

***Parks & Reserves  
of the  
Tweed Caldera***

**Incorporating**

*National Parks:*

**Mt Warning**

**Border Ranges**

**Mebbin**

**Nightcap**

**Mt Jerusalem**

**Goonengerry**

*Nature Reserves:*

**Limpinwood**

**Numinbah**

**Snows Gully**

***Plan of Management***

**NSW  
NATIONAL  
PARKS AND  
WILDLIFE  
SERVICE**

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**NSW National Parks and Wildlife Service**

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## FOREWORD

This plan of management encompasses the national parks and nature reserves commonly known as the “Tweed Caldera”, all of which form part of the ancient Mt Warning (or Wollumbin) shield volcano in far northern NSW. The “planning area” encompasses Mt Warning, Border Ranges, Mebbin, Nightcap, Goonengerry and Mt Jerusalem National Parks and Limpinwood, Numinbah and Snows Gully Nature Reserves.

The parks and reserves of the planning area are all considered in the one plan because, with the exception of the western Border Ranges, they form part of a common landscape - the Mt Warning shield volcano. (Also forming part of this spectacular landform are Lamington and Springbrook National Parks in Queensland).

Most of the planning area is of international renown for its World Heritage listed subtropical rainforests (part of the Central Eastern Rainforest Reserves (Australia) World Heritage Property), outstanding landscapes, and the recreation opportunities it affords. The majority of Border Ranges NP and all of Limpinwood NR is declared wilderness, thereby affording a sense of remoteness and solitude. The plan also provides for the protection of significant Aboriginal and historic cultural heritage values.

In addition to the subtropical rainforest, there are large areas of wet and dry sclerophyll forest and pockets of sub-montane heath which provide habitat for a large number of threatened plant and animal species. Of particular significance is the border region of the planning area which has the highest concentration of marsupial, bird, snake and frog species in Australia.

A wide range of nature based recreation opportunities are provided in the planning area. Some outstanding scenic drives are provided, including the extensive Tweed Scenic Drive in the Border Ranges with its focus on rainforests and views into the Tweed Caldera. Such driving opportunities are rare elsewhere. There is also a diverse range of spectacular bushwalks including: the summit walk in Mt Warning NP; Antarctic beech forest walk in Border Ranges NP, and walks to towering waterfalls in Nightcap NP.

Eleven day use and three camping areas are provided in the planning area. Horse riding is also provided on a range of trails in those parts of the planning area where the activity can be undertaken safely and sustainably.

This plan of management establishes the scheme of operations for the “Parks and Reserves of the Tweed Caldera”. In accordance with the provisions of Sections 75 and 76 of the *National Parks and Wildlife Act, 1974*, this plan of management is hereby adopted.

**Bob Debus**  
**Minister for the Environment**



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## ABBREVIATIONS

CERRA	Central Eastern Rainforest Reserves (Australia) World Heritage Property
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth).
EP&A Act	Environmental Planning & Assessment Act 1979 (NSW)
F&NPE Act	Forestry and National Parks Estate Act 1998 (NSW)
FR&NPR Act	Forestry Revocation and National Park Reservation Act 1983 (NSW)
MOU	Memorandum of Understanding
Mt	Mount
NP	National Park
NR	Nature Reserve
NSW	New South Wales
NPWS	New South Wales National Parks and Wildlife Service (which is part of the Department of Environment and Conservation)
NP&W Act	National Parks and Wildlife Act 1974 (NSW)
Planning Area	Parks and Reserves of the Tweed Caldera
QLD	Queensland
QPWS	Queensland Parks and Wildlife Service
SCA	State Conservation Area
SF	State Forest
SFNSW	State Forests New South Wales
TSC Act	Threatened Species Conservation Act 1995 (NSW)

# 1. INTRODUCTION

## 1.1 Location & Regional Setting

This plan affects a group of national parks and nature reserves associated with the Tweed shield volcano caldera and located in the hinterland of the far north coast of New South Wales (see Table 1 and Figure 1).

**Table 1. The Planning Area**

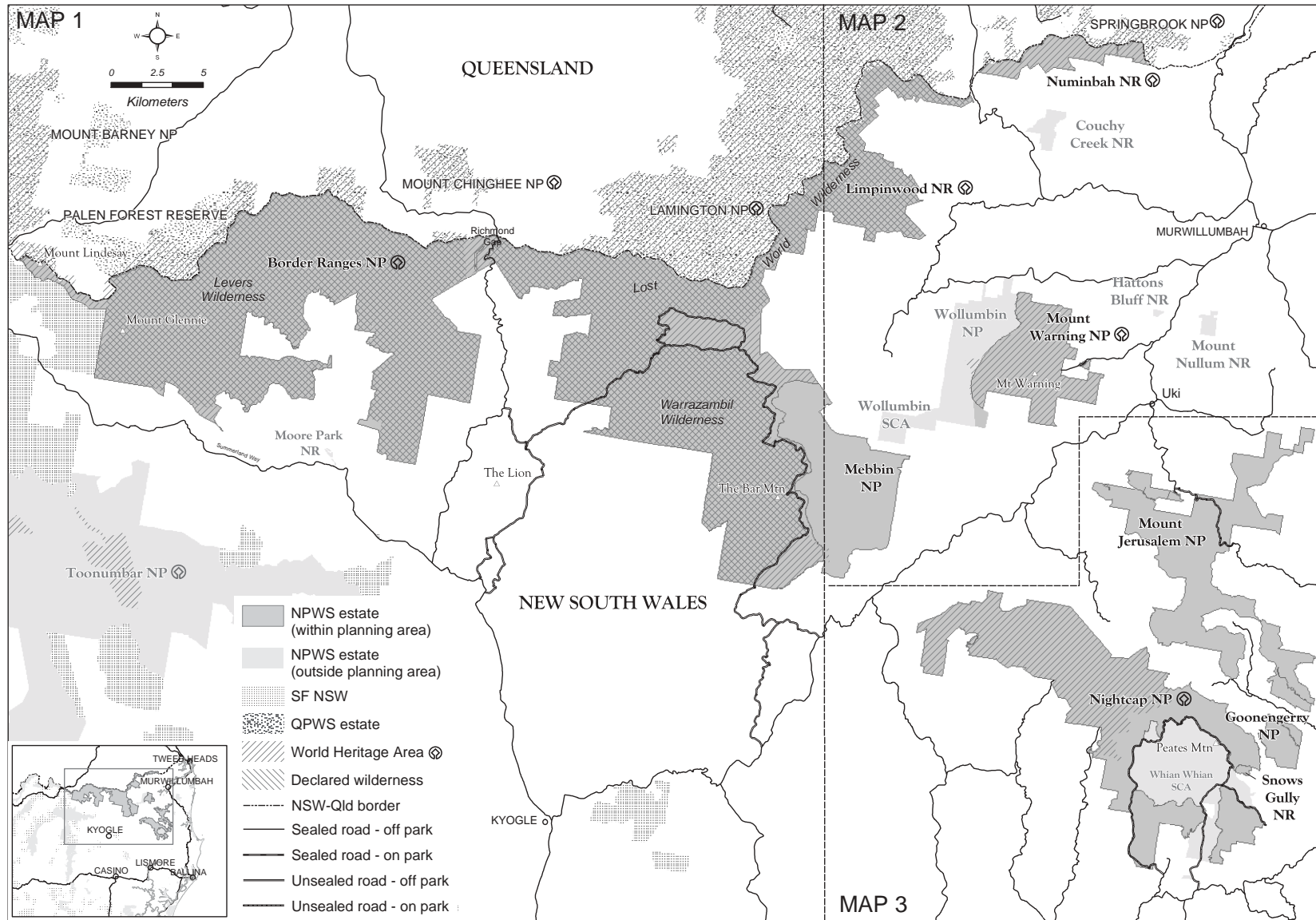
<i>NPWS Estate</i>	<i>Area (hectares)</i>
Numinbah Nature Reserve	892
Limpinwood Nature Reserve	2861
Border Ranges National Park	31860
Mount Warning National Park	2607
Mebbin National Park	3804
Mount Jerusalem National Park	5160
Nightcap National Park	8028
Goonengerry National Park	442
Snows Gully Nature Reserve	35
<b>Total for the planning area</b>	<b>55689</b>

The planning area covers a total area of 55,689ha on the far north coast of NSW (see Table 1). It is surrounded by major townships of the region, including Murwillumbah, Mullumbimby, Byron Bay, Lismore and Kyogle. Border Ranges NP and Limpinwood and Numinbah NRs form part of the NSW-Queensland border along the McPherson Range.

