road and Tubrabucca Road. Williams Tops Road, in southern Barrington Tops National Park may also be closed occasionally due to high rainfall events. These closures are conducted for short periods of time to protect public safety and occur cooperatively with Forestry Corporation of NSW, Police and local councils.

The transport of animals, and in particular livestock from the surrounding land use, across the planning area is an issue.

Community discussion and opinion on what is an appropriate level of vehicle access in the planning area remains wide and varied. Improved road conditions leading to and within the planning area in conjunction with greater promotion of the area has seen a substantial increase in the volume of traffic going to the area. There has been an increase in the number of tour buses visiting the area. Snow falls on the Barrington Tops Plateau also result in a high volume of traffic visiting the area.

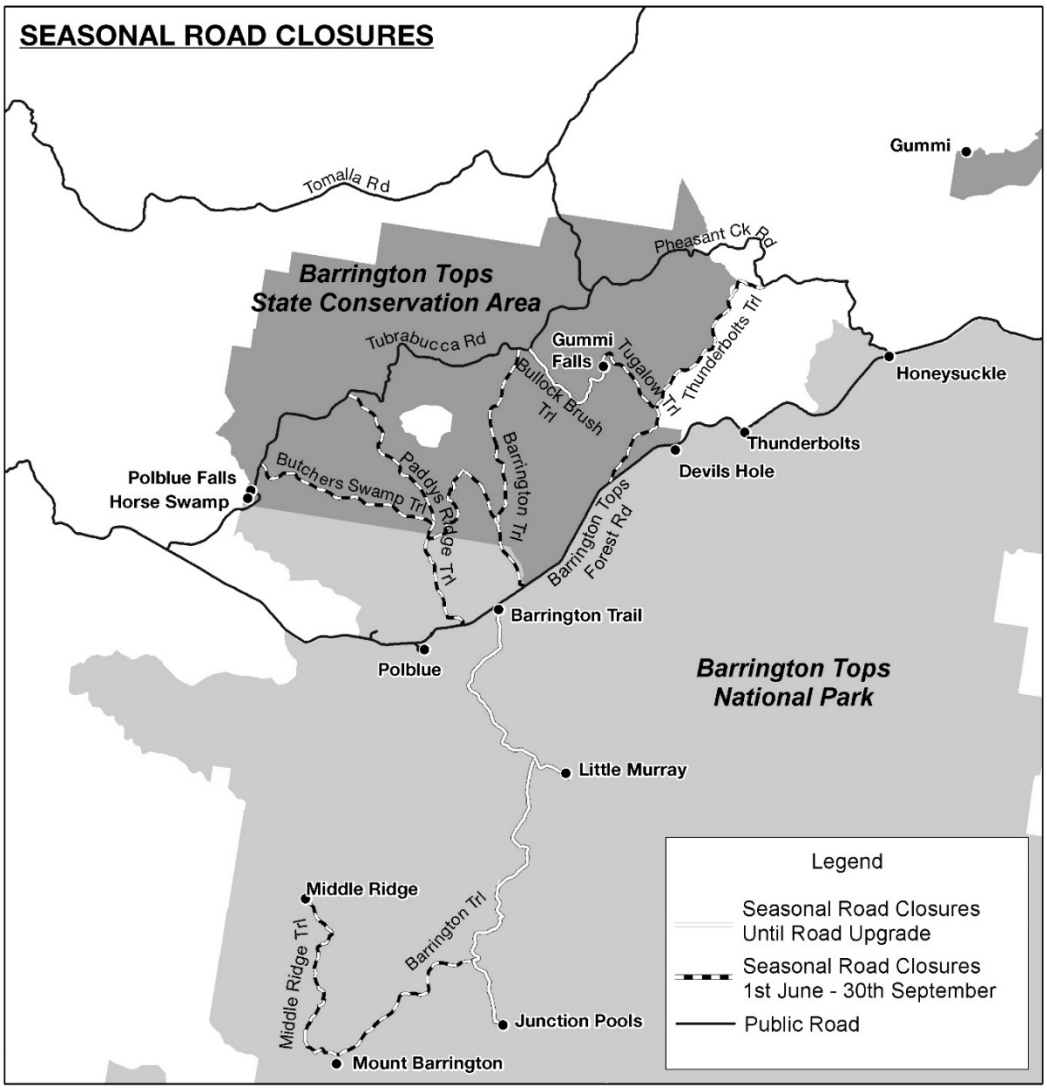


Figure 5 Seasonal road closures in the planning area

Issues

- The need to provide a range of driving experiences and destinations.
- Impact of the road network on conservation values of the area, including the potential spread of weeds and pests, especially Scotch broom and Phytophthora.
- The majority of existing unformed roads suffer from severe erosion with the passage of vehicles. Some existing unformed trails are poorly positioned and have poor drainage and design, e.g. Junction Pools Trail and Poloma Trail.
- There is potential impact of constructing new roads and ongoing road maintenance on Aboriginal sites, vegetation communities and wildlife in the planning area.
- The standard of Mount Royal Road south of Mount Royal National Park is a problem for local residents and visitors accessing the area with two-wheel drive vehicles, especially after rainfall.
- Whilst the number of logging trucks using roads in the planning area is insignificant in comparison to the total volume of traffic using these roads, logging trucks do pose a significant safety issue when travelling along the steep often winding unsealed roads in the area, especially Barrington Tops Forest Road.

- The condition of roads in the Barrington Tops Plateau area can pose a risk to motorists during the winter months when the roads may be covered in snow and/or ice.
- Road safety issues associated with sites along the Barrington Tops Forest Road, particularly with snow events and the activities of tour buses.
- There is a need for adequate parking and turn-around areas for buses and vehicles at recreational areas along the Barrington Tops Forest Road, particularly after snowfalls.
- The movement of wildlife, including feral animals such as feral horses, across roads poses a risk to motorists.
- The current lack of parking areas at Devils Hole and Honeysuckle day use areas and Thunderbolts Lookout poses a safety risk to motorists.
- There is unauthorised use of trails by vehicles and motorbikes in the wilderness areas of the planning area, especially in the Paterson River and Wangat River area.
- The Rural Fire Service has requested that the complex of trails around Strip Road (associated with Strip Trail) be maintained for firefighting purposes. These trails have high levels of visitor usage and are prone to erosion. Therefore vehicle usage needs to be controlled if they are to be maintained for fire management.
- Safety concerns about inexperienced 4WD operators and possible rescue operations.
- Maintenance of public access roads requires substantial resources and priority is generally given to roads that provide access to recognised facilities and attractions.
- There is a need for seasonal closure of some roads to ensure visitor safety and minimise damage to trails.
- Substantial resource implications are associated with implementing and maintaining road closures.
- There is the need for access agreements for some adjoining landholders that use park roads for private use and for NPWS that use some private roads to access the planning area.
- Many neighbouring property owners are concerned about public liability associated with the use of trails passing through private property.
- Some trails within the planning area have similar names (e.g. Tubrabucca Road and Tubrabucca Trail, Polblue Trail and Polblue Ridge Road), which can cause confusion for visitors and people not familiar with the area, especially during wildfires. To remove confusion, these trails need to be renamed, however, it is also recognised that these names may have historical associations.
- Illegal vehicle access can cause loss of vegetation cover, soil compaction, erosion and damage to park infrastructure. Other potential impacts associated with legal and illegal access include increased littering, weed invasion and feral animal predation.
- Increasing volume of visitor traffic and the constant need to closely manage access to roads and trails, especially 4WD trails such as the Barrington Trail.
- The transport of animals, and in particular livestock from the surrounding land use, across the planning area.

Desired outcome

- Provision of a well maintained road network that provides public access to recognised park facilities and attractions, provides management access for essential purposes, is cost effective, and minimises impacts on natural and cultural values.

Guidelines

9.2.1 Maintain the public and park roads illustrated on Figure 6 for two and four-wheel drive access. This provides 75 km of roads available for unsealed two-wheel drive access and 61 kilometres for four-wheel drive access.

9.2.2 Public and park roads may be temporarily closed to all public access, including cyclists, due to extreme weather conditions, fire events and other natural hazards.

9.2.3 The NPWS will work cooperative with other authorities to implement the management plan for seasonal and temporary road closures to deal with severe weather events like snow where roads need to be temporarily closed.

9.2.4 Appropriate environmental assessment and justification will be undertaken for any new road development.

9.2.5 The NPWS will continue to cooperate with Forestry Corporation of NSW and local councils on road maintenance programs.

9.2.6 Animals (including dogs, cats, livestock) will be permitted to be transported by vehicle through Barrington Tops National Park and Barrington Tops State Conservation Area only along Barrington Tops Forest Road, Tubrabucca Road and Pheasant Creek Road and only within the road corridor. Animals (including dogs, cats and livestock) will be permitted to be transported by vehicle through Mount Royal National Park only along Mount Royal Road and Cassels Road and only within the road corridor. The vehicles must not stop and the animals must not leave the vehicle within the reserves.

Actions

9.2.7 Maintain the public and park roads illustrated on Figure 6 to two-wheel drive and four-wheel drive standard as shown.

9.2.8 Maintain the management trails identified on Figure 6, including the Strip Road complex associated with the Strip Trail, for management purposes only, including fire and pest management and emergency access.

9.2.9 Close and rehabilitate all trails not shown on Figure 6.

9.2.10 Roads identified in Figure 5 will be subject to seasonal closures to motorised vehicles between 1 June and 30 September for the purposes of visitor safety and to minimise damage to trails during the wetter periods of the year.

9.2.11 The Barrington Trail south of Barrington Tops Forest Road will remain seasonally closed from 1 June to 30 September until the road between Barrington Tops Forest Road and Junction Pools is improved. Following road improvement this section of road will be open all year round, while the Barrington Trail from Junction Pools turn-off to Middle Ridge Day Use Area will be seasonally closed (see Figure 5).

9.2.12 Better signage to explain seasonal road closures will be developed and installed.

9.2.13 Monitor all trails for detrimental environmental impacts and, where necessary undertake appropriate maintenance.

9.2.14 Due to the infestation of Phytophthora along the Watergauge Trail, it will remain as a management trail with restricted NPWS access. The trail will also be investigated to determine if it should be permanently closed and rehabilitated in the future.

9.2.15 The degraded or eroded section of Junction Pools Trail and Poloma Trail will be redesigned. If required, minor roadworks will be carried out to reroute the trail and the closed section of the road will be rehabilitated.

9.2.16 Ensure all non-NPWS uses and occupancies of NPWS land are authorised in accordance with Part 12 of the NPW Act.

9.2.17 Develop a strategy to deal with buses using the Barrington Tops Plateau (including bus parking) with other relevant authorities.

9.2.18 Provide improved car parking at Thunderbolts Lookout (up to a total of 5 car spaces) and Honeysuckle Day Use Area (up to 10 car spaces).

9.2.19 Undertake actions to maintain closures for unauthorised use of trails in wilderness areas, in particular the Paterson River and Wangat River area.

9.2.20 Investigate and if feasible rename (or possibly dual name, to retain historical value) Polblue Trail, Tubrabucca Trail, and Strip Road complex associated with the Strip Trail using local Aboriginal names.

9.2.21 Investigate the potential for declaring Barrington Tops Forest Road a regional road to improve resource allocation for maintenance.

9.2.22 Investigate and if feasible develop a traffic management plan for key visitation areas, including Polblue, to address traffic management issues including pedestrian safety.

9.2.23 Prepare and implement a reserve access strategy to secure park access for public use and management purposes.

9.2.24 Identify and seek to correct boundary errors, boundary encroachments and proposed section 188C boundary adjustments as identified in the reserve access strategy.

9.3 Camping

Background

Forests NSW developed many of the camping areas within the planning area when the area was under their management. Over time, these areas developed an established clientele and pattern of use. This clientele were mainly four-wheel drive vehicle based campers who drove the many trails as part of recreation. With the transfer of management to NPWS there has been an associated change in management focus to biodiversity conservation which has led to some conflict with visitors.

There are currently 11 camping areas, primarily in the northern part of the planning area. These areas range from large, developed camping areas with high quality amenities and facilities like toilets, gas BBQs and visitor information (e.g. Gloucester River and Polblue) to very basic and often remote camping areas with little or no facilities (e.g. Wombat Creek and Gummi Falls). There are 7 recognised and managed camping areas in the Barrington/Chichester area and 7 day use/picnic areas which complement the opportunities provided in the national park and state conservation.

The NPWS aims to offer camping and recreational opportunities complementary to, yet different from, those provided elsewhere in the region. It also aims to maintain a range of opportunities within the planning area so as to provide for a range of visitors and to ensure that camping and day use areas are not located within areas of high conservation value.

The key intent for camping under this plan is to continue to maintain a relatively large number of existing camping opportunities. To minimise visitor impacts, the NPWS intends to formalise some of the campsites, provide appropriate facilities and visitor education, and improve law enforcement.

Issues

- There is a need to provide a range of camping experiences within the planning area and to ensure that facilities at each location are appropriate to camper numbers, recreational settings and environmental constraints.
- There is a need to provide cost-effective management and servicing of camping areas to ensure that visitor expectations are met in respect of appropriate management of visitor behaviour, and to reduce conflicts between visitors.
- There is a broad range of community opinion on what facilities should be provided in the planning area. Opinions range between those wanting less developed areas to the continued provision of car-based and caravan/camper trailer camping opportunities, to the formalisation of campsites to minimise impacts, possible provision of permanent tents or structures for campers and the need for camping areas in the southern part of Barrington Tops National Park.
- Members of the Aboriginal community have expressed a desire for the establishment of one or more culture camps.
- The current toilet facilities in many camping areas may have a severe negative impact on the ground and surface water.
- There is inconsistent style and condition of facilities provided in areas, with many areas still containing old state forest infrastructure which is run down and needs replacing.
- Firewood provision places a high resource commitment on the NPWS that may not be sustainable in the long-term.
- As part of implementing the Phytophthora containment strategy Big Hole Camping Area has been closed.
- Tubrabucca Flats camping area has been closed due to its remoteness, difficultly in servicing and the unruly behaviour of campers.
- Some camping areas (e.g. Polblue, Devils Hole, Junction Pools) are located within or in close proximity to fragile environments like the montane swamps and woodlands, which contain many rare and threatened species. Increased damage to the vegetation within and surrounding these areas by visitors potentially threatens the long-term survival of these species.
- Damage is caused to vegetation through the collection of firewood (both ‘live’ and ‘dead’ material) and the use of vegetation to secure tents. This also results in loss of understorey and regrowth, and impacts on wildlife.
- Damaged caused by the continued use of wood fires in camping areas has resulted in multiple fire scars, and the loss of vegetation.
- Carrying capacities (limits to number of campsites) for each camping area have not been defined.
- Consideration should be given to implementation of camping fees to assist with the maintenance of camping areas.

Desired outcome

- Provision of a range of camping opportunities that are consistent with the objectives of protecting the natural and cultural values of the planning area.

Guidelines

9.3.1 Permit bush camping more than 200 metres from a public road or walking track throughout the planning area, except in the Phytophthora quarantine area.

9.3.2 Promote minimum-impact camping techniques in association with relevant interest groups.

9.3.3 Only permit wood fires in camping areas within provided barbecue places or communal fire places (see Table 2).

9.3.4 Undertake rehabilitation works in camping areas as necessary to protect the natural environment in particular threatened species.

9.3.4b Configure and manage facilities in camping areas in accordance with Table 2.

Actions

9.3.5 Provide 11 designated camping areas as outlined in Table 2 and on Figure 7. All other camping locations will be closed and rehabilitated. No camping areas will be provided in the southern area of Barrington Tops National Park, as there are opportunities for camping in the adjacent Chichester State Forest.

9.3.6 Manage campsites and provide facilities in accordance with proposed camping specifications outlined in Table 2.

9.3.7 Vehicular access to Polblue Overflow and Gloucester River Overflow camping areas will be restricted to peak periods (i.e., school holidays and long weekends).

9.3.8 Horse camping will only be permitted at the Cascades Camping Area on the Manning River.

9.3.9 Investigate and install communal fireplaces in Horse Swamp, Little Murray, Devils Hole and Gloucester River camping areas to reduce the impact of multiple fire scars.

9.3.10 Introduce camping fees for some camping areas.

9.3.11 Assess and monitor environmental impacts and visitor use patterns in all camping areas to enable the NPWS to make future management decisions about the provision of facilities, site protection, and protection of endangered ecological communities and rare and threatened species.

9.3.12 Opportunities for Aboriginal cultural camps may be provided within identified camping areas. Proposals for new Aboriginal cultural camp locations will be considered subject to appropriate assessment and a plan amendment.

Table 2 Camping area facilities

Designated camping area	Maximum number of campsites (1)	2WD vehicular access	4WD vehicular access	Large Caravans / Campervans permitted	Small caravans / camper trailers permitted (2)	Horse camping permitted	Toilet facilities	Gas BBQs	Woodfires permitted in fireplaces (3)	Communal fireplace (4)	Tables	Information panels / shelter
Polblue	60	Y		Y	Y		Y	Y	Y	Y	Y	Y
Polblue Overflow	5	Y		N	Y				P			
Gloucester River	25	Y		Y	Y		Y	Y	Y	P	Y	Y
Gloucester River Overflow	5	Y		N	Y		Y					
Horse Swamp	8	Y		Y	Y		Y	P	Y			Y
Devils Hole	5	Y		N	Y		P		Y			
Youngville	4	Y					Y	Y	Y		Y	Y
Cascades	3		Y			Y			P			
Little Murray	10		Y	N	Y		Y		Y		Y	
Junction Pools	10		Y	N			Y		Y			
Gummi Falls	20		Y	N	Y		Y		P		P	Y
Wombat Creek (remote, walking access only)	5						Y		Y			
Black Swamp (remote, walking access only)	5						P		Y			

Y – facility provided, P - facility proposed, N – not permitted

1 – campsites at camping areas with vehicle access will accommodate 6 people and campsites at camping areas with walking access only will accommodate 2 people

2 – infrastructure (roads, vehicle parking and turning bays) will not accommodate large caravans

3 – fireplaces may be shared between multiple campsites

4 – communal fireplaces are larger fireplaces associated with shelter infrastructure.