The parks and reserves of the planning area are grouped under the one plan because of their close associations in a biogeographical and recreational use context. They are related in a biogeographical sense due to the following attributes:

- All of the parks and reserves have landforms associated with the Tweed shield volcano erosion caldera;
- Border Ranges and Mebbin NPs and Limpinwood and Numinbah NRs are contiguous in area, forming part of the Tweed and McPherson Ranges and Tweed valley; and
- Limpinwood and Numinbah NRs, Mt Warning, Border Ranges, the majority of Nightcap and a portion of Mebbin NPs are all part of the World Heritage CERRA representing links in a chain of ancient subtropical rainforest remnants.

The parks and reserves of the planning area collectively provide a broad range of outdoor nature based recreation and tourism opportunities. These opportunities are further complemented with opportunities in the adjoining areas of the Tweed and Byron coast and hinterland as well as the Queensland National Parks on the adjacent State border.



**Figure 1. Map of the Planning Area (refer to maps 1, 2 and 3 for detailed coverage)**



## 1.2 Park Dedication

Limpinwood NR was the first section of the planning area to be dedicated as NPWS estate. This occurred in 1963, with additions made in 1967, over former fauna and crown reserves under the *Fauna Protection Act 1948*. Further additions were made in 1988 under the *NP&W Act 1974*.

Mount Warning was originally gazetted on 22 February 1928 as a reserve for public recreation. This reservation continued until gazettal of the Mount Warning National Park on 14 January 1966. Small additions were made under the *NP&W Act 1974* in 1972 followed by other additions in 1984 and 1989 over former water supply and crown reserves. The latest addition occurred in 2003 under the *National Parks Estate (Reservations) Act 2002*. Wollumbin SF adjoined the western side of Mt Warning NP but in 2003 this area was dedicated as Wollumbin National Park and Wollumbin State Conservation Area (see map 2) (Due to the timing of the creation of Wollumbin NP and SCA, its management will be addressed in a separate plan of management).

The first part of Border Ranges NP was reserved in 1979 over crown land under the *NP&W Act 1974*. The majority of the park was reserved in 1983 and 1984. The 1983 reservation occurred under the *Forest Revocation and National Park Reservation (FR&NPR) Act 1983* over the former Wiangaree and Roseberry SFs and part of Mt Lindesay SF. The 1984 addition occurred over former Crown land under the *NPW Act 1974*. Further additions were made in 1988, 1989 and 1996 under the *NP&W Act 1974*.

Numinbah NR was dedicated in 1981 over former crown lands under the *NP&W Act 1974*. Another addition followed in 1989 over former Crown land under the *NPW Act 1974*.

Nightcap NP was reserved in 1983 under the *FR & NPR Act 1983* over part of the former Goonimbar SF. Major additions were gazetted later that year including the balance of Goonimbar SF and parts of Whian Whian SF. An addition was made over a further part of the Whian Whian SF in 1999 under the *Forestry and National Park Estate (F & NP) Act 1998*. The remainder of Whian Whian SF was dedicated as Whian Whian State Conservation Area in 2003 (but due to the timing of this addition to the NPWS estate it has not been considered in this plan of management).

Snows Gully NR was dedicated in 1992 under the *NP&W Act 1974* over former private lands that were purchased by the NPWS.

Mt Jerusalem NP was reserved in 1995 over part of the former Nullum SF under the *NP&W Act 1974* and over the balance in 1999 along with Burringbar SF under the *F & NP Act 1998*.

Mebbin NP was reserved over the former Mebbin SF in 1999 under the *F & NP Act 1998*.

Goonengerry NP was initially named Tom Rummery Forest and the land was owned by the Banana Growers Federation but later sold to the Forestry Commission in 1985 and named Goonengerry SF. It was reserved as Goonengerry NP in 1999 under the *F & NP Act 1998*.

As well as the gazetted parks and reserves, the planning area includes several Ministerial roads which are vested in the Minister for the Environment on behalf of the Crown for the purposes of Part 11 of the NPW Act. They were created under the F & NP Act 1998 to ensure that the access arrangements which existed immediately prior to the declaration of the parks and reserves (primarily for timber hauling and private property access) could continue. The management of Ministerial roads is subject to the provisions of this plan, the NPW Regulations and the requirements of the EPA Act (refer to section 3.2.1).

### **1.3 Plan Purpose**

The *National Parks and Wildlife Act 1974* (NP&W Act) requires that a plan of management be prepared for each national park or nature reserve. The NP&W Act requires that the plan of management provide a scheme of operations to be undertaken for the park or reserve.

This plan provides a framework on how the planning area will be managed in the years ahead. The plan aims to inform NPWS staff, the community and other agencies and has been prepared following extensive consultation. It proposes desired outcomes, guidelines and actions to protect the values to address the issues affecting the planning area. These relate to the conservation of natural and cultural heritage and the management of visitor use, other authorised activities and park management operations.

### **1.4 Previous Plans of Management**

Existing plans of management are in place for most of the planning area. These are the Caldera Parks and Reserves Plan of Management 1989 and the Mount Warning National Park Plan of Management 1985 (as amended in 1988). The previous State Forest areas had been managed for many years under a number of Plans of Management prepared by State Forests of NSW, the latest being the Murwillumbah Management Plan 1985.

This adopted plan of management supersedes all plans of management that previously applies to sections of the planning area. There are no pre-existing Plans of Management for Mebbin, Mt Jerusalem, Goonengerry and parts of Nightcap NPs and Snows Gully NR.

### **1.5 Summary of Key Values**

The landscapes of the planning area are part of the identity, spirituality, connection and resource base for local Aboriginal people including the Nganduwal, Galibal, Gidhabul and Widjabal Aboriginal peoples. They contain a complex network of mythological and significant sites that are closely interrelated and bound together by their ‘Dreaming.’ Despite being dispossessed during the early European settlement of

the Region, the local Aboriginal peoples maintain a diversity of living cultures and a unique and deep felt attachment to these lands.

The planning area is of international significance as recognised by the inclusion of the majority of the area in the Central Eastern Rainforest Reserves (Australia) World Heritage Property (World Heritage CERRA). It comprises the central component of the World Heritage area and represents natural heritage of international significance as ancient rainforest communities, high biodiversity and unique geological landforms.

It is the rainforests of the planning area that are central to its listing as part of the World Heritage CERRA. It contains a large refuge of ancient rainforest communities, plants and animals with evolutionary links to Gondwana. In combination with the contiguous Lamington and Springbrook NPs, the planning area contains the largest node of sub-tropical rainforest in Australia.

The inclusion of parts of the planning area in the World Heritage CERRA is also due to its high biodiversity. This rich biodiversity is largely the function of its vegetation which is extremely diverse. In addition to extensive areas of subtropical rainforest, there are large areas of wet and dry sclerophyll forest and pockets of sub-montane heath. These communities contain the principal habitats of a large number of threatened plant and animal species.

This diversity of vegetation provides a range of habitat types which support a wide range of native animal groups and species. Of particular significance is the border region containing Border Ranges NP and Limpinwood and Numinbah NRs which has the highest concentration of marsupial, bird, snake and frog species in Australia.

The planning area also contains landforms of international significance which are recognised under the World Heritage Convention as being outstanding examples of ongoing ecological processes. The eroded remnants of the Tweed shield volcano represent one of the largest and best examples of an erosion caldera in the world. This crater-shaped landform known as the 'Tweed Caldera' has been created by 23 million years of erosion. It is centred at Mt Warning which is the more erosion resistant solidified main chamber of the former volcano. This central mountain massif is encircled by other remnants of the volcano which form a dramatic escarpment consisting of the McPherson, Tweed, Nightcap and Koonyum Ranges.

The Tweed Caldera dominates the landscape of the far north coast of NSW and is of regional landscape significance. It provides the mountainous backdrop to the major townships of Murwillumbah, Kyogle, Lismore, Byron Bay and Mullumbimby. These landforms significantly contribute to the sense of place and identity of the people of the far north coast of NSW and are an integral part of the rich natural and cultural fabric of the region.

The planning area also contains declared and identified Wilderness Areas. These are the Lost World and Warrazambil Wilderness Areas and the identified Levers Wilderness Area in Border Ranges NP. These and other large remote areas of the planning area allow natural systems to function with minimal human interference. They are important for providing opportunities for solitude and self-reliant

bushwalking and remote camping. They are visually spectacular and can be easily viewed from the many lookouts, vantage points and roads within the planning area.

The overall scenic qualities of the planning area are representative of the landscape prior to European settlement and beyond to ancient times and are of historic significance. Mt Warning is historically associated with the European discovery of the East Coast of Australia through its naming by Captain Cook as a prominent landmark to warn early mariners of the Point Danger reefs. Of particular historic significance is that the planning area were former forestry lands involved in all stages of development of the regional forestry industry. The planning area was also the subject of both early and contemporary conservation campaigns to halt logging which eventually lead to the dedication of many of these forests as National Park.

The World Heritage rainforests of the planning area provide an integral component of the nature-based recreation and tourism opportunities in the region. Along with the nearby Byron Bay and Tweed coasts, these idyllic settings are the backbone of the region's tourism industry and an important part of the outdoor lifestyle of the growing regional population.

The planning area contains 11 day use areas and three camping areas linked by a vast network of scenic roads and walking tracks. In particular, the Tweed Range Scenic Drive in Border Ranges NP is reputed to be the longest and most accessible rainforest scenic drive in Australia and provides access to a number of day use and camping areas. There is also a diverse range of spectacular walks including the summit walk in Mt Warning NP, a renowned mountain walk from 'base to top'. Other popular walks take visitors through ancient Antarctic beech forest in Border Ranges NP and lowland rainforest beneath towering escarpment waterfalls in Nightcap NP.

## **1.6 Landscape Context**

Natural and cultural heritage and on-going use are strongly inter-related and together form the landscape of an area. Much of the Australian environment has been influenced by past Aboriginal and non-Aboriginal land use practices and the activities of modern day Australians continue to influence bushland through recreational use, cultural practices, the presence of introduced plants and animals and in some cases air and water pollution.

The geology, landform, climate and plant and animal communities of the area, plus its location, have determined how it has been used by humans. Both Aboriginal and non-Aboriginal people place cultural values on natural areas, including aesthetic, social, spiritual, recreational and other values. Cultural values may be attached to the landscape as a whole or to individual components, for example to plant and animal species used by Aboriginal people. This plan of management aims to conserve both natural and cultural values. For reasons of clarity and document usefulness natural and cultural heritage, non-human threats and on-going use are dealt with individually, but their inter-relationships are recognised.

## 2. MANAGEMENT CONTEXT

### 2.1 Legislative & Policy Context

The management of national parks and nature reserves in New South Wales (NSW) is in the context of a legislative and policy framework, primarily the *National Parks and Wildlife Act 1974 (NPW Act)*, the *Threatened Species Conservation Act 1995 (TSC Act)* and the policies of the National Parks and Wildlife Service (NPWS). Section 72AA of the NPW Act lists the matters to be considered in preparation of a plan of management.

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

The plan of management is a statutory document under the NPW Act. Once the Minister has adopted a plan, no operations may be undertaken within the planning area except in accordance with the plan. The plan will also apply to any future additions to the planning area. Where management strategies or works are proposed for the planning area or any additions that are not consistent with the plan, an amendment to the plan will be required.

The planning area will be managed in accordance with the following legislative and policy framework. The specific guidelines and actions proposed in this plan have been established in accordance with this framework.

#### 2.1.1 NATIONAL PARKS & NATURE RESERVES

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

Under the Act, nature reserves are managed to:

- conserve biodiversity, maintain ecosystem functions, and protect geological and geomorphological features and natural phenomena;
- conserve places, objects, features and landscapes of cultural value;
- promote public appreciation, enjoyment and understanding of the reserve's natural and cultural values; and
- provide for appropriate research and monitoring.

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.

Under the Act, national parks are managed to:

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

For those parks of the planning area that were dedicated in March 1999 under the Forestry and National Parks Estate Act 1998 (F&NPE Act), management must also be in accordance with the NSW Upper North East Regional Forest Agreement 2000.

### 2.1.2 NPWS POLICIES & STRATEGIES

The policies are compiled from the legislative background, the NPW Regulations and internationally accepted principles of park and reserve management. They relate to nature conservation, Aboriginal and historic heritage conservation, recreation, commercial use, research and communication. The Park Management Policies evolve in response to changes in scientific understanding and the economic, social and political environment in NSW.

### 2.1.3 WORLD HERITAGE

The majority of the planning area is part of the World Heritage listed Central Eastern Rainforest Reserves Australia (CERRA). CERRA represents natural heritage of international significance as an ancient refuge of rainforest communities with a high diversity of plant and animal species.

The International Convention for the Protection of the World Cultural and Natural Heritage (the World Heritage Convention) was adopted by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in 1972, and ratified by Australia in 1974. The Convention provides a framework for international cooperation and the collective protection of cultural and natural heritage of outstanding universal value. Under this convention Australia has obligations to do all it can to ensure that effective and active measures are taken for the identification, protection, conservation, and presentation of the cultural and natural heritage situated on its territory by:

- developing policies which aim to give this heritage a function in the life of the community, to strengthen appreciation and respect for the reserve's World Heritage values;

- developing policies which aim to integrate the reserve's protection into comprehensive planning programs;
- establishing scientific and technical studies and research aimed at counteracting threatening processes and learning more about the condition and management of the World Heritage values; and
- implementing measures to identify, protect, conserve, present and rehabilitate the World Heritage values of the protected areas so they can be transmitted to future generations.

The management of World Heritage CERRA parks and reserves is required to be consistent with Australia's obligations under the World Heritage Convention. In this regard, the plan seeks to ensure the identification, protection, conservation and presentation of the World Heritage values of the planning area so they can be transmitted to future generations.

The Strategic Overview for the Management of the World Heritage Central Eastern Rainforest Reserves (Australia) (CERRA 2000) provides broad direction on management across CERRA to achieve these obligations. Although not a statutory plan, it has been endorsed as policy by the NSW, Queensland and Commonwealth Governments. This plan is consistent with the strategies outlined in the Strategic Overview.