9.4 Day use

There are currently 20 day use areas within the planning area with a range of facilities provided. All of the day use areas (except Youngville and Gloucester River) are separate from camping areas to reduce the potential conflict between users. There are 13 additional day use areas in the adjacent state forest and Hunter Water Corporation areas, which complement the day use areas provided in the planning area.

Because of the topographical nature of the planning area, it offers opportunities for views from vantage points into the surrounding valleys. There are a number of existing lookouts promoted across the area, which range from developed (e.g., Devils Hole) to basic with no infrastructure (e.g., Mount Barrington). Management of views, visitor safety and minimising environmental impacts are the major management considerations for these lookouts. In particular, Burraga Swamp, which is within the wilderness area, has suffered from uncontrolled visitor access onto the fragile swamp environment. In 1988, a severe windstorm left Cobark Park and Moppy Day Use Area unsafe for visitors. Forests NSW, who managed these areas at the time, were forced to close these sites. Cobark Park was a popular visitor destination with camping, day use facilities and a walking track.

Issues

- Some of the current day use areas do not have facilities appropriate to the primary function of the area.
- Day use areas have been developed over time without due regard to the quality of visitor experience.
- There is a need to provide a range of day use experiences within the planning area and to ensure that facilities within these locations are appropriate to day use numbers, recreational settings and environmental constraints.
- Lack of day use facilities for visitors entering the planning area from the east along the Barrington Tops Forest Road.
- A severe windstorm resulted in irreversible track damage at Moppy Day Use Area and the area is no longer viable due to safety issues.
- Toilet facilities need to be located at day use areas to ensure that there is minimal impact on groundwater and, subsequently, surface water.
- There are inconsistent types or styles and conditions of facilities provided in some areas, with many areas still containing old state forest infrastructure, which is in poor condition and needs replacement.
- Firewood provision places a heavy resource commitment on the NPWS that may not be sustainable in the long-term.
- There is a need for maintenance of views from lookouts, especially Mount Barrington.
- To address safety issues, minimise environmental impact and provide quality views, lookout platforms are required at Andrew Laurie Lookout along the Gloucester Falls track, Cobark Park, Thunderbolts, Jerusalem Creek and at Mount Barrington.
- There are 2 day use areas, Burraga Swamp and Careys Peak, which are within the wilderness boundary. Future works will be required in these areas to protect the sensitive environments and manage visitor access.
- Burraga Swamp is within declared wilderness. There may be a need to provide facilities such as a viewing platform to protect the fragile swamp environment from uncontrolled visitor access subject to environmental assessment that considers relevant policies and legislation including the Wilderness Act and NPWS Wilderness Policy and appropriate approvals.
- Careys Peak is within declared wilderness. There is a need to undertake maintenance of the lookout structure, including replacement of the barrier and vegetation pruning.

- The potential for visitors to spread Phytophthora throughout the planning area, especially in the vicinity of Big Hole is a major concern.
- The location of some day use areas (e.g., Polblue) are within or in close proximity to fragile environments like the montane swamps and woodlands, which contain many rare and threatened species. Damage to the vegetation within and surrounding these areas by visitors potentially threatens the long-term survival of these species.
- Damage is caused to vegetation through the collection of firewood (both 'live' and 'dead' material), that results in loss of understorey and regrowth, and impacts on wildlife.
- Damage caused by the continued use of wood fires in day use areas has resulted in multiple fire scars, and the loss of vegetation.
- Impact of visitors in popular destinations within or immediately adjacent to wilderness areas such as Careys Peak and Burraga Swamp.
- Carrying capacity of each day use area has not been defined.

Desired outcome

- Provision of a range of day use opportunities, in a diversity of natural settings, with minimal unacceptable environmental impact.

Guidelines

9.4.1 Undertake rehabilitation works in day use areas as necessary to protect the natural environment in particular threatened species.

9.4.2 Permit wood fires only in day use areas where barbecue places are provided (see Table 3).

9.4.2b Configure and manage facilities in day use areas in accordance with Table 3.

Actions

9.4.3 Provide 21 designated day use areas in the locations shown in Figure 7 and in accordance with the functions, level of facilities and site capacity defined in Table 3. This involves the addition of day use areas at Carters Brook and Middle Ridge.

9.4.4 Re-establish a day use facility at Cobark Park to provide car and bus parking, interpretative signage, walking track, toilets, picnic facilities and a lookout platform. This area will provide one of the primary entry points into Barrington Tops National Park.

9.4.5 Due to safety issues, close and rehabilitate the Moppy Day Use Area.

9.4.6 Provide lookout platforms at Cobark Park and Mount Barrington. Also investigate and where possible upgrade the lookouts at Andrew Laurie Lookout along the Gloucester Falls track, the Gloucester Falls, Jerusalem Creek and Thunderbolts.

9.4.7 Seek approval to a minor redefinition of the wilderness boundary to exclude the eastern section of Blue Gum Loop Walking Track near Williams River (refer also to section 9.5 Walking Tracks).

9.4.8 Investigate and install a low key viewing platform and an interpretation panel at Burraga Swamp to protect the fragile swamp environment subject to environmental assessment that considers relevant policies and legislation, including the Wilderness Act and NPWS Wilderness Policy and appropriate approvals.

9.4.9 Undertake maintenance of the lookout structure at Careys Peak including maintenance of the barrier and pruning of vegetation, subject to appropriate approvals.

9.4.10 Continue to prune vegetation at Andrew Laurie, Devils Hole, Thunderbolts, Mount Barrington and Jerusalem Creek lookouts, as required to maintain existing views.

9.4.11 Assess and monitor environmental impacts and visitor use patterns in day use areas to enable the NPWS to make future management decisions about the provision of facilities and site protection in these areas.

9.4.12 Investigate and if feasible rename (or possibly dual name, to retain historical value) Gummi day use area using local Aboriginal names.

Photo 5 Polblue campground and picnic area. John Spencer/DPE

Table 3 Day use facilities

Designated day use area	2WD vehicular access	4WD vehicular access	Gas BBQs	Woodfires permitted in fireplaces	Toilet facilities	Information panels / shelter	Tables	Disabled access	Lookout / viewing platform
Gloucester Tops	Y				Y	Y	Y		Y
Polblue	Y		Y		Y	Y	Y	Y	
Honeysuckle	Y			Y	Y	Y	Y		
Devils Hole	Y			Y	Y	Y	Y	Y	Y
Williams River	Y		Y		Y	Y	Y	Y	Y
Cobark Park	Y				P	Y	Y		P
Youngville	Y		Y	Y	Y	Y	Y		
Gloucester River	Y		Y	Y	Y	Y	Y		
Thunderbolts Lookout	Y								Y
Jerusalem Creek	Y		Y		Y	Y	Y		Y
Polblue Falls	Y					Y	Y		
Barrington Trail	Y					Y	Y		
Lagoon Pinch	Y					Y	Y		
Williams Top	Y					Y	Y		
Burraga Swamp		Y				P			P
Gummi	Y			Y			Y		
Gummi Falls		Y		Y	P	P	P		
Youngs Trail	Y					Y	Y		
Mount Barrington		Y			P	P	P		P
Middle Ridge		Y					P		
Carters Brook		Y					P		
Careys Peak									Y

Y – facility provided, P – facility proposed

9.5 Walking tracks

Background

The planning area offers over 120 km of walks of short, medium or long duration, including overnight walks. These walks allow visitors to experience and enjoy a range of features which are representative of the area's natural and cultural heritage.

The area can effectively be broken into three main sections: the northern, eastern and southern sections of the planning area:

- The **northern section** provides a network of short and long walking tracks. These consist of short walks off the Barrington Tops Forest Road. A network of longer tracks to the south of the plateau is also provided. Many of these trails provide a link to some of the overnight walks linking to the eastern and southern section of the planning area. A number of walking trails in the northern section are included in the BNT route.
- The **eastern section** provides a series of short walks around Gloucester River camping and day use areas as well as a network of short walks at Gloucester Tops. Longer overnight walks to the northern and southern sections of the planning area also link up from Gloucester Tops.
- In the **southern section** a primary link is provided by the Corker Trail to both the northern and eastern sections of the planning area. A series of shorter walks are provided in the vicinity of the Williams River, but also at Burraga Swamp and Jerusalem Creek. Within Mount Royal there are three walking tracks, one of which is a rough track to Pieries Peak. The other two walking tracks, Carrow Brook Walking Track, provides a loop walk from the Mount Royal Road east to Carrow Brook and Youngs Road Walking Track to the north-east, providing access to Boonabilla Creek.

Members of the community have proposed that an elevated walkway, the Lyrebird Creek Skyway be constructed near the Williams River in Barrington Tops National Park. The proposed walkway was inspired by similar structures in other states. The aim of this proposal was to increase the tourism potential for the area. A concept plan has been prepared for the walkway.

The 'Tops to Myall Heritage Trail' uses a number of management trails and walking trails in the planning area from the Barrington Trail to the Mountaineer. This route was promoted by the Tea Gardens Lions Club and covers about 220 km from Barrington Tops to Hawks Nest. Walkers throughout the year use Selby Alley and Munro's Huts. The inscriptions in the log books of both huts indicates they receive only low levels of visitation. This is due to the fact few people know where the huts are as they are not sign posted along the trails.

Issues

- Members of the community have expressed a desire for a range of walking opportunities from disabled access, easy walks to medium walks and long walks that provide opportunities for solitude and self-reliance.
- Walks need to be graded to enable people to choose walks that suit their abilities and experience.
- The lack of short to medium walking tracks on the plateau, particularly in the Barrington Tops State Conservation Area.
- The provision of additional facilities along walking tracks, including seats, upgrade of directional and interpretative signage and a footbridge at Bobs Crossing were suggested by some members of the community.

- Need to improve visitor safety, amenity and fragile environments threatened by degraded walking tracks (e.g., Polblue Swamp, Jerusalem Creek, Gloucester River, Gloucester Falls (Gloucester Tops) walking tracks).
- The occurrence of Phytophthora along the Watergauge Trail in the vicinity of Bob's Crossing potentially threatens vegetation communities elsewhere in the planning area with the spread of Phytophthora along the trails (see section 7.3).
- Need to improve management of long distance walkers and walking groups.
- Burraga Swamp Walking Track, Careys Peak Lookout Track and William River – Blue Gum Loop Track are within wilderness areas. There is a need to improve facilities in these locations to protect the environment and to manage visitor access.
- Many overnight walkers are inadequately prepared which often results in search and rescue operations.
- Consideration of the proposed Lyrebird Creek Skyway in the Williams River.

Desired outcome

- Provision of walking opportunities within a range of settings for walks, the use of which is sustainable and does not cause unacceptable environmental impact.

Action

9.5.1 Maintain the walking trails identified in Figure 7, according to the Australian Standards set out in Table 4.

9.5.2 Walking will not be permitted on the Watergauge Trail between Little Murray and Black Swamp and the Brumlow Swamp Trail as part of the Phytophthora containment strategy. Signs will be erected to show this trail is closed to all public access (see Section 7.3).

9.5.3 Upgrade Polblue Swamp, Gloucester River, Gloucester Tops and Jerusalem Creek walking tracks to improve visitor safety, amenity and protect fragile environments.

9.5.4 Investigate and where feasible re-establish the walking track at Cobark Park Day Use Area.

9.5.5 Burraga Swamp Walking Track is within declared wilderness. There may be a need to upgrade the walking track and manage visitor access to protect sensitive environments, subject to environmental assessment that considers relevant policies and legislation, including the Wilderness Act and NPWS Wilderness Policy and appropriate approvals.

9.5.6 Careys Peak Lookout Track is within the declared wilderness. There is a need to undertake ongoing maintenance and potentially upgrade the walking track, subject to environmental assessment that considers relevant policies and legislation, including the Wilderness Act and NPWS Wilderness Policy and appropriate approvals.

9.5.7 The eastern section of the Blue Gum Loop Walking Track is within declared wilderness. There is a need to undertake ongoing maintenance and/or replacement of existing facilities including raised walkways, staircases and bridges, subject to environmental assessment that considers relevant policies and legislation, including the Wilderness Act and NPWS Wilderness Policy and appropriate approvals.

9.5.8 Investigate the provision of walking tracks in the Barrington Tops State Conservation Area including short to medium walks to features areas such as Paddys Brush and Tubrabucca Flats.

9.5.9 Investigate and where appropriate provide improved directional signage along walking tracks, concentrating on primary trail junctions, along with the installation of track-side

interpretative signage along walking tracks including Polblue Swamp, Honeysuckle, Cobark Park, Burraga Swamp, Gloucester Tops and Jerusalem Creek.

9.5.10 Subject to funding and appropriate environmental assessment, allow for a skyway to be built in the Williams River area.

9.5.11 Munro and Selby Alley Huts will be maintained for use by bushwalkers. The impact of bushwalkers on the huts will be monitored. Any works undertaken will be in accordance with the Heritage Action Statements for Selby Alley and Munro Huts (see section 6.2).

9.5.12 Develop and publicly exhibit a Mount Royal National Park Walking Track Strategy. Establish and maintain walking tracks and visitor facilities in line with the strategy, subject to environmental assessments and economic feasibility. Review and update the strategy as required.

Table 4 Walking tracks

No.	Walking Track	Distance	Current Standard	Proposed Standard
	Northern Section			
1	Barrington Tops Forest Road: Honeysuckle Forest Track	1km loop	Hiking Track (Class 4)	Walking Track (Class 3)
2	Barrington Tops Forest Road: Thunderbolts Lookout Track	400m return	Hiking Track (Class 4)	Walking Track (Class 3)
3	Barrington Tops Forest Road: Devils Hole Lookout	200m return	Graded Path (Class 2)	Graded Path (Class 2)
4	Barrington Tops Forest Road: Polblue Swamp Track	2.8km loop	Hiking Track (Class 4)	Graded Path (Class 2)
5	Barrington Tops Plateau to Mount Barrington (Management trails)	16.5km	Hiking Track (Class 4)	Hiking Track (Class 4)
6	Barrington Tops Plateau: Edwards Swamp Trail (Management Trail)	7km	Hiking Track (Class 4)	Hiking Track (Class 4)
7	Barrington Tops Plateau: Aeroplane Hill Track	5.5km	Marked Route (Class 5)	Hiking Track (Class 4)
8	Barrington Tops Plateau: Careys Peak Trail (Management Trail)	7km	Hiking Track (Class 4)	Hiking Track (Class 4)
8A	Barrington Tops Plateau: Careys Peak Lookout Track	250m	Walking Track (Class 3)	Walking Track (Class 3)
9	Barrington Tops Plateau: Polblue Falls	200m return	NA	Walking Track (Class 3)
10	Barrington Tops Plateau: Horse Swamp Camping Area to Polblue Falls Picnic Area	150m	NA	Walking Track (Class 3)
	Eastern Section			
11	Gloucester River: Gloucester River Track	2.5km	Hiking Track (Class 4)	Hiking Track (Class 4)
12	Gloucester River: Sharpes Creek Track	4.5km loop	Hiking Track (Class 4)	Hiking Track (Class 4)
13	Gloucester Tops: Antarctic Beech Forest Track	1km loop	Hiking Track (Class 4)	Hiking Track (Class 4)
14	Gloucester Tops: Gloucester Falls Track	1.5km loop	Walking Track (Class 3)	Walking Track (Class 3)
15	Gloucester Tops: River Track	2.5km loop	Hiking Track (Class 4)	Hiking Track (Class 4)
16	Gloucester Tops: Link Trail (Management Trail)	17km	Hiking Track (Class 4)	Hiking Track (Class 4)

No.	Walking Track	Distance	Current Standard	Proposed Standard
	Southern Section			
17	Williams River: Blue Gum Loop Track	3.5km loop	Walking Track (Class 3)	Walking Track (Class 3)
18	Williams River: Rocky Crossing Track	16km return	Hiking Track (Class 4)	Walking Track (Class 3)
19	The Corker Trail	20km return	Hiking Track (Class 4)	Hiking Track (Class 4)
20	Mount Nelson Trail (Management Trail)	7km	Hiking Track (Class 4)	Hiking Track (Class 4)
21	Glowang Trail (Management Trail)	6km	Hiking Track (Class 4)	Hiking Track (Class 4)
22	Mountaineer Trail (Management Trail)	15km	Hiking Track (Class 4)	Hiking Track (Class 4)
23	Jerusalem Creek Track	2km return	Hiking Track (Class 4)	Walking Track (Class 3)
24	Mount Allyn: Burraga Swamp Track	2km return	Marked Route (Class 5)	Walking Track (Class 3)
25	Mount Royal: Pieries Peak Walking Track	2.6km return	Marked Route (Class 5)	Hiking Track (Class 4)
26	Mount Royal: Carrow Brook Walking Track	6.1km loop	Hiking Track (Class 4)	Hiking Track (Class 4)
27	Mount Royal: Youngs Trail Walking Track	10.8km return	Hiking Track (Class 4)	Hiking Track (Class 4)

No: refers to numbering system for walking tracks on Figure 7.

Walking Track Classification System AS 2156.1. There are six classes of walking tracks outlined in this standard with Class 1 being the most developed and suitable for all access through to Class 6 which is an unmarked route.

9.6 Horse riding

Background

Horse riding has a long history associated with the planning area, where for nearly 100 years it was the predominant form of transport for grazing and other interests. In the early part of this century the first tourists to Barrington Tops used the bridle trails to reach the plateau.

Opportunities for horse riding elsewhere in the region are considerable, including extensive areas of state forests and private property. There are also a number of commercial horse riding operators within the surrounding area.

The BNT passes through the planning area. Management and use of the BNT occurs under a Memorandum of Understanding (MoU) with the BNT Board and NPWS, which aims to provide guiding principles and establish a framework for a cooperative working relationship. Management and use of the BNT within the planning area will be consistent with this plan of management and with general NPWS policies.

The original route of the BNT ran through both Barrington Tops National Park and Barrington Tops State Conservation Area (which was state forest at the time). However, this route has not been used for some years due to difficulties with the trail further to the north, with the trail by-passing the Barrington Tops altogether. Negotiations have been undertaken with the NPWS and the BNT Board to bring the BNT through the Barrington Tops, using as much of the original route as possible. A new section of the BNT route has been identified in the planning area, in consultation with the BNT Board, which follows sections of the original route. Overnight camping with horses is permitted at Cascades Camping Area (see section 9.3), which is on the BNT route.

Issues

- Conflict within the community, with some people asking for a greater recognition and promotion of horse riding, including the BNT, while others feel it is an inappropriate activity within a national park.
- Horse riding has the potential to cause environmental impacts such as soil erosion, soil compaction, and the introduction and spread of weeds. There is evidence to suggest that horses may also be capable of spreading Scotch broom.
- The fragile swamp environments of Barrington Tops are very susceptible to damage from horses, particularly given the high concentration of rare and endangered plant and animal species in the area. Consequently, a conflict exists between the use of the plateau by horse riders and the objective of protecting the high ecological values of the area.
- Some members of the community believe that by allowing horse riders access to all trails throughout the planning area (including wilderness areas) it will assist in spreading the impact of horse riding across the landscape, not concentrating it to certain areas.
- Under the NPWS Wilderness Policy, horse riding is not permitted in wilderness areas.
- There is potential for conflict with other visitors such as bush walkers and campers, particularly around camping areas and on narrow tracks.

Desired outcome

- Provision of horse riding opportunities in the planning area, consistent with the objectives of protecting the natural and cultural values (particularly the montane swamps and grasslands), minimising conflicts with other users and ensuring appropriate levels of visitor safety.

Guidelines

9.6.1 Horse riding will be permitted in Barrington Tops State Conservation Area on the Bicentennial National Trail along Tubrabucca Road, Butchers Swamp Trail, Paddys Ridge Trail, Green Gap Trail, Barrington Trail – Central, Pheasant Creek Road and Gummi Road; and on Tubrabucca Road, Bullock Brush Trail, Tugalow Trail, Thunderbolts Trail and Wombat trail; and in Mount Royal National Park on Mount Royal Road, Cassels Road and Cedar, Timberlea and Bunyip trails. Horses will only be permitted within the road corridor of all these designated trails as shown on Figure 8.

9.6.2 Camping with horses will only be permitted at Cascade Camping Area (see section 9.3, Figures 7 and 8, Table 2) and subject to the following conditions:

- processed feeds or cracked grain may be used to feed horses but not hay
- horses are to be tethered at least 20 metres from the Manning River
- horses are to be tethered or contained in temporary yards overnight
- temporary yards must be erected at least 20 metres from the river – temporary yards will be constructed of electric fencing tape, and the yards are to be removed when the camping area is vacated.

9.6.3 Horse riding activities involving more than 10 people, that is part of an organised competition, non-commercial event, or a commercial activity require written consent from the NPWS. Provision of a risk assessment and appropriate public liability insurance will be a requirement for consent.

Actions

9.6.4 Develop and implement a Code of Practice for horse riding which will address matters such as the use of yards and tethers, mandatory holding distance from water sources, feed, environmental protection, safety, camping guidelines and interactions with other park users.

9.6.5 Impacts of horse riding on trails will be monitored and those areas showing signs of erosion or weed impact may be closed for rehabilitation.

9.7 Cycling

Background

Cycling is becoming an increasingly popular activity in the planning area, particularly with the increased popularity of mountain bike riding. The flatter areas of the plateau provide opportunities for less experienced riders and families. The long and somewhat steeper management trails of the central part of the planning area offer more challenging opportunities for more experienced riders. The BNT passes through the planning area and is available for cycling.

Issues

- Conflict may arise with other visitor uses such as bushwalking, vehicle touring and horse riding.
- Cycling may pose a significant safety hazard for walkers in areas where there is high speed cycling on downhill trails, e.g. The Corker.
- Conflicts may also exist where trails exit the reserves onto private property where landholders do not consent to public use.

- The occurrence of Phytophthora along the Watergauge Trail in the vicinity of Bob's Crossing, potentially threatens vegetation communities elsewhere in the planning area through the spread of Phytophthora along the trails used by cyclists (see section 7.3).
- Cycling causes damage to trail surfaces, including erosion (especially on steep sections of trails and in wet conditions).
- Vegetation damage and destruction resulting in the creation of new tracks and associated erosion problems (common where cyclists cut corners).
- Cycling may also introduce or spread weeds, in particular Scotch broom. In accordance with NPWS policy, management trails available for cycling will be signposted in strategic locations.

Desired outcome

- Provision of high quality and safe opportunities for recreational cycling, which are consistent with the objectives for the protection of the area's natural and cultural values.

Guidelines

9.7.1 Cycling will only be permitted on the BNT, roads and trails shown on Figure 8.

9.7.2 Cycling will not be permitted on the Watergauge Trail because of the potential for cyclists to spread Phytophthora throughout the planning area (see section 7.3).

9.7.3 Cycling is not permitted on single track walking tracks in the planning area consistent with NPWS policy.

9.7.4 Cycling on Youngs Trail is not permitted east of Shalley Hill.

Action

9.7.5 Trails will be monitored and if there are risks to other users or other inappropriate activities that damage the park, these trails will be closed to cycling.

9.8 Fishing

Background

Historically, fishing has been a popular past time for many visitors. Some of the earliest recreational uses of the Barrington Tops area were for trout fishing (Forestry Commission of NSW, 1984). Fishing is mostly concentrated on the streams and rivers of the Barrington Tops Plateau in the north of the planning area.

Whilst the NPWS have legal responsibility for the waterways within the planning area, under the *Fisheries Management Act 1994* are legally responsible for all fish and fish habitats in all waters in New South Wales.

Trout fishing is particularly popular and restocking of streams mainly in the northern part of Barrington Tops has occurred for over 50 years. Acclimatisation Societies undertake the restocking of streams annually in spring, under the direction of Department of Primary Industries (Fishing). Many of the streams on the plateau and those flowing into the Manning and Hunter River catchments are stocked with rainbow trout. Sites designated for stocking are on the periphery of the planning area and included Polblue Creek, Tubrabucca Creek, Backwater Creek, Manning River and Carters Brook. None of these streams are within or flow into declared wilderness or World Heritage areas (DPI, 2005). The fishing season for general trout streams is from Saturday morning of the October long weekend to Monday night of the June long weekend.

In addition to regulating the fishing season, Department of Primary Industries (Fishing) regulate the bag limits and permitted fishing gear.

Issues

- Many members of the community would like to see continuity of fishing opportunities, including access to popular fishing sites. Continued restocking of the streams with trout has also been requested.
- The impact of stocking of introduced trout on native fish species is unknown as restocking has been done for over 50 years. It is possible that restocking with trout has led to the elimination of the smaller native galaxiid species, which are normally abundant in mountain streams of northern NSW but are not well recorded in the planning area (Hardwick et al. 1995).
- Limited supervision or overseeing of Acclimatisation Societies stocking fish in the planning area could result in fish being released into streams not authorised by DPI Fisheries.
- If introduced trout were released into areas that have never been stocked before (especially streams in wilderness or World Heritage areas), then it is likely that the introduced trout will have a significant impact on the smaller native galaxiid species.
- There is potential impact on invertebrate life cycles through the introduction of exotic fish species and removal of native species.
- The movement of people fishing along creeks and rivers may also contribute to the spread of weeds, especially Scotch broom.
- NSW Fisheries (DPI 2005) developed the NSW Freshwater Fish Stocking Fishery Management Strategy, which specifies that no harvest stocking of fish species will occur within the declared wilderness or world heritage areas.
- Disturbance of swamp foreshores may threaten *Crenoicus harrisoni* populations.
- The collection of native invertebrates is a potential threat to the biodiversity of the planning area.
- There is a high potential for localised damage and destruction of riparian vegetation and riverbank erosion at popular fishing locations.
- The creation of informal riverbank walking tracks can lead to soil erosion.

Desired outcome

- Provision of opportunities for recreational fishing in the planning area, which do not compromise the natural and cultural values of the area.

Guidelines

9.8.1 Fishing activities will be jointly managed with Department of Primary Industries (Fishing).

9.8.2 The collection of animals, including amphibians, amphibious mammals and amphibious reptiles and the introduction of live bait into the planning area is prohibited.

9.8.3 The restocking of exotic fish species (rainbow trout) in the planning area will continue in Polblue Creek, Tubrabucca Creek, Backwater Creek, Manning River and Carters Brook as nominated by Department of Primary Industries (Fishing). In accordance with NSW Freshwater Fish Stocking Fishery Management Strategy (DPI 2005), no harvest stocking of fish species will occur within the declared wilderness and World Heritage areas. No streams within or flowing into declared wilderness or World Heritage areas will be stocked with trout or any introduced fish species. The NPWS will work cooperatively with

Department of Primary Industries (Fishing) to ensure stocking is undertaken in accordance with the *Fisheries Management Act 1994* (s216).

9.8.4 Encourage the restocking of streams with locally endemic fish species rather than introduced species in accordance with the Fishery Management Strategy.

9.8.5 Support and encourage any initiatives by Department of Primary Industries (Fishing) to undertake research on native fish in the area, recreational fish catches and to manage fish populations and habitat.

9.9 Adventure activities

Background

For the purposes of this plan, adventure activities include but are not limited to canyoning, orienteering/rogaining, paragliding/sailing, abseiling and rock climbing. Although not widespread, adventure activities and in particular canyoning, are known to occur in some parts of the planning area.

Many of the rivers within the planning area are very steep and rugged and provide opportunities for canyoning. The Barrington Tops canyon along the Williams River is popular; however, it is also extremely dangerous resulting in a number of rescue operations. Previous climbing systems on the Williams River have been removed due to safety concerns and signs have been erected warning of the inherent risks associated with canyoning along the Williams Falls.

Issues

- Adventure activities have the potential to conflict with other park visitors and/or with the protection of the natural and cultural environment.
- Due to the extent of wilderness, the extensive infestation of Scotch broom, sensitivity of montane swamp environments, and the broad area nature of orienteering/rogaining this activity has the potential to cause significant environmental impact.
- Canyoning in the Williams River is dangerous, due to the natural formation of the river and the existing climbing systems (i.e. rock bolts) which are inadequate and pose a significant risk to visitors.
- Rescue operations in the Williams River are costly and hazardous for rescuers.
- Extreme weather conditions experienced in the area are an additional consideration increasing the risk for these activities.

Desired outcome

- Provision of safe opportunities for adventure activities in the planning area.

Guidelines

9.9.1 Orienteering/rogaining, paragliding/sailing, abseiling and rock climbing will not be permitted in the planning area. Any other form of adventure activity will require written consent from the NPWS. Provision of a risk assessment and appropriate public liability insurance will be a requirement for consent.

9.9.2 Canyoning activities will require written consent from the NPWS. Provision of a risk assessment and appropriate public liability insurance will be a requirement for consent.

9.9.3 Continue to support relevant groups and authorities with search and rescue activities in the planning area.

9.10 Commercial tourism

Background

A commercial activity is an organised activity conducted within the planning area operated by a business or organisation to generate income or profit. Commercial operators play an important role in the provision of recreational opportunities within the planning area. There are 9 commercial operators currently licensed with the NPWS in the planning area. Vehicle based tours (including coach tours) which incorporate bushwalking and mountain bike tours are the focus of commercial recreation, in addition to eco-tours.

There are currently a large number of commercial tour operators who use the planning area who are not licensed with the NPWS. Given the growth in the tourism industries in many local communities surrounding this area, and the proximity of the planning area to the tourism markets of both Newcastle and Sydney, the demand for commercial tour licences is likely to increase.

Tours and commercial activities within the planning area have many potential benefits. They can increase visitor opportunities to participate in nature-based activities with instruction in safety and minimising impact. Guided activities also provide opportunities to interpret and promote natural and cultural heritage. Conversely, these activities have the potential to impact on the values of the planning area and the experience of other visitors where there is competition for facilities and overcrowding of sites.

Certain commercial activities are permitted under the NPW Act, and associated regulations but no commercial activities are permitted in wilderness areas. Commercial operators are required to have a lease or a licence with the NPWS, while organised non-commercial groups are required to have consent.

Issues

- There is a need for all commercial operators undertaking activities in the planning area to be licensed.
- An effective licensing system is required to ensure tour operators and group activities are appropriate for the management objectives of the site and the resource.
- It is unknown whether current visitor numbers to the planning area are sustainable. The NPWS needs to define appropriate visitor numbers for those destinations within the planning area, which may be negatively impacted by overuse and misuse so as to create a sustainable and quality recreational experience. This also applies to non-commercial activities.
- There is community support for the promotion of commercial operations, with a preference for ecologically based tourism.
- Formal accreditation of operators to ensure their activities are not detrimental, and ensuring educational messages are accurate and consistent has also been suggested.

Desired outcome

- Provision of opportunities for commercial recreational activities within the planning area that contribute to a positive, nature-based recreation experience with minimal impact on natural and cultural values.

Guidelines

9.10.1 Ensure the long-term protection of the natural and cultural values of the planning area, visitor experiences and safety, and recreational opportunities by requiring licences in accordance with the Commercial Recreation and Tour Operator Parks Eco Pass Operating Procedures.

9.10.2 Encourage all commercial operators to undertake an education training program.

9.10.3 Require commercial operators whose activities may encroach on, use or visit an Aboriginal site or place, to negotiate with, and obtain the support of appropriate local Aboriginal groups.

Action

9.10.4 Undertake an inventory of all commercial operators operating in the planning area.

9.10.5 Continue to implement a commercial licensing system for all commercial activities within the planning area.

9.10.6 Investigation into the appropriate limits for commercial activities will be undertaken. This will take into consideration the location and frequency of activities and group sizes as well as the potential for impact on the environmental values, facilities and other visitors.

9.10.7 Monitor all commercial and non-commercial operators with respect to cumulative impacts, safety requirements, quality of information being given and compliance with licence conditions. Licences or consents may be cancelled if there is a breach of the conditions.

10. Scientific research

10.1 Background

The principal function of research in the planning area is to provide information that contributes to management and effective decision making, to establish appropriate conservation priorities and to improve the understanding of:

- the natural and cultural resources and the processes that affect them
- community and economic values
- the needs of park visitation and the impact of such visitation on environmental values.

Research undertaken within the planning area also acts to supplement research being undertaken on a broader scale in NSW under the NSW Biodiversity Strategy and further afield at an interstate and or national level. Given that the planning area contains a significant number of species which are either high altitude specialists at middle latitudes or are at the extremes of their geographic ranges, there is a high potential for the area in terms of research on the effects of climate change (see also 5.1).

Research in the planning area commenced well before the area was declared a national park. The earliest recorded scientific study of the planning area was undertaken by Fraser and Vickery in 1937–38, when they produced a series of papers on various aspects of the 'Ecology of the Upper Williams River and Barrington Tops Districts'. Even earlier, from 1923, the Australian Museum was undertaking scientific field trips to the planning area.

Since this early beginning numerous scientific studies have been undertaken, resulting in at least 53 publications. The majority of these studies have focused on the natural environment and particularly in more recent times in relation to management aspects, including pest species, threatened species and Phytophthora management. An extensive survey of rare plants on the Barrington Tops Plateau has also been undertaken. Other areas of investigation include park management issues such as recreation, catchment and cultural heritage values.

Studies undertaken by NPWS have focused on threatened species, pest species, vegetation surveys, recreational and cultural matters relating to the management of the planning area. As part of preparing this draft plan of management a Scientific Forum was held in 2003 with representation from universities, local councils, other government agencies and the NPWS. The aim of this forum was to gain input from the scientific community as the planning area is widely acknowledged as being significant for scientific research. The forum was also used to help develop a focus for management of the planning area and to determine priority research areas.

Issues

- Research is generally undertaken on an ad hoc basis with there being little direction towards doing research in priority areas.
- Records of research conducted in the planning area are inadequate to provide meaningful information on what research projects have been undertaken and where.
- Not all researchers liaise with the NPWS regarding research they are doing in the planning area, nor do all researchers provide the NPWS with the data and results of their research.
- Research in the planning area may have a detrimental impact on the natural and cultural values of the area.

Desired outcome

- Research should be undertaken which contributes to improved park management, increases the understanding and knowledge about the natural and cultural values of the planning area and should have minimal impact.

Guidelines

10.1 Require all researchers to be licensed in accordance with legislative requirements of the NPW Act and NPWS policy.

10.2 Direct NPWS research efforts towards baseline data and monitoring the impact of recreational activities on biophysical indicators.

10.3 Ensure that research causes minimal environmental impact. This will include ensuring that any research structures, long-term markers etc., are placed in locations that will minimise their visual impact and ensure their removal upon completion of the research.

10.4 Work cooperatively with and encourage researchers from other organisations to share information and to design research programs that provide information that is directly useful for management purposes.

10.5 Liaise with and provide a copy of all findings to all relevant groups (including the Commonwealth Department of Agriculture, Water and the Environment and Local Aboriginal Land Councils) when undertaking research into areas such as Aboriginal heritage or World Heritage areas.

Action

10.6 Prepare a prospectus to encourage the involvement of other organisations in identified priority research areas. Priority research areas are:

- the impact of threatening processes on native animals and plants, e.g. Phytophthora, wild dog movements, fox predation, spread of Scotch broom with priority being given to the impact on threatened species, development of appropriate biological control agents for introduced species
- baseline information on native fish in the area, recreational fish catches and the impact on recreational fishing on native fish
- the nature and distribution of Aboriginal heritage values and the impact of threatening processes on Aboriginal heritage
- baseline data for monitoring climate change, including weather
- ecological fire requirements of the plant and animal communities, particularly the fire response of significant plant species
- the impact of recreational activities on biophysical attributes and an evaluation of this impact over time
- investigation of historic heritage with priority given to the compilation of a social history of the planning area, including its recent history as a protected conservation area
- undertake park visitor profiles to better assess visitor usage (popular activities, destinations, visitor numbers and origins)
- the carrying capacities of camping and day use areas within the planning area including monitoring commercial activities.

11. Management operations

11.1 Reserve management

A telecommunications tower was constructed on Mount Barrington by the NPWS in 2002 to provide VHF radio coverage over the area. The site comprises a tower and associated infrastructure that is managed and maintained by the NPWS. There are two works compounds located within the planning area at Little Murray and near Polblue Camping Area, which are a base for field activities for work conducted in the northern part of the planning area.

Within the planning area there are 4 operational quarries located at Wild Turkey, Gloucester Tops and Sharpes Creek quarries in Barrington Tops National Park and Butchers Swamp Quarry in Barrington Tops State Conservation Area. A risk assessment of each of these quarries was done as part of preparing Quarry Safety Management Plans for each quarry to ensure compliance with the *Mine Inspection Act 1901* and Regulations. These quarries are important in providing road base gravel in the area without the threat of introducing pathogens like Phytophthora or weeds into the area from quarries in neighbouring lowland areas.