This plan of management also seeks to address the Australian World Heritage Management Principles set out in the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. In addition to World Heritage Convention obligations, these principles include provisions for community and stakeholder consultation, Commonwealth accreditation of State management plans and environmental impact assessment for any actions that are likely to have a significant impact on World Heritage values.

#### 2.1.4 WILDERNESS

The NPWS are also responsible for administering the Wilderness Act 1997 (NSW) which determines identification and management of Wilderness in NSW. An area of 31,421 ha within the planning area has been declared wilderness under the Wilderness Act 1987 and the NPW Act. Wilderness areas are large natural areas of land that, together with their native plant and animal communities, are essentially unchanged by human activity. Wilderness areas provide opportunities for solitude and appropriate self-reliant recreation, however, protection of natural values has priority over providing for recreational use.

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, declared wilderness areas will be 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; and
- to provide opportunities for solitude and appropriate self-reliant recreation.

The Levers, Lost World and Warrazambil Wilderness Areas occupies the majority of the Border Ranges NP and all of Limpinwood NR (refer to section 3.1.5).

#### 2.1.5 THREATENED SPECIES

In managing populations of threatened species and critical habitat, the NPWS has responsibilities in accordance with the *Threatened Species Conservation (TSC) Act 1995*. This includes preparing Recovery Plans for threatened species, populations and ecological communities, in addition to the developing Threat Abatement Plans to manage key threatening processes.

#### 2.1.6 ENVIRONMENTAL IMPACT ASSESSMENT

The NPWS is required by the *Environmental Planning and Assessment Act 1979* to assess the environmental impacts of activities it is undertaking and the activities of others.

Prior to any ‘works’ or ‘activities’ being undertaken within NPWS Estate, an environmental impact assessment will be undertaken pursuant to Part 5 of the EP&A Act. The level of environmental assessment will depend upon the work or activity proposed and the associated degree of impact. A low impact proposal, such as the upgrading of a walking trail, may only require a Review of Environmental Factors (REF) to be prepared. A high impact proposal, such as the construction of a visitor facility, may require an Environmental Impact Statement.

The *Threatened Species Conservation Act 1995* amendments to the EP&A Act requires the NPWS as a determining authority to consider the impact of the proposal upon threatened species. Section 5A of the EP&A Act (otherwise known as the “8-part test”) provides for this assessment of impact upon threatened species, populations or ecological communities, or their habitats. If it is considered that the proposal will result in a significant impact the preparation of a Species Impact Statement is required.

## 2.2 Management Vision

*“The parks and reserves of the Tweed Caldera are managed as a vital part of the rich natural, cultural and social landscape of the far north coast hinterland. In particular, the NPWS in partnership with the community manage these areas to conserve their World Heritage values, high biodiversity and rich cultural attributes.”*

## 2.3 Management Directions

The primary emphasis of this Plan is the conservation of the natural, cultural and World Heritage values of the planning area. Visitor opportunities that are compatible



with and promote the understanding and enjoyment of these values is also a key emphasis. This will be achieved through the following:

- recognition and protection of the World Heritage values through managing fire, introduced species, threatened species habitat and populations and visitor use in cooperation with other agencies;
- protection and enhancement of scenic values through the management of visually prominent infrastructure, park facility design and location and the rehabilitation of disturbed sites;
- recognition and protection of traditional and contemporary Aboriginal cultural heritage through cooperative arrangements and cultural site protection in partnership with the local Aboriginal community;
- recognition and protection of historic heritage through identification and protection of historic resources;
- protection of wilderness area values through limiting management only to works essential for public safety and environmental protection for pre-existing walking tracks and lookout points;
- protection of water catchment values through the management of fire, roads, trails and tracks and visitor areas including waste disposal;
- protection of significant vegetation communities and threatened plant and animal species through managing fire, introduced plants and animals and visitor use;
- protection of habitat on adjoining lands through cooperative arrangements with neighbours and adjoining local government agencies;
- 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 planning and control programs in cooperation with other agencies and neighbours;
- provision of sustainable public vehicle access to visitor areas through designating the road network, maintenance standards, road and parking improvements and cooperative arrangements with adjoining local government agencies;
- management of existing day use and camping areas in a sustainable and complementary way through designating settings and capacities for each area, in addition to integrated planning with other agencies providing adjoining recreation opportunities;
- provision of sustainable and complementary opportunities for bushwalking, horse riding, cycling and adventure activities through identifying appropriate routes and sites, management standards, strategic planning, codes of conduct and cooperative arrangements with recreation groups;
- encouraging commercial tourism opportunities that are sustainable and compatible with park values through licensing appropriate activities, promoting best practices and cooperative planning and management in partnership with tourism operators and agencies;
- integrating and promoting interpretive and educational opportunities through strategic planning, signage, publications and programs to assist in visitor understanding and enjoyment;

- improving knowledge of natural and cultural heritage, corresponding threats and the evaluation of management programs through research and monitoring programs; and
- management of pre-existing non-park related uses through licensing, cooperative arrangements and appropriate site management.

## 3. MANAGEMENT STRATEGIES

This chapter contains management strategies for the planning area. Under each management topic, park values are summarised, existing situation analysed and desired outcomes and strategies proposed.

The strategies established in this plan of management will provide the framework for management consistent with anticipated resources available to the NPWS and anticipated community trends.

Where not specifically provided for in this plan, management will also be in accordance with the *NP&W Act* and with general NPWS policies.

### **3.1 THE CONSERVATION OF NATURAL & CULTURAL HERITAGE**

#### **3.1.1 World Heritage**

The planning area is a major and central component of the World Heritage CERRA property which was inscribed on the World Heritage List in 1986, and extended in 1994. World Heritage CERRA is one of only 14 World Heritage properties in Australia and some 120 Natural World Heritage properties throughout the world.

World Heritage CERRA represents natural heritage of international significance as an ancient refuge of rainforest communities with a high diversity of plant and animal species. The planning area as a component of World Heritage CERRA represent the hub of these ancient rainforest communities. It also contains the unique Tweed shield volcano erosion caldera which is a contributing value to this international recognition.

Approximately three-quarters of the planning area are part of the World Heritage CERRA. This includes Mt Warning NP, Border Ranges NP, Limpinwood NR, Numinbah NR, the majority of Nightcap NP (includes 61% of the park, being the extent of Nightcap NP in 1994) and a portion of Mebbin NP (includes less than 1% of the park, being the former Mebbin Lagoons Flora Reserve).

Collectively, these areas constitute approximately 20% of World Heritage CERRA which consists of disjunct ancient rainforest communities located in 40 individual protected areas located between Barrington Tops near Newcastle and the Mistake Mountains east of Toowoomba. Other major national parks that are part of this World Heritage property but are outside of the planning area include: Oxley Wild Rivers; Werrikimbe; New England; Dorrigo; Washpool; Gibraltar Range in NSW and Lamington and Springbrook in Queensland which are contiguous with the northern part of the planning area.

The World Heritage CERRA was listed based on satisfying the following three of the four possible criteria for natural heritage of outstanding universal significance. It contains:

- \* outstanding examples of the major stages of the Earth's evolutionary history, (*criterion I*), including rainforest ecosystems and relict plant and animal species dating from Gondwana. In particular, the planning area contains core nodes of subtropical rainforest which represent a primary branch in the evolution of Australian rainforests;
- \* outstanding examples of significant ongoing geological processes and biological evolution (*criterion II*), including centres of endemism where ongoing evolution is taking place and taxa showing evidence of relatively recent evolution. In addition, the erosion caldera of the Tweed shield volcano is one of the best preserved in the world, notable for its size, age and landforms that represent all three stages of the erosion of shield volcanoes: the planeze, residual and skeletal stages; and
- \* Significant areas for the conservation of biological diversity (*criterion IV*), with the border region containing the highest species diversity in Australia for birds, marsupials, frogs and snakes. In addition, the region contains the principal habitats of a large number of threatened plant and animal species.