Issues

- The road base gravel in the quarries is finite. These quarries may need to be expanded in the future.
- Quarries have an environmental and visual impact.

Desired outcome

- Continue to provide appropriate infrastructure to support reserve management.

Guidelines

11.1.1 Retain the works compounds at Little Murray and Polblue as bases for field activities in the northern part of the planning area.

11.1.2 Continue use of existing quarries for provision of road base gravel for roads on NPWS estate only, to prevent the introduction of pathogens and weeds.

Action

11.1.3 Implement the recommendations of the risk assessment undertaken for Butchers Swamp, Wild Turkey, Gloucester Tops and Sharpes Creek Quarries as part of the Quarry Management Safety System.

11.2 Non NPWS infrastructure

Bobs Crossing Gauging Station

The Department of Primary Industries (Water) has a gauging station on the Barrington River at Bob's Crossing. The gauging station was established approximately 20 years ago to measure the height and flow of the water in the river. The data is used for catchment modelling. Department of Primary Industries (Water) has an agreement in place with the NPWS for accessing the gauging station to receive data and maintain the station.

Weather gauging stations

There is a range of monitoring stations including pluviometer rain gauges at Wombat Creek and above Mount Nelson in Barrington Tops National Park. This rain gauge, constructed by Hunter Water in 1994, provides early flood warning data for the Chichester Dam catchment. This data is extremely important given the steepness of the Chichester catchment and the short duration of critical storm events.

Trigonometric stations

There are six trigonometric stations located in the planning area. These are Mount Barrington, Careys Peak, Polblue, Gloucester Tops, Cockrow Mountain, and Mount Royal. Wangat Trigonometric Station falls on the boundary of Barrington Tops National Park and a Trigonometric Reserve exists around the trigonometric station. All these trigonometric stations are part of what is known as the 'Spine' survey for the primary spatial referencing system for the state and an essential component of the NSW Geodetic Survey network.

The trigonometric station at Cockrow Mountain was originally erected in 1884 and the trigonometric station at Mount Royal in 1916, whilst the remaining stations were all built between 1976-77 as part of the campaign to complete the trigonometrical survey coverage of the State, and resulted in the Australian Geodetic Datum of 1984 (AGD84).

There is a need to use and maintain all parts of the State's Geodetic Survey and to occupy any one of these trigonometric stations from time to time. Few of the trigonometric stations within the planning area are accessible by road. The Department of Planning and Environment (Crown Land) is responsible for managing the trigonometric stations in the planning area in accordance with NPWS policy (NPWS 1982).

Desired outcome

- Effectively manage, maintain and potentially upgrade non-NPWS infrastructure in cooperation with relevant authorities whilst ensuring minimal impact on the planning area values.

Guidelines

11.2.1 Continue the rights to existing monitoring stations in accordance with the existing agreements with Department of Planning and Environment and Hunter Water.

11.2.2 Continue to allow Department of Planning and Environment access to maintain trigonometric stations in accordance with the NPWS Policy – Surveying Activities Associated with Trig and Geodetic Stations and the *Surveying Act 2002*.

11.2.3 Retain infrastructure of trigonometric stations for their historical value, in particular Cockrow Mountain and Mount Royal.

11.2.4 Require an appropriate level of environmental impact assessment and NPWS approval for new infrastructure and any alterations to the existing infrastructure and/or maintenance requirements.

Action

11.2.5 Investigate the potential for upgrading pluviometers to include thermometers, wind speed and direction recorders.

11.2.6 Maintain service agreements or licences with owners of non-NPWS infrastructure that set prescriptions for the maintenance of these facilities and access roads.

11.3 Mining and exploration in Barrington Tops State Conservation Area

Background

Early exploration of the planning area by prospectors searching for gold and gems resulted in the establishment of a few small settlements which were abandoned when the minerals were mined out. Mineral exploration was mainly focused in the nearby areas of Moonan, Copeland Tops, Bowman, Boranel, and Dilgry River (Forestry Commission 1984). In more recent years there has been no mining in the planning area, with the exception of sluice mining in Whispering Gully in the mid-1980s when this area was state forest.

State conservation areas like Barrington Tops State Conservation Area were reserved for the purpose of protecting natural and cultural heritage, and providing opportunities for sustainable recreation, exploration and mining. Mineral commodities of interest in the SCA and adjacent areas include gemstones (sapphires and rubies) and gold.

Regional NSW (Mineral Resources) is the lead authority for mining, mineral exploration and mine site rehabilitation. Regional NSW (Mineral Resources) is required under the EP&A Act to undertake environmental assessments for mining and exploration activities in all state conservation areas. The existing Memorandum of Understanding (MoU) between the Deputy Secretary of the National Parks and Wildlife Service and Mineral Resources describes the management and consultative arrangements associated with exploration and mining in state conservation areas.

The concurrence of the Minister administering the NPW Act is required in respect of the granting and renewal of mining leases after reservation of a state conservation area (according to section 47J of the NPW Act). The granting of exploration licences and assessment leases does not require the concurrence of the Minister. The Minister's concurrence is required, however, if the holder of an exploration licence or assessment lease wishes to exercise rights under that title.

Issues

- Barrington Tops State Conservation Area is an environmentally sensitive area containing significant ecosystems with a number of threatened species.
- The montane swamps of the Barrington Tops Plateau are an endangered ecological community that contain mineral resources, but are also of high conservation value. Potential mineral exploration and mining in this area may threaten these values (see 5.6 and 11.1).
- Threats to water quality and soil erosion are also a concern, particularly in the montane swamps. The water contained within the swamps is of high conservation value, as it provides water for the Manning and Hunter Rivers, which are vital for neighbouring townships.
- Recreational fossicking can potentially impact upon the natural, cultural and other recreational values of the area.
- Introduction of mining infrastructure (e.g., heavy machinery) could introduce or spread weeds and pathogens like Phytophthora and Scotch broom into the area, which may have a significant impact on the area.

Desired outcome

- Ensure all potential mining and exploration in Barrington Tops State Conservation Area is undertaken in accordance with relevant legislation and with minimal impacts.

Guidelines

11.3.1 Applications for approval to undertake exploration or mining activities within Barrington Tops State Conservation Area will be subject to environmental assessment and approval by Regional NSW (Mineral Resources) and concurrence of the Minister administering the NPW Act.

11.3.2 Access to areas that are more robust to disturbance will be considered more favourably than sensitive areas like the montane swamps.

11.3.3 Hygiene protocols for stopping the spread of pathogens and weeds into the area will be required as part of application approvals.

11.3.4 Any new trails created as a part of mining operations will be closed and rehabilitated immediately after use.

11.3.5 No fossicking will be permitted in Barrington Tops State Conservation Area, Barrington Tops National Park or Mount Royal National Park.

11.3.6 Review the classification of Barrington Tops State Conservation Area every 5 years to determine whether it should receive either a national park or nature reserve classification in accordance with section 47M of the NPW Act and in consultation with the Minister administering the *Mining Act 1992*.

11.4 Boundary fencing and boundary identification

Background

The planning area has more than 360 km of boundary of which approximately 200 km borders private property. Although the NPWS has no legal responsibility to contribute to boundary fencing under the *Dividing Fences Act 1991*, the NPWS recognises that boundary fencing can enhance conservation values and resolve management problems.

Due to the remoteness and rugged terrain of the park boundary, access to and clear identification of the boundary is not always possible. The NPWS Boundary Fencing Policy includes a ‘give and take’ clause which may alleviate boundary access issues and the necessity for exact identification of the boundary.

Desired outcome

- Contribute to the conservation of the planning area’s values through effective management of boundary issues.

Guidelines

11.4.1 Undertake cooperative replacement and repair of boundary fencing with neighbouring property owners in accordance with the NPWS Boundary Fencing Policy.

11.4.2 Where there is dispute with neighbouring property owners about the exact location of the boundary, the NPWS may have the boundary surveyed.

Part C: Plan implementation

12. Implementation and review of plan

This plan of management establishes a scheme of operations for the planning area. It will remain in force until amended or replaced in accordance with section 73B of the NPW Act. The plan is part of a system of management which includes the NPW Act, management policies, established conservation and recreation philosophies, and strategic planning at corporate, directorate and regional levels.

Relative priorities for activities identified in this plan are set out in Table 5 below. These priorities are subject to the availability of necessary staff and funds, and to any special requirements of the Deputy Secretary or Minister. High priority activities are those considered 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.

The environmental impact of proposed activities will be assessed at all stages in accordance with established environmental assessment procedures. If the impacts of any activity proposed in this plan are found to be unacceptable, the activity will not be undertaken or be modified so as to comply with the environmental assessment outcomes.

Table 5 Summary of actions

The corresponding reference indicates from which section of the plan the action was generated.

Reference	Action
High priority	
5.4	**Native plants**
5.4.2	Control blackberry, especially in known locations of rare plants (see section 7.1).
5.5	**Native animals**
5.5.6	Continue monitoring of threatened species including the Hastings River mouse, rufous scrub-bird, rufous bettong and broad-toothed rat.
5.5.8	Implement relevant strategies in priorities action statement and recovery plans for species, communities and populations.
5.5.10	Implement threat abatement plans for species or activities listed as a key threatening process.
5.6	**Montane peatlands and swamps on the Barrington Tops Plateau**
5.6.5	Implement the priorities action statement and assist with the preparation of the recovery plan for the montane peatlands and swamps.
7.1	**Introduced plants**
7.1.7	Implement wash-down procedures for vehicles (including heavy machinery) to stop the spread of weeds, especially Scotch broom, oxeye daisy, crofton weed/mist flower and introduced grasses.
7.1.8	Contain and treat Scotch broom within the existing infestations areas as prescribed in the Scotch Broom Containment Strategy (NPWS 2002b). This will include: • focusing control in areas possessing high environmental (i.e. containing threatened species, montane swamps) and water catchment values • continuing to exclude public vehicle access from the Careys Peak Trail between Mount Barrington and Careys Peak. This trail presents the greatest risk of movement of Scotch broom seed into uninfested southern areas of the planning area and neighbouring lands • biannual monitoring of the Link Trail • limiting the spread of Scotch broom at the southern and south-eastern perimeter of its current infestation • continuing the program of control of Scotch broom along all roads, tracks and trails leading out of the planning area using herbicide • controlling Scotch broom in public use areas within the planning area using herbicide and bush regeneration techniques • protecting uninfested catchments and continuing to treat Devils Hole • encouraging bushwalkers and horse riders to monitor and document new outbreaks of Scotch broom in the planning area • implementing a hygiene protocol to prevent spread of Scotch broom into non-infested areas.
7.1.9	Investigate and where feasible strategically release biological control agents for Scotch broom in the planning area, taking into consideration where biological control agents have already become established (for example at Tomalla Station) at lower altitudes.
7.1.11	Undertake further research into Scotch broom, in particular biological control and apply where indicated.
7.1.13	Continue the long term monitoring projects already established.
7.1.14	Identify and treat, and if possible eradicate, any isolated Scotch broom infestation outside the main infestation as a priority.

Reference	Action
7.1.18	Continue control program for crofton weed using herbicide and bush regeneration techniques.
7.1.33	Identify and treat any new high risk weed infestations as soon as possible before they become major management problems.
7.2	**Introduced animals**
7.2.4	Undertake cooperative management of wild dogs with neighbouring property owners.
7.2.5	Undertake annual ground-baiting control programs in coordination with the various Wild Dog Associations and Livestock Heath and Pest Authorities.
7.2.6	Undertake wild dog trapping programs around the boundary of the planning area to control wild dogs that are reluctant to take baits.
7.2.7	Undertake reactive programs as required. Where economic loss results from wild dog attacks on properties adjacent to the planning area, control activities along the perimeter of the planning area will be undertaken. Control programs will be developed with the cooperation and participation of affected landholders and Livestock Heath and Pest Authorities.
7.2.9	Support Wild Dog Associations adjacent to the planning area.
7.2.10	Assist the Livestock Heath and Pest Authorities in the preparation and implementation of Wild Dog Management Plans for each Wild Dog Association area within the planning area.
7.2.11	Continue to control feral pigs, giving priority to areas near montane swamps and grasslands.
7.2.12	Develop and implement a Feral Pig Management Strategy. This will include: • assessment of the effectiveness of the trapping program • assessment of techniques used and investigation of alternative control methods other than those currently used (e.g. 1080 bait stations).
7.2.15	Develop and implement a Feral Horse Management Plan to remove feral horses from the planning area. This will be based on the guidelines outlined in the English Report, (English 2003). The plan will include options for the removal of feral horses, techniques for monitoring the impact and number of feral horses, and the process for community consultation.
7.2.16	Implement fox control programs in accordance with the NSW Fox Threat Abatement Plan to limit fox predation on the Broad-toothed rat on the Barrington Tops Plateau and the rufous bettong in Mount Royal.
7.3	**Phytophthora**
7.3.1	Develop and implement a *Phytophthora cinnamomi* Management Plan. This will include: • implementing a quarantine area (see Figure 7, inset A), and restricting public access along the Watergauge Trail from Beean Beean Plain to Black Swamp to limit further spread of Phytophthora to other areas • implementing an education and interpretation strategy to inform the public of the problem and how it is being dealt with • installation of hygiene facilities at entry points to the quarantine area which are to be used by NPWS, contractors, researchers, firefighters and anyone entering or operating in the vicinity of the quarantine area • investigation and if feasible installation of cleaning stations for bicycles and other vehicles using management trails in the vicinity of the infestation • investigation and if feasible installation of boot cleaning stations on all walking trails in the vicinity of the infestation • increased law enforcement of the area

Reference	Action
	• consideration of the impacts of feral animals on Phytopthora management • incorporation of appropriate hygiene measures in any pest management operations where there is the risk of Phytophthora being spread • ongoing monitoring, including undertaking regular soil analysis in cooperation with the Department of Planning and Environment's Environment and Heritage Group and Botanic Gardens Trust (Sydney).
7.3.3	Undertake further research into the extent of infestation at Barrington Tops, impact of fire on areas of dieback, impact of *Phytophthora cinnamomi* on sub-alpine environments and potential impact of the application of chemicals (such as Phosphite) to phosphorous deficient soils within the park and its usefulness to control the pathogen.
7.3.4	If *Phytophthora cinnamomi* is found outside of the quarantine area shown on Figure 7, inset A, investigate and if necessary expand the quarantine area to cover all areas of known infestation.
8.1	**Fire management**
8.1.7	The Reserve Fire Management Strategy will be implemented for the planning area, and reviewed and updated in response to fire history, and changes in operational and environmental circumstances.
9.2	**Vehicle access**
9.2.7	Maintain the public and park roads illustrated on Figure 6 to two-wheel drive and four-wheel drive standard as shown.
9.2.8	Maintain the management trails identified on Figure 6, including the Strip Road complex associated with the Strip Trail, for management purposes only, including fire and pest management and emergency access.
9.2.19	Undertake actions to maintain closures for unauthorised use of trails in wilderness areas, in particular the Paterson River and Wangat River area.
9.2.20	Investigate and if feasible rename (or possibly dual name, to retain historical value) Polblue Trail, Tubrabucca Trail, and Strip Road complex associated with the Strip Trail using local Aboriginal names.
9.2.21	Investigate the potential for declaring Barrington Tops Forest Road a regional road to improve resource allocation for maintenance.
9.2.22	Investigate and if feasible develop a traffic management plan for key visitation areas, including Polblue, to address traffic management issues including pedestrian safety.
9.3	**Camping**
9.3.8	Horse camping will only be permitted at the Cascades Camping Area on the Manning River.
9.4	**Day use**
9.4.5	Due to safety issues, close and rehabilitate the Moppy Day Use Area
9.4.12	Investigate and if feasible rename (or possibly dual name, to retain historical value) Gummi day use area using local Aboriginal names.
9.5	**Walking tracks**
9.5.2	Walking will not be permitted on the Watergauge Trail between Little Murray and Black Swamp and the Brumlow Swamp Trail as part of the Phytophthora containment strategy. Signs will be erected to show this trail is closed to all public access (see Section 7.3).
9.10	**Commercial tourism**
9.10.4	Undertake an inventory of all commercial operators operating in the planning area.

Reference	Action
Medium priority	
5.4	**Native plants**
5.4.3	Protect rare plant populations potentially impacted upon by vehicular use and pedestrian traffic at Junction Pools and Devils Hole Camping Areas through fencing and exclusion zones.
5.4.4	Undertake further research and survey into the distribution, ecology and threats to rare plant species, in particular poorly known and potentially threatened orchid species, and implement actions to manage threats where possible.
5.4.5	Implement relevant strategies in recovery plans and priority action statements for threatened species.
5.5	**Native animals**
5.5.7	Where threats are identified, develop and implement actions for the conservation and protection of rare and endangered animal species.
5.5.11	Continue implementation of signage and information strategies to discourage visitors from feeding wildlife (see section 9.1).
5.6	**Montane Peatlands and Swamps on the Barrington Tops Plateau**
5.6.6	Install on-site interpretative signage and displays across the Barrington Tops Plateau to increase community understanding and appreciation of the natural values of montane swamps. This will involve developing Polblue Swamp Walk as an interpretative walk.
6.1	**Aboriginal heritage**
6.1.14	Develop and implement a management plan for Mount McKenzie Aboriginal Place in partnership with the Aboriginal community.
6.1.15	Investigate and if feasible provide culture camp opportunities within the planning area in consultation with the Aboriginal community (refer to section 9.3 Camping).
6.1.16	Conduct a program to upgrade the interpretative and directional signage across the planning area. This will include the provision of up to three interpretation sites dedicated to Aboriginal heritage (see section 9.1).
6.2	**Historic heritage**
6.2.3	Record and manage all historic places, including those in designated wilderness areas, in a way appropriate to their cultural significance.
6.2.4	Implement the recommendations of the Heritage Actions Statements for Selby Alley, Munro, Careys Peak, Little Murray Huts and the Gloucester River Depot.
6.2.5	Selby Alley and Munro huts will be maintained in association with the Newcastle Bushwalking Club. The impact of recreational use of the huts on the site will be monitored and if necessary appropriate works will be done to protect the site in accordance with the Heritage Action Statements.
6.2.6	Investigate and record the location of the Whispering Gully Hut. Assess the hut's significance and develop a management plan.
6.2.7	Record known hut sites not already investigated, and encourage further research into their history and management.
6.2.9	Develop a management plan and interpretation for the cattle yards and bullock dray located at the Gloucester River Camping Area.
6.2.10	Protect the remains of the Edwards lease fence lines and include them in the fire management strategy for the planning area as a heritage asset.

Reference	Action
6.2.15	Conduct an oral history project recording the recollections of past NPWS staff as it relates to the management and history of the planning area. Consider extending the project to include key historical user groups.
6.2.18	Provide interpretation signage on Aeroplane Hill to explain the history of the events leading to its naming and the general history of aircraft crashes in the planning area (see section 9.1).
7.1	**Introduced plants**
7.1.5	The known occurrence, distribution and density of introduced plants causing significant environmental damage will be mapped.
7.1.6	Environments currently free of introduced species will be monitored and any new weed incursions will be added to the regional database.
7.1.10	Investigate and where feasible implement alternative control methods for Scotch broom especially for undertaking work around high conservation areas.
7.1.12	Continue aerial mapping of Scotch broom to assess containment strategy and priority areas, every 10 years.
7.1.15	Assess current distribution of blackberry on the Barrington Tops Plateau.
7.1.16	Continue to undertake blackberry control programs, treating isolated infestations using herbicide.
7.1.17	Undertake appropriate and cost-effective monitoring of biological control agents for blackberries.
7.1.19	Focus control on wilderness areas (for example Williams River, Jerusalem Creek, Davis Creek, Cross Creek areas) and Mount Royal National Park.
7.1.20	Focus on access roads into infested areas including Mount Royal – Cassels Road for controlling crofton weed/mist flower.
7.1.21	Develop strategies for the control of wind borne species like mist flower/crofton weed, particularly in the top of the catchment.
7.1.22	Liaise with bushwalkers and other clubs regarding monitoring and treatment of infestations of crofton weed/mist flower in remote areas.
7.1.23	Monitor and treat tree of heaven infestations using herbicide.
7.1.27	Treat isolated infestations of lantana using a number of methods including herbicide and manual removal.
7.2	**Introduced animals**
7.2.8	Undertake further research into dog distribution throughout the planning area to better facilitate control programs.
7.2.13	Undertake law enforcement in conjunction with relevant NSW Government agencies, including police, to control illegal hunting of feral pigs, which will also assist the wild dog control program.
7.2.14	Encourage cooperative control programs for feral pigs with neighbours, focussing on annual aerial shooting programs to the north west.
7.3	**Phytophthora**
7.3.2	Investigate the potential for allowing public access back through the quarantine area once strategies (e.g. boot washing stations, Phosphite application) are in place and shown to be successful in preventing the spread of the pathogen to other areas.

Reference	Action
8.1	**Fire management**
8.1.8	Areas disturbed by fire suppression operations will be rehabilitated as soon as practical after the fire.
8.1.9	All fires will be mapped and records maintained.
8.1.10	Manage fire within vegetation communities according to the appropriate fire thresholds to assist long-term maintenance of biodiversity as part of the ecological management strategy for fire management.
9.1	**Interpretation, education and information**
9.1.5	A program to upgrade the interpretative and directional signage across the planning area will be implemented. This will include: • upgrading existing signage to incorporate information and maps for clearer orientation for visitors, relevant interpretative information about the surrounding landscape and guidelines for appropriate visitor behaviour • assessing the need for additional signage in some areas, for example at primary entry points, popular walking tracks and visitor use areas • continuing to update and improve brochures and other publications • providing an interpretation site dedicated to Aboriginal heritage • involving the local Aboriginal communities in the interpretation of Aboriginal cultural heritage.
9.1.6	Install signage in strategic locations which designate Barrington Tops National Park as a World Heritage Area.
9.1.7	Develop and implement a public contact and interpretation plan. This plan will: • emphasise key themes, particularly the conservation values of the planning area, and key messages to encourage appropriate visitor expectations and behaviour • provide an inventory and assessment of existing interpretation material including brochures, guidebooks, interpretative displays, information on the internet and park signage • identify gaps/weaknesses in information of this plan.
9.1.8	Hold local community days to encourage community involvement and provide information to neighbours and the surrounding community on park management issues.
9.2	**Vehicle access**
9.2.9	Close and rehabilitate all trails not shown on Figure 6.
9.2.10	Roads identified in Figure 5 will be subject to seasonal closures to motorised vehicles between 1 June and 30 September for the purposes of visitor safety and to minimise damage to trails during the wetter periods of the year.
9.2.11	The Barrington Trail south of Barrington Tops Forest Road will remain seasonally closed from 1 June to 30 September until the road between Barrington Tops Forest Road and Junction Pools is improved. Following road improvement this section of road will be open all year round while the Barrington Trail from Junction Pools turn-off to Middle Ridge Day Use Area will be seasonally closed (see Figure 5).
9.2.12	Better signage to explain seasonal road closures will be developed and installed.
9.2.13	Monitor all trails for detrimental environmental impacts and where necessary undertake appropriate maintenance.
9.2.14	Due to the infestation of Phytophthora along the Watergauge Trail, it will remain as a management trail with restricted NPWS access. The trail will also be investigated to determine if it should be permanently closed and rehabilitated in the future.

Reference	Action
9.2.15	The degraded or eroded section of Junction Pools Trail and Poloma Trail will be redesigned. If required, minor roadworks will be carried out to reroute the trail and the closed section of the road will be rehabilitated.
9.2.16	Ensure all non-NPWS uses and occupancies of NPWS land are authorised in accordance with Part 12 of the NPW Act.
9.2.18	Provide improved car parking at Thunderbolts Lookout (up to a total of 5 car spaces) and Honeysuckle Day Use Area (up to 10 car spaces).
9.2.23	Prepare and implement a reserve access strategy to secure park access for public use and management purposes.
9.2.24	Identify and seek to correct boundary errors, boundary encroachments and proposed section 188C boundary adjustments as identified in the reserve access strategy.
9.3	**Camping**
9.3.5	Provide 11 designated camping locations as outlined in Table 2 and on Figure 7. All other camping locations will be closed and rehabilitated. No camping areas will be provided in the southern area of Barrington Tops National Park, as there are opportunities for camping in the adjacent Chichester State Forest.
9.3.6	Manage campsites and provide facilities in accordance with proposed camping specifications outlined in Table 2.
9.3.7	Vehicular access to Polblue Overflow and Gloucester River Overflow camping areas will be restricted to peak periods (i.e., school holidays and long weekends).
9.3.9	Investigate and install communal fireplaces in Horse Swamp, Little Murray, Devils Hole and Gloucester River camping areas to reduce the impact of multiple fire scars.
9.3.10	Introduce camping fees for some camping areas.
9.3.11	Assess and monitor environmental impacts and visitor use patterns in all camping areas to enable the NPWS to make future management decisions about the provision of facilities, site protection, and protection of endangered ecological communities and rare and threatened species.
9.3.12	Opportunities for Aboriginal cultural camps may be provided within identified camping areas. Proposals for new Aboriginal cultural camp locations will be considered subject to appropriate assessment and a plan amendment.
9.4	**Day use**
9.4.3	Provide 21 designated day use areas in the locations shown in Figure 7 and in accordance with the functions, level of facilities and site capacity defined in Table 3. This involves the addition of day use areas at Carters Brook and Middle Ridge.
9.4.4	Re-establish a day use facility at Cobark Park to provide car and bus parking, interpretative signage, walking track, toilets, picnic facilities and a lookout platform. This area will provide one of the primary entry points into Barrington Tops National Park.
9.4.6	Provide lookout platforms at Cobark Park and Mount Barrington. Also investigate and where possible upgrade the lookouts at Andrew Laurie Lookout along the Gloucester Falls track, the Gloucester Falls, Jerusalem Creek and Thunderbolts.
9.4.7	Seek approval to a minor redefinition of the wilderness boundary to exclude the eastern section of Blue Gum Loop Walking Track near Williams River.
9.4.8	Investigate and install a low key viewing platform and an interpretation panel at Burraga Swamp to protect the fragile swamp environment subject to environmental assessment that considers relevant policies and legislation including the Wilderness Act and NPWS Wilderness Policy and appropriate approvals.
9.4.9	Undertake maintenance of the lookout structure at Careys Peak including maintenance of the barrier and pruning of vegetation, subject to appropriate approvals.

Reference	Action
9.4.10	Continue to prune vegetation at Andrew Laurie, Devils Hole, Thunderbolts, Mount Barrington and Jerusalem Creek lookouts, as required to maintain existing views.
9.4.11	Assess and monitor environmental impacts and visitor use patterns in day use areas to enable the NPWS to make future management decisions about the provision of facilities and site protection in these areas.
9.5	**Walking tracks**
9.5.1	Maintain the walking trails identified in Figure 7, according to the Australian Standards set out in Table 4.
9.5.3	Upgrade Polblue Swamp, Gloucester River, Gloucester Tops and Jerusalem Creek walking tracks to improve visitor safety, amenity and protect fragile environments.
9.5.5	Burraga Swamp Walking Track is within declared wilderness. There may be a need to upgrade the walking track and manage visitor access to protect sensitive environments, subject to environmental assessment that considers relevant policies and legislation including the Wilderness Act and NPWS Wilderness Policy and appropriate approvals.
9.5.6	Careys Peak Lookout Track is within the declared wilderness. There is a need to undertake ongoing maintenance and potentially upgrade the walking track, subject to environmental assessment that considers relevant policies and legislation including the Wilderness Act and NPWS Wilderness Policy and appropriate approvals.
9.5.7	The eastern section of the Blue Gum Loop Walking Track is within declared wilderness. There is a need to undertake ongoing maintenance and/or replacement of existing facilities including raised walkways, staircases and bridges, subject to environmental assessment that considers relevant policies and legislation including the Wilderness Act and NPWS Wilderness Policy and appropriate approvals.
9.5.11	Munro and Selby Alley Huts will be maintained for use by bushwalkers. The impact of bushwalkers on the huts will be monitored. Any works undertaken will be in accordance with the Heritage Action Statements for Selby Alley and Munro Huts (see section 6.2).
9.5.12	Develop and publicly exhibit a Mount Royal National Park Walking Track Strategy. Establish and maintain walking tracks and visitor facilities in line with the strategy, subject to environmental assessments and economic feasibility. Review and update the strategy as required
9.6	**Horse riding**
9.6.4	Develop and implement a Code of Practice for horse riding which will address matters such as the use of yards and tethers, mandatory holding distance from water sources, feed, environmental protection, safety, camping guidelines and interactions with other park users.
9.6.5	Impacts of horse riding on trails will be monitored and those areas showing signs of erosion or weed impact may be closed for rehabilitation.
9.7	**Cycling**
9.7.5	Trails will be monitored and if there are risks to other users or other inappropriate activities that damage the park, these trails will be closed to cycling.
9.10	**Commercial tourism**
9.10.5	Continue to implement a commercial licensing system for all commercial activities within the planning area.
9.10.6	Investigation into the appropriate limits for commercial activities will be undertaken. This will take into consideration the location and frequency of activities and group sizes as well as the potential for impact on the environmental values, facilities and other visitors.

Reference	Action
9.10.7	Monitor all commercial and non-commercial operators with respect to cumulative impacts, safety requirements, quality of information being given and compliance with licence conditions. Licences or consents may be cancelled if there is a breach of the conditions.
10	**Scientific research**
10.6	Prepare a prospectus to encourage the involvement of other organisations in identified priority research areas. Priority research areas are: • the impact of threatening processes on native animals and plants e.g. Phytophthora, wild dog movements, fox predation, spread of Scotch broom with priority being given to the impact on threatened species, development of appropriate biological control agents for introduced species • baseline information on native fish in the area, recreational fish catches and the impact on recreational fishing on native fish • the nature and distribution of Aboriginal heritage values and the impact of threatening processes on Aboriginal heritage • baseline data for monitoring climate change, including weather • ecological fire requirements of the plant and animal communities, particularly the fire response of significant plant species • the impact of recreational activities on biophysical attributes and an evaluation of this impact over time • investigation of historic heritage with priority given to the compilation of a social history of the planning area, including its recent history as a protected conservation area • undertake park visitor profiles to better assess visitor usage (popular activities, destinations, visitor numbers and origins) • the carrying capacities of camping and day use areas within the planning area including monitoring commercial activities.
Low priority	
5.1	**Climate**
5.1.3	Investigate, and if feasible install, a weather station at Mount Barrington in partnership with other organisations as part of monitoring climate change.
5.3	**Catchment management**
5.3.4	Assess the Wangat, Chichester, Williams, Paterson and Allyn Rivers and Boonabilla Creek for declaration as wild rivers.
5.5	**Native animals**
5.5.9	Undertake research to assess the purity of dingo populations, including DNA testing.
5.6	**Montane Peatlands and Swamps of the Barrington Tops Plateau**
5.6.7	Monitor the impact of fishing activities on the montane swamps. Areas showing signs of unacceptable damage may be closed to fishing and rehabilitated (see section 9.8).
5.6.8	Monitor all commercial and non-commercial operators with respect to cumulative impacts on the montane swamps (see section 9.10).
5.6.9	Develop a monitoring system to assess the overall condition of the montane swamps
6.2	**Historic heritage**
6.2.8	Interpret the timber-getting history of the planning area at Gloucester River Camping Area.

Reference	Action
6.2.11	Conduct a significance assessment of the pine trees at Meehans Camp on the Barrington Trail and Paddys Ridge Trail and undertake works in accordance with the recommendations.
6.2.12	Provide interpretation for the heritage huts across the Barrington Tops Plateau in accordance with the Heritage Action Statements (see section 9.1).
6.2.13	Encourage archaeological investigation into the Tubrabucca homestead (Meehans Camp) precinct (see section 10).
6.2.14	Investigate and record the Carrow Brook logging camp and encourage archaeological investigation.
6.2.16	Include appropriate references in interpretative material to the long history of scientific research within the planning area and the campaign to conserve the natural values of the planning area within a conservation reserve (see section 9.1).
6.2.17	Include appropriate references in interpretative material to Carters Brush Trail, including its history as it relates to the surrounding communities (see section 9.1).
7.1	**Introduced plants**
7.1.24	Undertake regular tree risk assessments of the pine trees in Youngville Day Use Area, Meehans Camp on Barrington Trail and Paddys Ridge Trail in accordance with the NPWS Visitor Safety Policy, with all works (i.e. pruning, removal of trees) undertaken in accordance with recommendations made in the assessments.
7.1.25	The existing exotic mature pine trees in Youngville Day Use Area will remain, however, all juvenile plants will be removed. The trees will not be replaced if they die or become senescent.
7.1.26	Develop and implement a rehabilitation plan for the Green Gap pine plantation within Barrington Tops State Conservation Area.
7.1.28	Monitor other forms of lantana especially red lantana and treat appropriately.
7.1.29	Monitor and treat nodding thistle and scotch thistle infestations appropriately.
7.1.30	Monitor and potentially treat infestations of Yorkshire fog in key sensitive areas such as montane swamps.
7.1.31	Monitor and treat oxeye daisy appropriately.
7.1.32	Monitor for the grass *Anthox anthium.*
7.2	**Introduced animals**
7.2.17	Monitor the number and impacts of other pest animals (e.g. feral goats, feral deer, rabbits, feral cats, introduced birds, European honey bees) in the planning area.
7.2.18	Undertake control programs for rabbits, goats, deer, cats and honey bees as required.
7.2.19	Support further research into the impact of and control methods for species like feral cats, introduced birds species and European honey bees.
9.1	**Interpretation, education and information**
9.1.9	Liaise with other organisations which provide information to park visitors to ensure all information is accurate, consistent, up to date and promotes appropriate visitor expectations and behaviour.
9.2	**Vehicle access**
9.2.17	Develop a strategy to deal with buses using the Barrington Tops Plateau (including bus parking) with other relevant authorities.

Reference	Action
9.5	**Walking tracks**
9.5.4	Investigate and where feasible re-establish the walking track at Cobark Park Day Use Area.
9.5.8	Investigate the provision of walking tracks in the Barrington Tops State Conservation Area including short to medium walks to features areas such as Paddys Brush and Tubrabucca Flats.
9.5.9	Investigate and where appropriate provide improved directional signage along walking tracks, concentrating on primary trail junctions, along with the installation of track-side interpretative signage along walking tracks including Polblue Swamp, Honeysuckle, Cobark Park, Burraga Swamp, Gloucester Tops and Jerusalem Creek.
9.5.10	Subject to funding and appropriate environmental assessment, allow for a skyway to be built in the Williams River area.
11.1	**Reserve management**
11.1.3	Implement the recommendations of the risk assessment undertaken for Butchers Swamp, Wild Turkey, Gloucester Tops and Sharpes Creek Quarries as part of the Quarry Management Safety System.
11.2	**Non NPWS infrastructure**
11.2.5	Investigate the potential for upgrading pluviometers to include thermometers, wind speed and direction recorders.
11.2.6	Maintain service agreements or licences with owners of non-NPWS infrastructure that set prescriptions for the maintenance of these facilities and access roads.