A brief summary of CERRA's World Heritage values is given in Appendix 1 and a more detailed appraisal documented in Adam (1987) and Hunter (1999).

Under the World Heritage Convention, there is an obligation to ensure the *identification, protection, conservation, presentation and rehabilitation* of these World Heritage values to enable the transmission of these places of international significance to future generations. These obligations are addressed individually below regarding the World Heritage values of the planning area as part of the CERRA.

*Identification* refers to assessing additional and complementary areas worthy of inclusion under World Heritage CERRA and documentation of the World Heritage values. Those areas of the planning area that are not part of World Heritage CERRA were State Forest at the time of World Heritage listing in 1986 and 1994 and as such were not eligible to be nominated. These areas adjoin and have similar natural heritage values as World Heritage CERRA and are managed accordingly. These areas need to be considered under any future re-nomination of this World Heritage property.

*Identification* also includes identifying and documenting the World Heritage values of the CERRA which is essential information for effective management and visitor interpretation. Whilst there is documentation on the overall World Heritage values (Adam, 1987) and how they relate to groups of reserves within World Heritage CERRA (Hunter, 1999), the nature and spatial extent of World Heritage values within individual reserves need to be further documented.

The *protection* of World Heritage CERRA principally relies on appropriate legislative, regulatory and institutional arrangements (see 2.1 *Legislative & Policy Context*). Legislative requirements include the provisions of the *NP&W Act* and environmental impact assessment procedures under the *EP&A Act* and *EPBC Act*. Regulatory requirements include those specified under this Plan and other planning strategies.

This includes the ‘Strategic Overview for the World Heritage CERRA’ (Environment Australia, 2000) which was being finalised at the time of writing. This Strategy provides an ‘umbrella’ framework to promote integrated and appropriate management of the property. It aims to overcome management inconsistencies that may arise due to the fragmented nature of the property and management by various State agencies. The ‘Northern CERRA Key Directions’ (Maher et al, 1998) also promotes a consistent and integrated management direction for New South Wales and Queensland agencies responsible for managing the northern part of the CERRA. Strategies contained in these documents have been incorporated in the development of this plan.

In accordance with the above Strategies, the integrated policy and management of the property between agencies is currently undertaken via the CERRA Steering and Coordinating Committees. These Committees are made up of representatives from the various management agencies and convened by the CERRA Executive Officer. A NPWS and QPWS cross border liaison group also meet on a 6 to 12 monthly basis to promote the integrated management of the state border region of the CERRA property.

The *conservation* of the World Heritage values of the planning area needs to address potential threatening processes such as fire, introduced plants and animals, visitor use, and management operations. Whilst these issues are addressed in detail in the following sections of the plan, a greater emphasis on conserving World Heritage values is promoted in this section of the Plan.

*Protection* and *conservation* of the World Heritage values also requires public consultation to ensure management issues are identified and corresponding strategies are supported by the community. In the preparation and implementation of this Plan, the NPWS undertake targeted consultation with the NPWS Northern Rivers Advisory Committee, local Aboriginal representatives, other agencies, park neighbours, environmental and recreation groups and commercial operators. Wider community input is facilitated through advertisements, media releases and the public exhibition process for this draft Plan. Ongoing community involvement in park management is also facilitated through other mechanisms identified throughout this plan.

*Rehabilitation* of degraded areas and the management of degrading processes is required to maintain the ecological integrity of natural systems within the CERRA. The *presentation* of CERRA’s values via interpretation and education is important to ensure community understanding and support for conservation programs in World Heritage areas. These issues are also addressed in detail in other sections of this plan (see 3.1.2 *Landforms & Visual Landscapes*, 3.2.10 *Information and Interpretation*).

### **DESIRED OUTCOME**

- ◆ **The World Heritage areas of the parks and reserves of the planning area, as part of the CERRA World Heritage property, are *identified, protected, conserved, presented* and, where necessary, *rehabilitated* in accordance with the principles of the World Heritage convention.**

## **GUIDELINES & ACTIONS**

### ***Identification***

- **Assess the World Heritage values of Mebbin, Mt Jerusalem, Goonengerry NPs and the extension of Nightcap NP as potential additions to the World Heritage CERRA property. This should be undertaken as part of a review and nomination of all potential additions to this property.**
- **Encourage further research on the World Heritage values and identify their spatial distribution in each park and reserve.**

### ***Protection***

- **Implement the guidelines and actions contained in this plan in a manner consistent with the ‘Strategic Overview for Management of World Heritage CERRA’ (CERRA, 2000) and ‘Northern CERRA Key Directions’ (Maher et al, 1998).**
- **Continue to participate in the CERRA Steering and Coordinating Committees, the NPWS and QPWS cross border liaison group and liaison with the CERRA Executive Officer regarding integrated management of the property in accordance with the above Strategy documents.**
- **Ensure the environmental assessment of proposals in World Heritage CERRA areas addresses the potential impacts on World Heritage values.**
- **Seek endorsement of this plan by the Commonwealth Government under a bilateral agreement in accordance with the EPBC Act.**

### ***Conservation***

- **Promote the conservation of World Heritage values in the preparation and implementation of the following management programs:**
  - **Recovery Plans and Threat Abatement Plans for threatened species, particularly for relict Gondwanan rainforest species (see 3.1.7 *Biodiversity*);**
  - **Fire Management Strategies, promoting the exclusion of fire from rainforest (see 3.1.10 *Fire Management*); and**
  - **Pest Management Strategies, particularly to prepare Restoration and Rehabilitation Plans for rainforest communities including the targeted control of invasive rainforest weeds (see 3.1.8 *Introduced Plants*).**
- **As part of the ‘State of the Parks’ monitoring program, include the assessment of the condition of measurable World Heritage values and review management accordingly.**
- **Provide training opportunities for NPWS staff to improve understanding of World Heritage values and corresponding threatening processes.**
- **Continue to provide opportunities for community involvement in the conservation of World Heritage values such as through the Northern Rivers Regional Advisory Committee and liaison with stakeholders as specified elsewhere in this plan.**

### *Rehabilitation*

- **Promote the rehabilitation of World Heritage values in the restoration of degraded areas including the following:**
  - **Restoration and rehabilitation of degraded plant communities (see 3.1.8 *Introduced Plants*);**
  - **Rehabilitation of disturbed sites and former logging tracks not identified to be retained (see 3.1.2 *Landforms and Visual Landscapes*); and**
  - **Review the necessity for the border rabbit fence to reduce any impacts on native animals (see 3.1.9 *Introduced Animals*).**

### *Presentation*

- **Promote information and education on World Heritage CERRA including the following:**
  - **Emphasise the World Heritage CERRA theme for interpretation associated with Mt Warning and Border Ranges NPs (see 3.2.10 *Information & Interpretation*);**
  - **Promote the World Heritage status and values of all areas that are part of the World Heritage CERRA via signage and brochures at a level commensurate with their use (see 3.2.10 *Information & Interpretation*);**
  - **Promote the parks and reserves of the World Heritage CERRA as a single entity through consistent information and signage; and**
  - **Provide information to the tourism industry and tour operators to assist in presenting the World Heritage values of the area (see also 3.2.9 *Commercial Tourism*).**

### **3.1.2 Landforms and Visual Landscapes**

The planning area largely consists of the eroded remnants of the Tweed shield volcano. The exception is western Border Ranges NP which is geologically linked to the Focal Peak volcano centred near Mt Barney in Queensland.