Table 6 Summary of guidelines

5.1	**Climate**
5.1.1	Give priority to the management of species and communities considered under threat from climate change, including the montane swamps and the broad-toothed rat through pest and fire management programs.
5.1.2	Investigate and implement appropriate fire regimes for fire sensitive plant communities and individual species and their habitats, in particular the montane swamps.
5.2	**Geology, soils, landforms and Scenic Values**
5.2.1	Design, situate and maintain all new facilities to complement the surroundings and to be visually unobtrusive.
5.2.2	Gravel and soils that are imported into the planning area will be guaranteed to be free of weeds and other contaminants.
5.2.3	Manage recreational and other uses to minimise erosion, changes to soil structure and degradation of catchment values (see sections 5.3, 9.2-9.8).
5.2.4	Prohibit the extraction of clay, rock, and gravel from the planning area, except from designated quarries for essential management work (see section 11.1).
5.2.5	Implement strategies to minimise erosion arising from prescribed burns and wildfires in fire planning and management programs (see section 8).
5.2.6	Maintain prohibition of fossicking in the planning area (refer to section to 11.3 Mining and Exploration).
5.3	**Catchment management**
5.3.1	Work with the Hunter–Central Rivers Catchment Management Authority to protect the catchment's water quality and health.
5.3.2	The potential to impact on water quality and discharge levels will be considered when undertaking any activity within the planning area.
5.3.3	Work with Hunter Water Corporation to manage the Chichester Catchment Area which is part of Hunter drinking water supply.
5.4	**Native plants**
5.4.1	Avoid herbicide spraying during the flowering times of rare and threatened species.
5.5	**Native animals**
5.5.1	Give priority to identifying habitats of threatened species and potential threats.
5.5.2	Work with neighbours to encourage the retention and where possible, improvement of key habitat and wildlife corridors linking the planning area to other large naturally vegetated tracts of land.
5.5.3	Promote the understanding and protection of native animals through interpretation programs (see section 9.1).
5.5.4	Assist the Fisheries section of the Department of Primary Industries to protect aquatic communities.
5.5.5	Work cooperatively with Fisheries to conserve *Crenoicus harrisonii*
5.6	**Montane peatlands and swamps on the Barrington Tops Plateau**

5.6.1 Encourage research to be undertaken on the montane swamps giving priority to research issues identified in section 10.

5.6.2 Give priority to the management of species and communities considered under threat from climate change within the montane swamps (e.g. Broad-toothed rat, threatened orchids).

5.6.3 Prohibit unauthorised vehicle use within close proximity of the montane swamps (see section 9.2).

5.6.4 Prohibit adventure activities in montane swamps and the surrounding area (see section 9.9).

6.1 Aboriginal heritage

6.1.1 Continue to build working relationships with the Aboriginal communities connected with the planning area. Foster their continued involvement in strategic and management planning.

6.1.2 Encourage continued Aboriginal community involvement in park management and investigate new opportunities for involvement. Such opportunities may relate to the promotion of appropriate visitor behaviour (for example assistance with the development of a camping code of conduct), assistance with the protection and interpretation of heritage sites, assistance with threatened species protection (for example Broad-toothed rat) and monitoring impacts on the planning area.

6.1.3 Undertake conservation works in consultation with the local Aboriginal community to protect Aboriginal sites if any are being negatively impacted by visitors, feral animals or any other natural or artificial process.

6.1.4 Only Aboriginal sites or places approved by the Aboriginal community will be open to visitation and will be interpreted in a way that is culturally appropriate, accurate and respects the wishes of Aboriginal people.

6.1.5 Encourage research and recording of the social and cultural history, use and relationship of Aboriginal people to the planning area.

6.1.6 Encourage surveys for unrecorded Aboriginal sites, with a priority given to areas of high recreational use.

6.1.7 The Aboriginal community will be encouraged to visit the planning area and undertake cultural activities consistent with the NPW Act and NPWS policy.

6.1.8 Investigate approval for wild resource use by Aboriginal people in the planning area consistent with any NPWS policy.

6.1.9 Aim to increase community understanding and appreciation of the natural and cultural values of the planning area by emphasising in interpretation the traditional use of the area by local Aboriginal people and the importance of the planning area to local contemporary Aboriginal people.

6.1.10 Commercial tour operators will be encouraged to employ Aboriginal tour guides to enhance the experience of their clients and provide economic, social and cultural benefits for Aboriginal people (see section 9.10).

6.1.11 Encourage Aboriginal organisations to compete for contract work associated with park management programs.

6.1.12 Commercial operators who propose to visit approved Aboriginal sites or places and/or interpret Aboriginal cultural heritage within the planning area must seek the approval of relevant Aboriginal communities and ensure that information provided about an Aboriginal site or place is culturally appropriate, accurate and respects the wishes of Aboriginal people (see section 9.10).

6.1.13	NPWS will work with Aboriginal communities to facilitate the carrying out of community based cultural tours within the planning area (see section 9.10).
6.2	**Historic heritage**
6.2.1	No historic structure, place or other historic resource will be altered or destroyed without assessment of its heritage significance.
6.2.2	Encourage research into the social and cultural history of the Wangat River and Whispering Gully mining precincts. Continue to not encourage access to these areas due to safety concerns (see section 10).
7.1	**Introduced plants**
7.1.1	Undertake all weed management and control in accordance with the priorities identified in the Hunter and Central Coast Hunter Range Regional Pest Management Strategies (see Appendix 4).
7.1.2	All pesticides will be used in accordance with best management practices and relevant legislation (i.e. *Pesticides Act 1999*).
7.1.3	Coordinated weed management will be encouraged across all land tenures and in cooperation with neighbours, the North Coast Weed Management Committee and the Upper Hunter Noxious Weeds Council.
7.1.4	The involvement of community groups in weed identification, mapping and treatment will be encouraged.
7.2	**Introduced animals**
7.2.1	Undertake all introduced animal management and control in accordance with the priorities identified in the Hunter and Central Coast Hunter Range Regional Pest Management Strategies. Species defined as high priority include the feral pig, feral horse, wild dog and fox (see Appendix 4).
7.2.2	Introduced animals will be controlled, in cooperation with neighbours, Livestock Heath and Pest Authorities and Wild Dog Associations.
7.2.3	Domestic animals and stock will not be permitted in the planning area other than on those roads and areas designated under section 9.2 for transit of pets in vehicles and under section 9.6 those areas designated for horse riding.
8.1	**Fire management**
8.1.1	Wildfires will be suppressed as quickly as possible if they are likely to threaten biodiversity or neighbouring assets. As far as possible, fire will be completely excluded from areas of rainforest.
8.1.2	The use of heavy machinery for fire suppression will be avoided as far as possible in the vicinity of threatened species, rainforest, cultural heritage sites, water catchment areas and wilderness areas.
8.1.3	Encourage research into the ecological fire requirements of the plant and animal communities within the planning area, particularly the response of significant plant species to fire (see section 5.1, 5.2).
8.1.4	Maintain close contact and cooperation with Rural Fire Service bush fire brigades and continue to actively participate in the relevant Bush Fire Management Committees.
8.1.5	The use of chemical retardants during wildfires will take into consideration the potential significant impacts on the plants and animals of the planning area and particularly the montane swamps.
8.1.6	The use of surfactants will be restricted in the montane wetlands and swamps.

9.1 Interpretation, education and information

9.1.1 Aim to increase community understanding and appreciation of the outstanding natural and cultural values of the planning area by placing emphasis on:

- the Gondwana Rainforests of Australia World Heritage Area
- the significance of the Barrington Wilderness
- the diversity of plants and animals, in particular the sub-alpine environment
- traditional use of area by local Aboriginal people and the value to contemporary Aboriginal people
- history of the early settlement and use of the planning area and the strong historical association that many people have today
- the importance of the area to regional tourism and its popularity
- minimal recreation impact including appropriate visitor behaviour.

9.1.2 Encourage continued community involvement in reserve management and investigate new opportunities for involvement. Such opportunities may relate to the promotion of appropriate visitor behaviour (for example camping code of conduct), assistance with the protection and interpretation of heritage sites, assistance with threatened species protection (for example Broad-toothed rat) and monitoring impacts on the planning area.

9.1.3 Continue active participation with local and regional tourism authorities and economic development organisations in the development and implementation of regional tourism strategies, to ensure the promotion of appropriate ecologically sustainable tourism in the planning area.

9.1.4 Encourage relevant authors and publishers to liaise with NPWS staff regarding park information and encourage the promotion of appropriate use and minimal impact recreational use in publications.

9.2 Vehicle access

9.2.1 Maintain the public and park roads illustrated on Figure 6 for two and four-wheel drive access. This provides 75 km of roads available for unsealed two-wheel drive access and 61 kilometres for four-wheel drive access.

9.2.2 Public and park roads may be temporarily closed to all public access, including cyclists, due to extreme weather conditions, fire events and other natural hazards.

9.2.3 The NPWS will cooperate with other authorities to implement the management plan for seasonal and temporary road closures to deal with severe weather events like snow where roads need to be temporarily closed.

9.2.4 Appropriate environmental assessment and justification will be undertaken for any new road development.

9.2.5 The NPWS will continue to cooperate with Forestry Corporation of NSW and local councils on road maintenance programs.

9.2.6 Animals (including dogs, cats, livestock) will be permitted to be transported by vehicle through Barrington Tops National Park and Barrington Tops State Conservation Area only along Barrington Tops Forest Road, Tubrabucca Road and Pheasant Creek Road and only within the road corridor. Animals (including dogs, cats and livestock) will be permitted to be transported by vehicle through Mount Royal National Park only along Mount Royal Road and Cassels Road and only within the road corridor. The vehicles must not stop and the animals must not leave the vehicle within the reserves.

9.3 Camping

9.3.1 Permit bush camping more than 200 metres from a public road or walking track throughout the planning area, except in the Phytophthora quarantine area.

9.3.2 Promote minimum-impact camping techniques in association with relevant interest groups.

9.3.3 Only permit wood fires in camping areas within provided barbecue places or communal fire places (see Table 2).

9.3.4 Undertake rehabilitation works in camping areas as necessary to protect the natural environment in particular threatened species.

9.3.4b Configure and manage facilities in camping areas in accordance with Table 2.

9.4 Day use

9.4.1 Undertake rehabilitation works in day use areas as necessary to protect the natural environment in particular threatened species.

9.4.2 Permit wood fires only in day use areas where barbecue places are provided (see Table 3).

9.4.2b Configure and manage facilities in day use areas in accordance with Table 3.

9.6 Horse riding

9.6.1 Horse riding will be permitted in Barrington Tops State Conservation Area on the Bicentennial National Trail along Tubrabucca Road, Butchers Swamp Trail, Paddys Ridge Trail, Green Gap Trail, Barrington Trail – Central, Pheasant Creek Road and Gummi Road; and on Tubrabucca Road, Bullock Brush Trail, Tugalow Trail, Thunderbolts Trail and Wombat trail; and in Mount Royal National Park on Mount Royal Road, Cassels Road and Cedar, Timberlea and Bunyip trails. Horses will only be permitted within the road corridor of all these designated trails as shown on Figure 8.

9.6.2 Camping with horses will only be permitted at Cascade Camping Area (see section 9.3, Figure 7 and 8, Table 2) and subject to the following conditions:

- processed feeds or cracked grain may be used to feed horses but not hay
- horses are to be tethered at least 20 metres from the Manning River
- horses are to be tethered or contained in temporary yards overnight
- temporary yards must be erected at least 20 metres from the river. Temporary yards will be constructed of electric fencing tape and the yards are to be removed when the camping area is vacated.

9.6.3 Horse riding activities involving more than 10 people, that is part of an organised competition, non-commercial event, or a commercial activity require written consent from the NPWS. Provision of a risk assessment and appropriate public liability insurance will be a requirement for consent.

9.7 Cycling

9.7.1 Cycling will only be permitted on the BNT, roads and trails shown on Figure 8.

9.7.2 Cycling will not be permitted on the Watergauge Trail because of the potential for cyclists to spread Phytophthora throughout the planning area (see section 7.3).

9.7.3 Cycling is not permitted on single track walking tracks in the planning area consistent with NPWS policy.

9.7.4 Cycling on Youngs Trail is not permitted east of Shalley Hill.

9.8 Fishing

9.8.1 Fishing activities will be jointly managed with Department of Primary Industries (Fishing).

9.8.2 The collection of animals including amphibians, amphibious mammals and amphibious reptiles and the introduction of live bait into the planning area is prohibited.

9.8.3	The restocking of exotic fish species (rainbow trout) in the planning area will continue in Polblue Creek, Tubrabucca Creek, Backwater Creek, Manning River and Carters Brook as nominated by Department of Primary Industries (Fishing). In accordance with NSW Freshwater Fish Stocking Fishery Management Strategy (DPI 2005) no harvest stocking of fish species will occur within the declared wilderness and World Heritage areas. No streams within or flowing into declared wilderness or World Heritage areas will be stocked with trout or any introduced fish species. The NPWS will work cooperatively with Department of Primary Industries (Fishing) to ensure stocking is undertaken in accordance with the *Fisheries Management Act 1994* (s216).
9.8.4	Encourage the restocking of streams with locally endemic fish species rather than introduced species in accordance with the Fishery Management Strategy.
9.8.5	Support and encourage any initiatives by Department of Primary Industries (Fishing) to undertake research on native fish in the area, recreational fish catches and to manage fish populations and habitat.
9.9	**Adventure Activities**
9.9.1	Orienteering/rogaining, paragliding/sailing, abseiling and rock climbing will not be permitted in the planning area. Any other form of adventure activity will require written consent from the NPWS. Provision of a risk assessment and appropriate public liability insurance will be a requirement for consent.
9.9.2	Canyoning activities will require written consent from the NPWS. Provision of a risk assessment and appropriate public liability insurance will be a requirement for consent.
9.9.3	Continue to support relevant groups and authorities with search and rescue activities in the planning area.
9.10	**Commercial tourism**
9.10.1	Ensure the long-term protection of the natural and cultural values of the planning area, visitor experiences and safety, and recreational opportunities by requiring licences in accordance with the Commercial Recreation and Tour Operator Parks Eco Pass Operating Procedures.
9.10.2	Encourage all commercial operators to undertake an education training program.
9.10.3	Require commercial operators whose activities may encroach on, use or visit an Aboriginal site or place, to negotiate with, and obtain the support of appropriate local Aboriginal groups.
10.	**Scientific research**
10.1	Require all researchers to be licensed in accordance with legislative requirements of the NPW Act and NPWS policy.
10.2	Direct NPWS research efforts towards baseline data and monitoring the impact of recreational activities on biophysical indicators.
10.3	Ensure that research causes minimal environmental impact. This will include ensuring that any research structures, long-term markers etc. are placed in locations that will minimise their visual impact and ensure their removal upon completion of the research.
10.4	Work cooperatively with and encourage researchers from other organisations to share information and to design research programs that provide information that is directly useful for management purposes.
10.5	Liaise with and provide a copy of all findings to all relevant groups (including the Commonwealth Department of Agriculture, Water and the Environment and Local Aboriginal Land Councils) when undertaking research into areas such as Aboriginal heritage or World Heritage areas.

11.1	**Reserve management**
11.1.1	Retain the works compounds at Little Murray and Polblue as bases for field activities in the northern part of the planning area.
11.1.2	Continue use of existing quarries for provision of road base gravel for roads on NPWS estate only, to prevent the introduction of pathogens and weeds.
11.2	**Non-NPWS infrastructure**
11.2.1	Continue the rights to existing monitoring stations in accordance with the existing agreements with Department of Planning and Environment and Hunter Water.
11.2.2	Continue to allow the Department of Planning and Environment access to maintain trigonometric stations according to the NPWS Policy – Surveying Activities Associated with *Trig and Geodetic Stations and the Surveying Act 2002*.
11.2.3	Retain infrastructure of trigonometric stations for their historical value, in particular, Cockrow Mountain and Mount Royal.
11.2.4	Require an appropriate environmental impact assessment and NPWS approval for new infrastructure and any alterations to the existing infrastructure and/or maintenance requirements.
11.3	**Mining and exploration**
11.3.1	Applications for approval to undertake exploration or mining activities within Barrington Tops State Conservation Area will be subject to environmental assessment and approval by Regional NSW (Mineral Resources) and concurrence of the Minister administering the NPW Act.
11.3.2	Access to more robust areas to disturbance will be considered more favourably than sensitive areas like the montane swamps.
11.3.3	Hygiene protocols for stopping the spread of pathogens and weeds into the area will be required as part of application approvals.
11.3.4	Any new trails created as a part of mining operations will be closed and rehabilitated immediately after use.
11.3.5	No fossicking will be permitted in Barrington Tops State Conservation Area, Barrington Tops National Park or Mount Royal National Park.
11.3.6	Review the classification of Barrington Tops State Conservation Area every five years to determine whether it should receive either a national park or nature reserve classification in accordance with section 47M of the NPW Act and in consultation with the Minister administering the *Mining Act 1992*.
11.4	**Boundary fencing and boundary identification**
11.4.1	Undertake cooperative replacement and repair of boundary fencing with neighbouring property owners in accordance with the NPWS Boundary Fencing Policy.
11.4.2	Where there is dispute with neighbouring property owners about the exact location of the boundary, the NPWS may have the boundary surveyed.

The corresponding reference indicates from which section of the plan the guideline was generated.

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Acronyms and abbreviations

ASL	Above Sea Level
BNT	Bicentennial National Trail
CERRA	Central Eastern Rainforest Reserves of Australia
CMA	Catchment Management Authority
DECC	Department of Environment and Climate Change
DPI	Department of Primary Industries
DWE	Department of Water and Energy
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FOXTAP	Fox Threat Abatement Plan
MoU	Memorandum of Understanding
NP	National park
NPW Act	*National Parks and Wildlife Act 1974*
NPW Regulation	National Parks and Wildlife Regulation 2002
NPWS	National Parks and Wildlife Service
RLPB	Rural Lands Protection Board
ROTAP	Rare and Threatened Australian Plants
SCA	State Conservation Area
TSC Act	*Threatened Species Conservation Act 1995*
UNESCO	United Nations Educational, Scientific and Cultural Organisation

Appendices

Appendix 1: Vegetation communities of Barrington Tops National Park, Mount Royal National Park and Barrington Tops State Conservation Area

	Description	Distribution
Subtropical Rainforest		
Suballiance No.12 (Floyd 1990)	*Sloanea woollsii – Dysoxylum fraserianum – Argyrodendron actinophyllum – Caldcluvia.*	Generally occurs in high exposed locations between 600 and 1000 m. Particularly on slopes with easterly aspects on soils generally derived from basalts.
Suballiance No.13 (Floyd 1990)	*Schizomeria – Doryphora – Caldcluvia – Cryptocarya glaucescens*	Generally occurs under cooler conditions than suballiance No.12 on basalt derived soils from 500 to 1100 m. Generally confined to the Barrington Tops watershed.
Suballiance No.14 (Floyd 1990)	*Doryphora - Daphnandra micrantha – Dendrocnide – Ficus – Toona*	Occurs in areas drier than either suballiance 12 or 13 and prefers the more sheltered and fertile gullies at altitudes below 500 m.
Dry Rainforest		
Suballiance No.24 (Floyd 1990)	*Backhousia sciadophora-Dendrocnide – Drypetes*	Occurs on steep, stony slopes where soils are generally shallow and well drained. Often occupy scree slopes, which act to prevent the spread of fire in otherwise fire prone environments.
Suballiance No.29 (Floyd 1990)	*Backhousia myrtifolia – Lophostemon confertus – Tristaniopsis* spp.	Found on shallow dry soils of sedimentary origin occasionally with some basaltic enrichment; principally in dry gullies.
Warm Temperate Rainforest		
Suballiance No.35 (Floyd 1990)	*Ceratopetalum -Schizomeria – Caldcluvia*	Occurs at the most southerly part of its range and is very restricted in area being confined to the Jerusalem Creek area of Barrington Tops National Park. It occurs on poorer sandstone derived sediments. Coachwood (*Ceratopetalum apetalum*) which is normally a major component of this community is otherwise absent in Barrington Tops National Park.
Suballiance No.39 (Floyd 1990)	*Schizomeria – Doryphora –Orites – Caldcluvia*	Occurs at altitudes between 700 and 1100 m in protected locations generally on enriched shallow podzolic soils.
Cool Temperate Rainforest		
Suballiance No. 50 (Floyd 1990)	*Nothofagus – Doryphora – Orites – Caldcluvia*	Occur in sheltered areas at lower altitudes between 700m and 1000 m on rich basalt and granodiorite derived soils.
Suballiance No.51 (Floyd 1990)	*Nothofagus – Elaeocarpus holopetalus*	Found at higher altitudes between 1150 and 1500 m, in more sheltered valleys and at higher altitudes on the plateau along creek lines on basalt and granodiorite derived soils.