Collectively, the planning area form a crater-shaped landform known as the ‘Tweed Caldera.’ It is one of the largest and best examples of an erosion caldera in the world as recognised under the World Heritage CERRA.

The landform is the result of the different erosion rates of the two main rock types of basalt and rhyolite. The more erodible basalts which formed the bulk of the original shield volcano have been extensively eroded. This has isolated the less erosive central vent of the original volcano that is now Mt Warning NP from the rest of its shield. It is encircled by the McPherson, Tweed, Nightcap and Koonyum Ranges located principally within the other parks and reserves of the planning area. These ranges largely consist of the more erosion resistant rhyolite.

These two dominant rock types of the planning area weather to give very different soil types. On the escarpment plateau, the basalt rock weathers to form krasnozems which are highly weathered red-clayey soils. The basalt on the slopes below produce prairie soils which are brown to grey in colour and less acidic than krasnozems. Both

are moderately fertile and tend to support rainforest and wet sclerophyll vegetation. Conversely, the rhyolites of the escarpment weather to produce less fertile yellow podzolic soils and support drier eucalypt vegetation types (Adam, 1987).

The protection of the geological landforms and soil landscapes of the planning area is an inherent part of park management. Soil conservation guidelines are outlined in NPWS Policy 1.4 (Soil Conservation and Rehabilitation).

These remnant landforms of the Tweed shield volcano dominate the landscape of the far north coast of NSW and hence are of regional landscape significance. They contribute to the mountainous backdrop to the major townships of Murwillumbah, Kyogle, Lismore, Byron Bay and Mullumbimby.

The Mt Warning massif itself is a visual icon for the region. The encircling McPherson, Tweed, Nightcap and Koonyum Ranges contain a variety of visually prominent landscapes including vertical escarpments, high waterfalls and ridgelines, plateaus and gullies of dense forest. They provide a visual contrast to the rural land use that dominates the Tweed and Richmond valley floor and the mosaic of urban development along the coast. Adjoining areas of privately owned forest provide visual buffers and transition zones between the juxtaposed natural and rural landscapes.

The siting of major infrastructure in visually prominent areas is the main threat to these regional scenic values. Management of the existing communications tower sites at Mt Nardi in Nightcap NP is also important as any additional infrastructure may have cumulative visual impacts (see 3.4.3 *Transmission Lines & Towers*). Whilst the visual impact of lookout platforms as viewed from adjoining lands has been assessed to be negligible, vegetation management at these sites is important to minimise potential visual intrusions.

The natural scenic amenity within the park can also be impacted by inappropriate development of park facilities. The *NPWS Guidelines for Park Facilities* (NPWS, undated) is used to guide the location, design and management of park infrastructure at day use and camping areas to minimise visual intrusions on the natural landscape.

There are also a number of degraded sites in some of the parks of the planning area from former land uses. Many of these areas continue to progressively degrade through weed invasion, soil erosion and inappropriate use.

These include a number of old 'log dumps' and milling sites from previous forestry uses such as in Mebbin, Nightcap, Mt Jerusalem and Goonengerry NPs. These sites consist of compacted or boggy bare earth and many contain timber refuse and weeds. They are often used for illegal dumping, rave parties or camping. There are also road base quarries in Border Ranges and Mt Jerusalem NPs which will require rehabilitation upon being decommissioned (see 3.3 *Management Operations*). These sites are denude of vegetation and contain large hillside scars. Other degraded areas exist in former plantations, at the sites of former dwellings and camps and due to natural disturbances such as fire.



The rehabilitation of these sites is an important aim of this Plan in order to return these areas to functioning natural systems, consolidate adjacent areas of habitat and improve visual quality. The restoration of plant communities is addressed under *3.1.9 Introduced Plants*.

### **DESIRED OUTCOMES**

- ◆ Geological and soil landscapes are protected and human disturbance of landforms and soils is minimised.
- ◆ Scenic values are protected from visual intrusions caused by infrastructure.
- ◆ Disturbed sites are rehabilitated to improve environmental integrity and visual quality.

### **GUIDELINES & ACTIONS**

#### *Scenic Amenity*

- Existing sites containing infrastructure such as communications towers or lookouts will be managed to minimise visual impacts. This may include rehabilitation and restoration works and bundling or relocation of transmission cables (see *3.4 Other Land Uses: Transmission Towers*).
- Assess the potential visual impacts of any proposed developments or site works as part of the overall environmental assessment required. Proposals assessed to have unacceptable impacts on natural landscape values will not be approved.

#### *Vegetation Management at Lookouts*

- Continue to manage vegetation that may obstruct views at the following lookouts and vantage points subject to environmental assessment:
  - The Summit lookout in Mt Warning NP;
  - Antarctic Beech and Blackbutts lookout in Border Ranges NP;
  - Lookout sites identified for retention along the ‘border track’ in Limpinwood NR accessed via the adjoining Lamington NP (see *3.1.5 Wilderness*);
  - Best of All lookout in Numinbah NR which is accessed via the adjoining Springbrook NP;
  - Minyon Falls and Minyon Grass lookouts in Nightcap NP.

#### *Site Rehabilitation*

- Progressively rehabilitate disturbed sites such as old log dumps and decommissioned road base quarries in Border Ranges, Mebbin, Nightcap, Mt Jerusalem and Goonengerry NPs. This may include works such as re-profiling, soil de-compaction, drainage and erosion control in addition to weed control, revegetation and closure of access (see *3.3 Management Operations*).

### 3.1.3 Aboriginal Heritage

The planning area is amongst a landscape that is part of the identity, spirituality, connection and resource base for the local Aboriginal community including the Nganduwal, Galibal, Githabul and Widjabal peoples (pers comms. McLaughlin, Native Title Tribunal, 20/9/1999).

The NPWS recognise that the Aboriginal peoples are the original custodians of the lands, waters, animals and plants of the planning area. Despite being dispossessed, the local Aboriginal community maintain a unique and deeply felt association with and connection to the land and water of the planning area. The land and water biodiversity values within a whole landscape context are the centre of Aboriginal spirituality and contribute to Aboriginal peoples identity. Aboriginal communities associate natural resources with the use and enjoyment of valued foods and medicines, caring for the land, passing on cultural knowledge and strengthening social bonds. Aboriginal heritage and nature are inseparable from each other and need to be managed in an integrated manner across the landscape. The NPWS acknowledge and respect this attachment and the traditional laws, customs, beliefs and culture of the local Aboriginal community. The NPWS seek opportunities for partnerships with the local Aboriginal community in managing and conserving natural and cultural heritage.

Local Aboriginal elders, custodians and representatives have stated that local Aboriginal people seek ownership, management involvement, employment and training opportunities with the NPWS. Many of these issues are associated with resolution of Native Title. At the time of writing, the Githabul Nation claim (NC 95/11) which includes the Border Ranges NP was the only native title claim registered with the National Native Title Tribunal in the planning area.

In addition to the Native Title process, there are many other mechanisms available to facilitate partnerships between the NPWS and local Aboriginal peoples. The 'Aboriginal ownership' provisions under Schedule 14 of the *NP&W Act* provides for the transfer of NPWS lands to Aboriginal ownership with negotiated lease-back arrangements to the NPWS under a joint management structure.

In addition to legislative mechanisms, opportunities for partnerships can be sought through regular communication with the regionally based Bundjalung Council of Elders, Local Aboriginal Land Councils and through the preparation of cooperative management agreements with local Aboriginal representatives. The NPWS Statement of Reconciliation (NPWS, 2000) also states the Services commitment to reconciliation and partnerships with Aboriginal people in the management of land and information, research, impact assessment and education regarding cultural and natural heritage. The NPWS policies 3.1-3.4 (Aboriginal Sites Conservation) outline detailed procedures regarding the identification, conservation, consultation, impact assessment and general management of Aboriginal heritage.

Partnerships with the local Aboriginal community are a priority to ensure appropriate recognition, conservation and management of these cultural attributes. It is important that the NPWS Aboriginal Sites Register is accurate and comprehensive to ensure

management activities do not inadvertently impact on the complex network of cultural sites within the planning area. These include creation places, ceremonial sites, traditional pathways and evidence of past occupation. Many of the prominent landforms of the planning area are also mythological sites (Nayutah & Finlay, 1988). The forests of the area also have other important cultural values such as in the transfer of traditional knowledge and for bush food and medicine.

A cultural heritage study has been undertaken and a Memorandum of Understanding is being developed between NPWS and the tribes of the Bundjalung Nation concerning co-management.

The anthropological and archaeological attributes of the Far North Coast region have explicable links for the local Aboriginal peoples. They are closely interrelated and bound together by their 'Dreaming' and it is highly important that all sacred sites are protected. If one site is damaged, all sites associated with that 'Dreaming' are affected in some way (Heron et al, 1996).

Whilst many of these sites are protected due to their location in remote forest, some culturally significant sites are subject to varying levels of recreation use. These include sites in Mt Warning, Nightcap and Mt Jerusalem NPs. There is evidence of inappropriate levels of visitor use at these sites causing impacts. Assessment and monitoring of these sites needs to be undertaken in partnership and with the consent of local Aboriginal people. At the time of writing, a cultural heritage study was being prepared for Mt Warning NP. Opportunities for greater involvement and recognition of local Aboriginal peoples in interpretive and educational programs also needs to be pursued.

The recognition and conservation of local Aboriginal culture in partnership with local Aboriginal people are important objectives of this plan.

### **DESIRED OUTCOMES**

- ◆ **Traditional and contemporary Aboriginal culture associated with the area is recognised, protected and presented appropriately in partnership with the local Aboriginal peoples.**
- ◆ **Representatives of the local Aboriginal peoples are actively and meaningfully involved in park management.**

### **GUIDELINES & ACTIONS**

#### ***Cooperative Arrangements***

- **In conjunction with the resolution of registered native title claims, assess claimed areas for listing under Schedule 14 of the NP&W Act as an option for joint management arrangements.**
- **Prepare cooperative management agreements or similar protocols where appropriate and if supported by local Aboriginal groups including the Gidhabul, Galibal, Widjabal and Nganduwal peoples. These agreements may include provisions relating to the following:**

- communication protocols;
- land management operations;
- visitor use and interpretation programs;
- research, monitoring and education programs;
- cultural tourism;
- employment and training opportunities; and
- traditional use such as acquiring bush food and medicine.
- Pursue partnerships with the local Aboriginal representatives through existing arrangements such as the following:
  - encourage local Aboriginal representation on the NPWS Northern Rivers Region Advisory Committee which acts in the capacity of the primary local community advisory group for the NPWS; and
  - regular communication on park management issues with the Bundjalung Council of Elders and local Aboriginal Land Councils.

### *Cultural Site Protection*

In partnership with local Aboriginal representatives, undertake the following:

- Assess the potential cultural impacts of any proposed developments, site works or commercial activities as part of the overall environmental assessment. Proposals assessed to have unacceptable cultural impacts will not be approved.
- Prepare and implement cultural heritage studies for cultural sites where there is evidence of ongoing impacts. These studies should be in accordance with The Australian Heritage Commission's *Protecting Aboriginal and Torres Strait Islander Cultural Heritage Places*.
- Undertake cultural heritage studies for the following cultural sites:
  - Mt Warning NP focusing on the summit walking track & lookout area;
  - rock shelters in the Terania basin in Nightcap NP; and
  - rock shelters in Mt Jerusalem NP.

### *Research & Monitoring*

- In partnership with local Aboriginal representatives, facilitate research to improve the understanding and management of anthropological and archaeological attributes of the area.
- Liaise with and support Aboriginal groups to identify, record and register cultural sites on the Aboriginal Sites Register.
- Monitor visitor impacts at cultural sites in Mt Warning NP and rock shelters in Nightcap NP and Mt Jerusalem NP by photographing and documenting site modification. Evaluate monitoring results on an annual basis and implement any necessary conservation actions. Actions may include restriction of access and management practices.

#### **3.1.4 Historic Heritage**

The planning area has strong associations with the early European settlement and development of the region from the 1840's. The history of the planning area in the

context of the surrounding far north coast NSW region is documented in Norris (1995) and Blackmore (1989).

The planning area is historically associated with:

- The European discovery of the east coast of Australia during Captain Cook's voyage in 1770. During this voyage, Mt Warning was named as a visible landmark to warn mariners of the Point Danger reefs near the mouth of the Tweed River.
- All stages of development of the regional forestry industry which was second only to agriculture in contributing to the early development of the region and one of the major early export industries for the nation. These range from early cedar cutting from the 1840s to 1890s which was one of the first industries in the region through to the introduction of modern silvicultural practices.
- Early transport and communications links such as the Historic Nightcap Track providing the first bridle track and telegraph line between the Richmond and Tweed valleys in 1871 and 1874 respectively. Part of this track is now a walking track of the same name in Nightcap NP.
- Early agriculture, namely dairying from the 1880s and banana growing in the marginal hill country since 1909 in addition to providing timber materials for the early packaging of these products.
- Early conservation campaigns influencing the conservation ethic of the people of the region. This included a campaign to protect the McPherson Range from 1896, one of nations earliest forest preservation campaigns.
- Early dedication of reserves for recreation and conservation purposes, namely portions of the current Mt Warning NP and Nightcap NPs reserved in 1928 and 1937 respectively.
- The conservation campaigns between 1972 and 1982 to protect the rainforests of the region from further logging which were the beginning of the modern conservation movement involving direct action. These led to the creation of many rainforest national parks in 1982 including Border Ranges and Nightcap NPs.

The planning area contains in situ historic resources that are physical evidence of these historic associations with the early settlement and development of the region (see *Appendix 5*).

The NPWS policy 4.1 (Historic Resources Conservation and Management Policies) outlines obligations in the conservation of these resources and ascribes to the principles of the Australia ICOMOS *Charter for the Conservation of Places of Cultural Significance* (The Burra Charter). Under this Charter, historic resources need to be recorded and assessed to determine their frequency (ie rarity), condition and significance.

Upon completing this assessment, detailed conservation plans may be required for any historic resources assessed to be of high heritage significance that are rapidly deteriorating. These plans should be based on the requirements of *The Conservation*

*Plan* (Kerr, 1990) and the principals of *The Burra Charter*. They would identify and prioritise any preservation, restoration, reconstruction and adaptation works required and advise on appropriate interpretive and monitoring programs.

Furthermore, application for listing significant historic resources on appropriate heritage registers may be required. These include the NPWS Heritage and Conservation Register, Section 170 Register held by the Heritage Council of NSW and the NSW State Heritage Register held by the Heritage Office of NSW for sites of State significance.

There are some introduced tree species associated with historic sites which may be of cultural heritage and landscape significance such as at the Long Creek village site in the west of Border Ranges NP. The retention of these trees may be warranted if assessed to be of historic significance and providing their capacity to disperse can be managed (see 3.1.8 *Introduced Plants*).

The identification, preservation and interpretation of the historic attributes of the planning area is an important objective of this Plan. Local historians, historical societies and members of the community are repositories of historic information and important stakeholders to assist in meeting this objective.