	Description	Distribution
Eucalypt Forest Communities		
Barrington Wet New England Blackbutt –Blue Gum (5,716 ha or 6.4%)	New England Blackbutt *(Eucalyptus campanulata)* in association with Sydney blue gum (*E.saligna)* mostly occurs as a tall wet forest with an often dense, tall mesic small tree and tall shrub understorey. Understorey species include soft corkwood (*Ackama paniculata),* forest maple *(Cryptocarya rigida),* jackwood *(C. glaucescens),* crabapple *(Schizomeria ovata*), rose myrtle (*Archirhodomyrtus beckleri)*, mountain watergum (*Tristaniopsis collina)* and at higher altitudes Antarctic beech (*Nothofagus moorei).* The ground cover is often sparse consisting principally of ferns such as *Sticherus lobatus and Blechnum wattsii, Hibbertia dentata* and *Lomandra longifolia* are also common.	It is particularly common in the Whispering Gully catchment.
Open Silvertop Stringybark - Blue Gum (5,051 ha or 5.6%)	Generally a tall open grassy forest clearly dominated by silvertop stringybark (*E. laevopinea)* but generally in association with Sydney blue gum *(E. saligna)* and or white-topped box *(E. quadrangulata).* The understorey is a dense grassy and herbaceous ground cover with scattered mesophytic shrubs, with the latter becoming dominant in some moister sites. Understorey shrubs include forest oak (*Allocasuarina torulosa)* and or green wattle (*Acacia irrorata).* Common ground cover species include *Lomandra longifolia, Pteridium esculentum, Dianella caerulea* and *Doodia aspera.*	This community occurs on the slopes of the plateau and is particularly common near Gloucester Tops and to western edge of Barrington Tops National Park.
Open Messmate – New England Blackbutt (5,049 ha or 5.6%)	Messmate (*E. obliqua)* is usually clearly dominant with New England blackbutt (*E. campanulata)* being a lesser component. Other canopy species that may occur include forest ribbon gum *(E. nobilis)* and silvertop stringybark (*E. laevopinea).* Mountain honeysuckle *(Banksia integrifolia varmonticola*) is often common as a sub-canopy species. The understorey is generally grassy and herbaceous. Common and frequent understorey species include *Poa* spp., bracken fern and *Lomandra longifolia.* In more protected sites there may be a dense fern groundcover of *Blechnum wattsii* and	This community occurs extensively on the edge of the plateau particularly on northerly aspects. Major examples occur within the vicinity of Gloucester Tops.

	Description	Distribution
	Sticherus lobatus and shrubs such as *Tasmannia stipitata.*	
Wet New England Blackbutt – Silvertop Stringybark (4643ha or 5.2%)	New England blackbutt dominates, silvertop stringybark *(E. laevopinea)* occurs frequently and white-topped box *(E. quadrangulata)* is occasionally present. The understorey is a dense grassy and herbaceous ground cover with scattered mesophytic shrubs, with the latter becoming prominent in the moister sites.	This tall open forest community occurs fairly extensively on northerly aspects particularly in the Gloucester Tops area.
Southern Wet Sydney Blue Gum (3,262 ha or 3.6%)	Tall open forest dominated by Sydney blue gum (*E. saligna)* with narrow-leaved white mahogany (*E. acmenoides)* as a common associate. Sydney blue gum and silvertop stringybark *(E. laevopinea)* are co-dominant in some stands. Understorey varies from tussock grass to mesic shrubs. Other canopy species include white-topped box (*E. quadrangulata)* and turpentine (*Syncarpia glomulifera).* There is usually a sub-canopy of rainforest species such as sassafras, corkwood, lilly pilly, crabapple, jackwood and forest maple. At the extreme Sydney blue gum occurs as scattered, but often very large, emergent trees over a tall rainforest (up to 25m), where this community grades into rainforest.	Occurs throughout the planning area at low to mid altitudes occasionally extending to 800m.
Coast Shrubby Grey Gum (1,232 ha or 1.4%)	Tall mixed open forest community dominated by grey gums including *Eucalyptus biturbinata, E. canaliculata* or at lower elevations *E. propinqua.* Associated species include White Mahogany (*E. acmenoides),* Sydney blue gum (*E.saligna*) and Tallowwood (*E. microcorys).* Understorey consists of a mosaic of grasses and herbs with ferns and mesic vine and shrub thickets.	This community has been extensively cleared throughout its area of natural occurrence. Found predominantly in south-east section of Barrington Tops National Park near the Wangat River and the Chichester Dam catchment at lower elevations.
Barrington Dry shrubby New England Blackbutt – Blue Gum (1,354 ha or 1.5%)	Tall open forest dominated by New England blackbutt often in association with Sydney blue gum. Understorey consists mainly of sclerophyll scrub or where fire is frequent a grassy layer dominated by *Poa labillardieri* and *Lomandra longifolia.*	This community occurs most commonly in Mount Royal National Park.

	Description	Distribution
Moist Open Escarpment White Mahogany (1,196 ha or 1.3%)	Dominated by Narrow – leaved white mahogany (*E. acmenoides),* commonly in associates with tallowwood *(E. microcorys),* small – fruited grey gum (*E. propinqua)* and Sydney blue gum *(E. saligna).*	Occurs at lower altitudes on more sheltered sites with a moderately dense, tall shrub and small tree understorey. On more exposed sites the understorey tends to be dominated by grasses and low scattered shrubs.
Barrington Moist Blue Gum – White Mahogany (895 ha or 1.0%)	Tall open forest or tall woodland dominated by Sydney blue gum *(E. saligna)* and narrow-leaved white mahogany (*E. acmenoides)*. White-topped box may also occur and may dominate small patches. The understorey generally consists of a mesic shrub layer but on more exposed sites grasses may predominate.	
Diehard Stringybark – New England Blackbutt (760 ha or 0.8%)	Generally merges with New England blackbutt communities, dominated by diehard stringybark *(E. cameronii).* Generally has a low grassy and herbaceous ground cover with only scattered shrubs.	Occurs on the drier western edges of Barrington Tops and Mount Royal National Parks.
Mountain Gum – Brown Barrell (3,030 ha or 3.4%)	A tall open forest dominated by mountain gum *(E. dalrympleana* spp. *dalrympleana)* in association with brown barrell (*E. fastigata).* The understorey generally consists of dense snow grass (*Poa sieberiana)* often with a scattering of *Acacia dealbata.*	This community generally occurs above 1300 m.
High Elevation Messmate - Brown Barrell (4,001 ha or 4.5%)	A tall open forest where messmate *(E. obliqua)* is usually dominant and brown barrell *(E. fastigata)* is a common associate. Brown barrell may alternate with messmate for dominance. Other occasional canopy species include *E. campanulata,* and *E. nobilis.* The understorey generally consists of tussock grasses and herbs. Frequent species include *Poa* spp., bracken fern and *Lomandra longifolia.* There is frequently a sparse to dense shrub stratum of *Acacia dealbata* and scattered thickets of lawyer vine (*Smilax australis.).*	Occurs extensively on the plateau generally at altitudes of between 1200 m and 1500 m however, it occasionally can be found down to 1000 m. This community is particularly well represented in the Barrington Tops State Conservation Area.
Brown Barrell – Mountain Gum (2,025 ha or 2.3%)	Dominated by brown barrell (*E. fastigata)* in association with mountain ribbon gum *(E. nobilis)* or mountain gum *(E. dalrympleana).* Dense grassy understorey with a dense to sparse shrub stratum of *Acacia dealbata* together with scattered small thickets of lawyer vine (*Smilax australis).*	Occurs extensively between 1200 m and 1500 m but occasionally down to 1000 m.

	Description	Distribution
Snow Gum – Mountain/Manna Gum (5684 ha or 6.4%)	Dominated by snow gum *(Eucalyptus pauciflora)* but includes sub-dominants such as mountain gum *(E. dalrympleana)* or forest ribbon gum (*E. nobilis).* It occurs extensively on low crests and slopes on the plateau above 1300 m. The proportion of snow gum tends to increase at higher altitudes or towards cold air drainage depressions. Black sally (*E. stellulata)* is occasionally present and is rarely locally common when other canopy species are usually absent. It has a dense ground layer that is dominated by snow grass (*Poa sieberiana),* often with scattered individuals or localised thickets of *Acacia dealbata.*	This community occurs within a mosaic of high elevation ecosystems.
Snow Gum (2666 ha or 3.0%)	Dominated by snow gum (*E. pauciflora),* however, may occur in association with mountain gum (*E. dalrympleana)* down to 1300 m. Black sally *(E. stellulata)* is occasionally present and rarely may be locally common (e.g. Polblue and Little Murray). The understorey is a dense sward of snow grass *(Poa sieberiana)*, often with scattered individuals or localised thickets of silver wattle (*Acacia dealbata*), Barrington wattle (*Acacia barringtonensis*), *Olearia erubescens,* golden everlasting (*Bracteantha bracteata*), small-fruited hakea (*Hakea microcarpa*), broad-leaved pepperbush (*Tasmannia purpurascens*), *Leucopogon hookeri, Pultenaea fasiculta, Lomandra longifolia*, snowgrass (*Poa sieberi*), bidgee-widgee (*Acaena novae-zelandiae*) and *Galium propinquum.*	Occurs extensively on the plateau above 1300 m.
Sub-alpine Communities		
Sub-alpine Grassland	Snowgrass (*Poa sieberiana*) dominates, however, at Gloucester Tops *Lomandra longifolia* often dominates. Many small shrubs and herbs (e.g. *Hakea microcarpa, Pultenaea gasciculata,* dwarf rice flower (*Pimelea linifolia*), grass triggerplant (*Stylidium graminifolium*) *Galium propinquum Leucopogon pilifer,* fringed eyebright (*Euphrasia ciliolata*), Barrington gentian (*Chionofentias barringtonensis*), *Thelymitra ixioides* var *ixiodes, Pterostylis coccina* and *Prasophyllum rogersii*), including terrestrial orchids amongst grass or lomandra clumps.	Found adjacent to wetlands, near streams and under snow gum woodland.

	Description	Distribution
Sub-alpine Wetland (Includes wet areas such as sod tussock, grassland, fen and bog)	Vegetation of wetlands is very uneven with sedge tussocks and sphagnum moss rising up to 1 m above original soil or peat level. Dominant plants include *Baloskion stenocoleum, Empodisma minus, Sphagnum cristatum, Carex gaudichaudiana, Plantago cladarophylla, Utricularia monanthos, Thelymitra cyanea.* Shrubs are also found in drier areas including *Leptospermum argenteum* (silver-leaved tea- tree), *Epacris microphylla* (coral heath), *Leucopogon hookeri, Hakea microcarpa* (small-fruited hakea).	Most occur in areas exposed to desiccating winds and cold air drainage.
Wet Heath Shrublands	*Pomaderis* sp.	

Based on rainforest classification as described by Floyd (1990), eucalypt forest communities described in NPWS (2003a) and the sub-alpine communities described in Henrich (2003).

Appendix 2: Threatened, rare or uncommon plants species and communities found in the planning area

Species	Location	Description	ROTAP Code	TSC Act
Legally protected species				
Asperula asthenes	Sub-alpine woodland	Herb	3VC	Vulnerable Schedule 2
Diuris venosa	Sub-alpine woodland	Terrestrial orchid	2VC	Vulnerable Schedule 2
Euphrasia ciliolata	Sub-alpine woodland	Herb	2KC	Vulnerable Schedule 2
Marsdenia longiloba	Subtropical Rainforest	Climber	3RC	Endangered Schedule 1
Pterostylis sp. D.	Sub-alpine wetland	Terrestrial orchid	3VCa	Vulnerable Schedule 2
Senna acclinus	Subtropical Rainforest	Shrub	3RC	Endangered Schedule 1
Tasmannia purpurascens	Sub-alpine woodland	Shrub	2VC-t	Vulnerable Schedule 2
Tasmannia glaucifolia	Sub-alpine woodland / wetland	Shrub	3VCi	Vulnerable Schedule 2
Chiloglottis platyptera	Sub-alpine woodland	Terrestrial orchid		Vulnerable Schedule 2
Plant community				**TSC Act**
Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions				Schedule 1 Endangered Ecological Community
Species	**Location**		**Description**	**ROTAP Code**
Rare or uncommon plants not legally protected				
Acacia barringtonensis	Sub-alpine woodland		Shrub	3RCa
Adenochilus nortonii	Sub-alpine wetland		Terrestrial orchid	
Asplenium trichomanes ssp. quadrivalens	Sub-alpine woodland		Fern	
Caladenia sp. aff. carnea	Sub-alpine woodland		Terrestrial orchid	
Caladenia sp. aff. patersonii	Sub-alpine wetland		Terrestrial orchid	
Calochilus sp. aff. gracillimus	Sub-alpine grassland		Terrestrial orchid	
Chiloglottis palachila	Cool temperate rainforest/sub-alpine woodland		Terrestrial orchid	3RC
Chiloglottis pluricullata	Sub-alpine woodland/wetland		Terrestrial orchid	

Species	Location	Description	ROTAP Code	TSC Act
Chionogentias barringtonensis	Sub-alpine grassland			2RC
Corybas sp. A	Sub-alpine wetland		Terrestrial orchid	
Discaria pubescens	Woodland / forest		Shrub	3RCa
Eriochilus sp. aff. cucullatus	Sub-alpine grassland		Terrestrial orchid	
Eucalyptus largeana	Wet sclerophyll forest		Tree	3R
Grevillea granulifera	Open woodland on granodiorite		Shrub	3Kca
Leptospermum argenteum	Sub-alpine wetland		Shrub	2RC
Marsdenia liisae	Wet sclerophyll forest		Climber	3RC
Microtis sp. aff. rara	Sub-alpine wetland		Terrestrial orchid	
Plantago cladarophylla	Sub-alpine wetland		Herb	2RC
Plantago palustris	Sub-alpine wetland		Herb	2RC
Pomaderris costata	Open forest		Shrub	3RC
Pomaderris helianthemifolia	Sub-alpine woodland		Shrub	
Prasophyllum rogersii	Sub-alpine grassland		Terrestrial orchid	
Prasophyllum sp. aff. fuscum	Sub-alpine grassland		Terrestrial orchid	
Prasophyllum sp. aff. odoratum	Sub-alpine grassland / wetland / woodland		Terrestrial orchid	
Pterostylis elegans	Sub-alpine woodland		Terrestrial orchid	3KC
Pterostylis sp. aff. cynocephala	Sub-alpine grassland		Terrestrial orchid	
Pterostylis sp. aff. longifolia	Sub-alpine wetland		Terrestrial orchid	
Pterostylis sp. aff. monticola	Sub-alpine grassland		Terrestrial orchid	
Pterostylis sp. aff. parviflora	Sub-alpine woodland		Terrestrial orchid	
Senecio macranthus	Wet sclerophyll forest		Herb	3RC
Genoplesium sp. aff. simulans	Sub-alpine woodland		Terrestrial orchid	

Appendix 3: Vulnerable or endangered animal species found in the planning area (*Threatened Species Conservation Act 1995*)

Species	Common Name	General Location	TSC Act
Amphibians			
Litoria booroolongensis	Booroolong Frog	Sub-alpine area streams.	E1
Litoria daviesae (formerly L. subglandusosa)	Glandular Frog	Sub-alpine area; rainforest, eucalypt forest, swamps.	V
Philoria sphagnicola	Sphagnum Frog	Sub-alpine area; rainforest, swamps.	V
Mixophyes balbus	Stuttering Frog	Cool temperate rainforest, moist eucalypt forest.	E1
Mixophyes iteratus	Giant Barred Frog	Below 1000 m in rainforest and wet eucalypt forests.	E1*
Reptiles			
Hoplocephalus stephensii	Stephens Banded Snake	Rainforest and eucalypt forest up to 950m.	V
Birds			
Burhinus grallarius	Bush Stone-curlew	Open forest, woodland.	E1
Atrichornis rufescens	Rufus Scrub-bird	Subtropical, warm temperate and cool temperate rainforest, moist eucalypt forest.	V
Callocephalon fimbriatum	Gang-gang Cockatoo	Tall mountain forests and woodlands. In winter, may occur at lower altitudes.	V
Calyptorhynchus lathami	Glossy Black- cockatoo	Moist and dry eucalypt forests, usually with sheoaks.	V
Climacteris picumnus	Brown Treecreeper	Woodlands, forest clearings, edges, eucalypts along streams.	V
Grantiella picta	Painted Honeyeater	Open forest and woodland.	V
Ninox connivens	Barking Owl	Eucalypt woodland, open forest, swamp woodlands, timbered watercourses.	V
Ninox strenua	Powerful Owl	Woodland, open forest, tall moist forest, rainforest.	V
Pachycephala olivacea	Olive Whistler	Wet, high altitude forests above 500m.	V
Ptilinopus magnificus	Superb Fruit-dove	Subtropical and dry rainforest.	V
Ptilinopus superbus	Wompoo Fruit-dove	Rainforest, low elevation moist eucalypt and brushbox forests.	V
Pyrrholaemus sagittatus	Speckled Warbler	Open woodland.	V
Tyto novaehollandiae	Masked Owl	Dry eucalypt forest and woodlands up to 1100m.	V

Species	Common Name	General Location	TSC Act
Tyto tenebricosa	Sooty Owl	Dry, subtropical and warm temperate rainforest, moist eucalypt forest.	V
Mammals			
Pseudomys oralis	Hastings River Mouse	Dry, open forest.	E1*
Mastacomys fuscus	Broad-toothed Rat	Sub-alpine swamps.	V,E2
Aepyprymnus rufescens	Rufous Bettong	Tall, moist eucalypt forest, open woodland.	V
Cercartetus nanus	Eastern Pygmy-possum	Rainforest, eucalypt forest.	V
Dasyurus maculatus	Spotted-tailed Quoll	Dry and moist eucalypt forest, rainforest.	V
Falsistrellus tasmaniensis	Eastern False Pipistrelle	Moist and dry eucalypt forest and rainforest.	V
Kerivoula papuensis	Golden-tipped Bat	Rainforest and moist forest with tangled understorey.	V
Macropus parma	Parma Wallaby	Moist eucalypt forest with thick understorey.	V
Petaurus norfolcensis	Squirrel Glider	Dry eucalypt forest and woodland.	V
Miniopterus australis	Little Bentwing Bat	Moist eucalypt forest, rainforest.	V
Miniopterus schreibersii	Common Bentwing Bat	Eucalypt forest and woodland.	V
Mormopterus norfolkensis	Eastern Freetail Bat	Mature forest with tree hollows.	V
Myotis adversus	Large-footed Myotis	Rainforest streams, large lakes and reservoirs.	V
Petaurus australis	Yellow-bellied Glider	Tall mature eucalypt forests.	V
Phascogale tapoatafa	Brush-tailed Phascogale	Dry eucalypt forest and woodlands.	V
Phascolarctos cinereus	Koala	Eucalypt forest and woodland.	V
Planigale maculata	Common Planigale	Rainforest, eucalypt forest, heathland, marshland, grassland.	V
Potorous tridactylus	Long-nosed Potoroo	Cool temperate rainforest.	V
Pteropus poliocephalus	Grey-headed Flying Fox	Rainforests, open forests, woodlands, Melaleuca swamps.	V
Saccolaimus flaviventris	Yellow-bellied Sheathtail Bat	Mature forest with tree hollows.	V
Scoteanax rueppellii	Greater Broad-nosed Bat	Woodland, moist and dry eucalypt forest to rainforest below 500m.	V
Thylogale stigmatica	Red-legged Pademelon	Rainforest, moist eucalypt forest with dense understorey.	V

Notes: V = Vulnerable, E1 = Endangered Species, E2 = Endangered Population

* listed also under the EPBC Act

Appendix 4: Significant pest species in the planning area

Pest species	Location	Potential impact	Weed type	Priority	Legal status
Weeds					
Scotch broom (Cytisus scoparius)	Woodlands and open forest dominated by *Eucalyptus pauciflora* with occurrences of other species such as *E. stellulata* and *E. dalrympleana* on the Barrington Plateau. Also infests wetlands and open grassland plains of the plateau	Potential to become a dominant in the understorey of the entire sub-alpine plateau. Scotch broom thickets also arbour pest animals such as feral pigs and foxes.	S	H	N
Tree of Heaven (Ailanthus altissima)	Along Moonan Brook near Bungaree Trail.	Plant spread rapidly from spreading roots, leaves allelopathic preventing growth of other plants.	T	H	W2
Blackberry (*Rubus sp.*)	Barrington Trail, Watergauge.	Restricted to previously disturbed areas (grazing/timber) and open forest canopies/ creeklines.	S	M	W3
Mist flower (Agertina riparia) Crofton weed (Ageratina adenophora)	Isolated infestations along creek lines flowing east from the plateau, along the edges of Gloucester Tops Road and along the creek lines and roads in Mount Royal National Park and Malumla in the south-western corner of Barrington Tops National Park.	Potential to infest along freshwater creeks, limited to disturbed sheltered areas along road edges, creeks and drainage easements.	S	H (MR) M (BT)	W3 Coastal areas
Nodding thistle (*Cardus nutans*)	Along Barrington Trail, Barrington Tops State Conservation Area.	Invasive on disturbed / cleared lands with an open canopy.	H	M	W3
Pine species (*Pinus spp.*)	Experimental pine plantation at Green Gap, Meehans Camp, and Paddys Ridge Trail, Barrington Tops State Conservation Area. Also in Youngville Picnic Area, Mount Royal National Park.	Potential to spread if left unchecked.	T	L	
Bamboo (Phyllostchys sp.)	Gloucester River Camping Area		S	L	
Yorkshire Fog (*Holcus lanatus*)	Polblue, Junctions Pools, Nolans Swamp	Potential to spread in and around wetlands displacing native grasses/sedge.	G	M	

Pest species	Location	Potential impact	Weed type	Priority	Legal status
Lantana (*Lantana camara*)	Chichester area.	Potential to spread in open forest following disturbance.	S	M	
St Johns wort (*Hypercium perforatum*)	Polblue area, isolated infestation.		H	H	W2
Vertebrate pests					
Wild dogs (*Canis lupus familaris*)	Wild dogs are found recorded on the boundaries of the planning area.	Potential impact on native animals and cause loss of stock in neighbouring properties.		H (BT) M (MR)	N
Feral pigs (*Sus scrofa*)	Feral pigs have been recorded in the plateau of the planning area.	Potential disturbance and removal of threatened and rare plant species. Recognised vector for dispersal of Scotch broom and promoting germination through rooting and wallowing habit. Potential vector for dispersal of Phytophthora.		H	N
Feral horses (*Equis caballus*)	Horses have been recorded on the plateau and in the Davis Creek – Cross Creek area.	Potentially cause damage to sub-alpine swamps through trampling of peaty soils and selective grazing. Potential vector for spreading Phytophthora.		H	
Foxes (Vulpes vulpes)	Foxes have been recorded throughout the planning area.	Potential impact on critical weight range mammals, birds, frogs and reptiles.			

Weed type

V= vine

S = shrub

T = tree

A= aquatic water weed

G= grass

H = herb

Priority

H (high) = highly invasive of non-disturbed areas; priority for immediate control programs

M (medium) = invasive in disturbed environments, reduced threat to non-disturbed areas

L (low) = restricted to areas of disturbance

Legal status

N = noxious weed or animal

MR = Mount Royal National Park

BT = Barrington Tops National Park and State Conservation Area

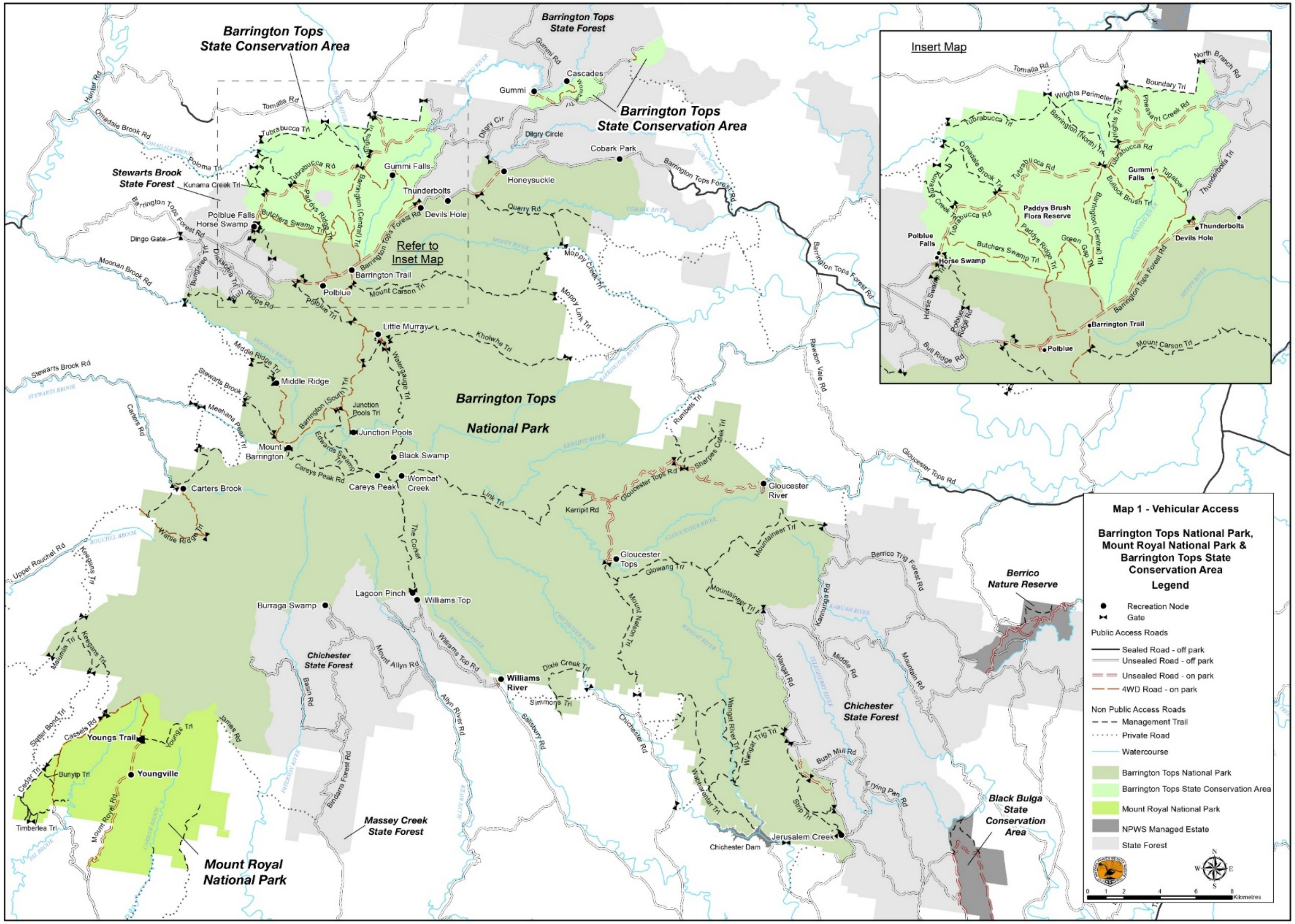

Figure 6 Vehicle access map

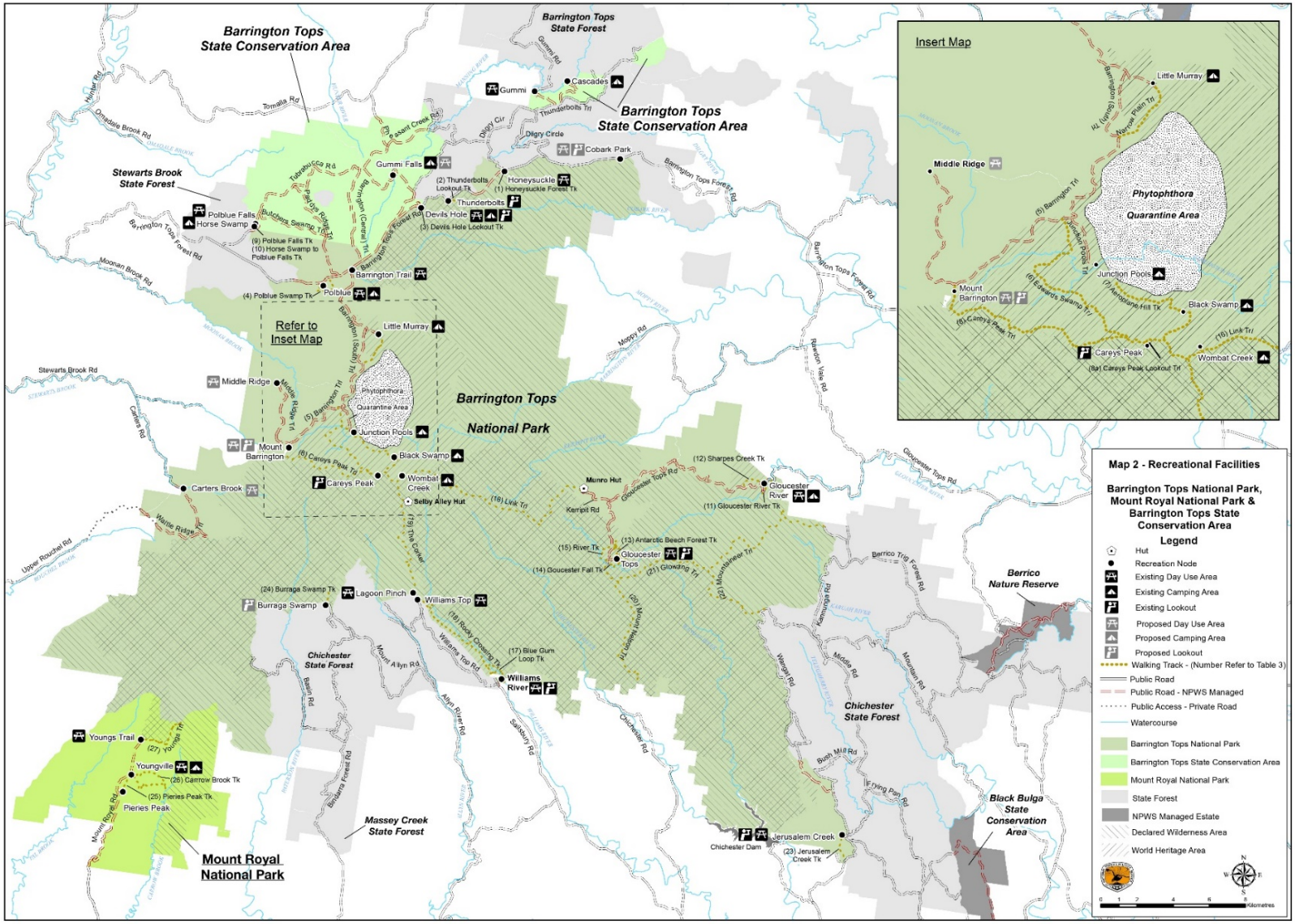

Figure 7 Recreational facilities map

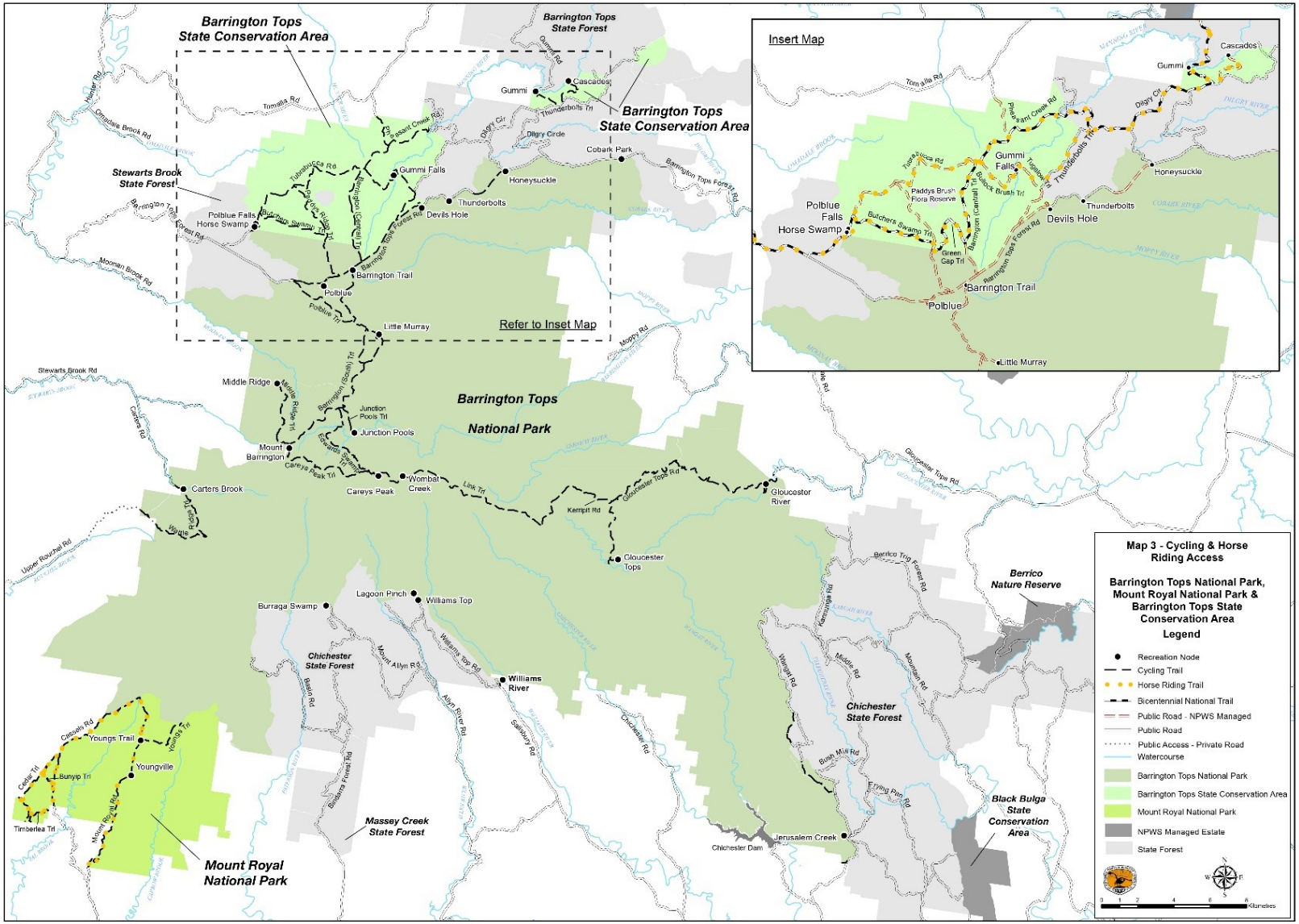

Figure 8 Cycling and horse riding access map