### **DESIRED OUTCOME**

- ◆ **Historic heritage resources are identified, protected and interpreted where appropriate.**

### **GUIDELINES & ACTIONS**

- **Assess the cultural significance of historic resources including those listed in the inventory at *Appendix 5* in accordance with *The Burra Charter*.**
- **Develop a statement of significance for historic resources to assist in determining priorities for conservation planning and works.**
- **Prepare and implement Conservation Guidelines/ Plans for historic resources assessed to be of high heritage significance and rapidly deteriorating in condition such as the Long Creek tramway and village sites in Border Ranges NP and the Kunghur flying fox in Nightcap NP.**
- **Assess the historic and landscape significance of plantings associated with historic sites, such as at the Long Creek village site in Border Ranges NP, prior to any proposed removal. Remove those introduced plants assessed not to be of historic and landscape significance, or have the capacity to spread (refer to 3.1.8 *Introduced Plants*).**
- **Ensure items of historic significance are considered for listing on appropriate heritage registers.**
- **Involve local historians, historical societies and members of the community in the identification, assessment, planning and management of historic items where possible.**

### 3.1.5 Wilderness

Almost 40% of the north-western section of the planning area is declared wilderness under the Wilderness Act 1987. The Levers (15,197 ha) and Warrazambil (7,197 ha) Wilderness Areas are wholly contained within Border Ranges NP. Levers Wilderness was declared on 19 February 2003 and is located west of the Richmond Gap. The south-east portion of Border Ranges NP contains the Warrazambil Wilderness which was declared on 12 April 1996. The Lost World Wilderness (9025 ha) comprises the north-east portion of the Border Ranges NP and the entire Limpinwood NR. It was declared on 14 September 1994 and is contiguous with the remote southern area of Lamington NP in Queensland.

Wilderness Areas are required to be managed in accordance with the management principals of the *Wilderness Act 1987*: to maintain their unmodified state; capacity to evolve in the absence of significant human interference; and provide opportunities for solitude and appropriate self-reliant recreation. There are some walking tracks in these Wilderness Areas which existed prior to Wilderness declaration. These include part of the Palm Forest Walk, Booyong Walk, Rosewood Loop, Red Cedar Loop and the Border Track in the Lost World Wilderness Area and the Falcorostrum Walk and Bar Mountain Circuit in the Warrazambil Wilderness Area. Ongoing maintenance of these tracks is required for public safety and to minimise impacts but will not involve track upgrading.

The Border Track, whilst predominantly located in the adjoining Lamington NP, is partly located in Limpinwood NR. It meanders along the Queensland – NSW border between Mt Hobwee and Echo Point on the McPherson Range escarpment. This track contains a number of lookout points with views across the Tweed Valley. Many of these informal lookouts duplicate views and need to be rationalised to reduce disturbance to important escarpment habitat. This includes the sensitive antarctic beech *Nothofagus moorei* vegetation communities and threatened flora such as the herb *Euphrasia spp. aff. bella* and waxberry *Gaultheria spp.* Whilst this track is effectively managed by the QPWS, there is ongoing coordination with the NPWS regarding track and lookout management.

The management of self-reliant bushwalking and associated remote camping sites in wilderness areas in Border Ranges NP and Limpinwood NR is addressed in other sections of the plan (refer to 3.2.3 *Camping*; 3.2.4 *Bushwalking*);).

#### **DESIRED OUTCOMES**

- ◆ **Wilderness Areas are managed to maintain their largely unmodified state, self-perpetuating natural systems and appropriate recreation including bushwalking on pre-existing walking tracks.**
- ◆ **Declared wilderness areas are managed in accordance with the Wilderness Act 1987 and NPWS Wilderness Policy.**

## **GUIDELINES & ACTIONS**

- **Continue to maintain existing sections of the Palm Forest Walk, Booyong Walk, Rosewood Loop, Red Cedar Loop, Falcorostrom Loop, Bar Mountain Circuit and the Border Track in Wilderness Areas of Border Ranges NP and Limpinwood NR to a Class 3 Australian Standard walking track (Standards Australia, 2001). Directional signage will be maintained for public safety. No additional signs will be placed along the wilderness sections of these tracks.**
- **Recognise the QPWS as the primary management authority of the 'Border Track' which traverses the Lost World Wilderness Area in Limpinwood NR. Continue to coordinate with QPWS regarding track and lookout management in accordance with this plan (refer to 3.1.2 *Landforms & Visual Landscapes*, 3.1.7 *Biodiversity*) and NSW environmental assessment requirements.**
- **Assist QPWS to conduct and implement a study of existing lookout sites along the escarpment section of the Border Track in Limpinwood NR to minimise impacts on Wilderness values. The study is to identify:**
  - Existing lookout sites and the current nature and extent of the view area;
  - Significant habitat and flora that may be affected by use and maintenance of lookout sites;
  - Lookout sites that should be closed due to duplication of views or threats to significant habitat, flora and Wilderness values; and
  - Lookout sites to be retained and maintenance required (see 3.1.2 *Landforms & Landscapes*).

### **3.1.6 Water Catchment**

The planning area provides large forested catchments in the headwaters of the Far North Coast's major river systems of the Tweed, Richmond and Brunswick Rivers. These intact upper catchment areas harness the region's high rainfall to provide a reliable source of high quality water to a number of municipal water reservoirs and many individual downstream agricultural and domestic uses (see 3.4.4 *Water Supply*). The Northern Rivers Catchment Management Authority coordinates catchment management initiatives for these river systems.

The protection of the water catchment values of the planning area is a prime objective of this plan to ensure high quality water in downstream waterways. The retention of native vegetation cover offers the greatest protection of these catchment values. Potential threats to catchment values include human waste disposal, soil erosion on roads, trails and tracks and stock grazing. The protection of the catchment values of the planning area are implicit under other actions contained in this plan (see 3.1.2 *Landforms & Visual Landscapes*, 3.1.7 *Biodiversity*, 3.1.10 *Fire Management*, 3.3 *Management Operations*, 3.4.4 *Water Supply*).

## **DESIRED OUTCOME**

- ◆ **Catchment values, water quality and the health of waterways are maintained or improved.**



## **GUIDELINES & ACTIONS**

- **Protect water catchment values through appropriate park management including the following:**
  - **exclude livestock with park boundary fencing to avoid stream bank and bed erosion (see 3.1.9 *Introduced Animals*);**
  - **continue to implement maintenance programs for roads, trails and tracks in accordance with erosion and sediment control best practices to minimise sedimentation of waterways (see 3.3 *Management Operations*); and**
  - **replace pit toilets with more appropriately designed, maintained and monitored on-site waste disposal systems (see 3.3 *Management Operations*).**
- **Liase with the Northern Rivers Catchment Management Authority regarding catchment management initiatives.**

### **3.1.7 Biodiversity**

Biological diversity, or biodiversity, is the variety of life forms that interact to support and sustain the balance of nature.

The planning area is one of the most bio-diverse regions of Australia. This rich biodiversity is largely the function of the vegetation of the planning area which itself is extremely diverse. These include extensive areas of rainforest, wet and dry sclerophyll forest and pockets of heath (refer to *Appendix 3*). This diversity of vegetation communities reflects the complex interactions between climate, topography, soil fertility and fire regime which vary significantly across the landscape.

The rainforest is highly diverse with four of the five rainforest sub-forms occurring in NSW represented in the planning area. These are cool temperate, warm temperate, subtropical and dry rainforest. Within these types of rainforest, 10 of the 13 component floristic alliances that occur in NSW as described by Floyd (1990) are also represented in the planning area.

Sub-tropical rainforest is the most abundant rainforest sub-form in the planning area. It occurs at the base, upper valleys and plateaus of the Tweed, McPherson and Nightcap Ranges. In combination with the adjoining Lamington and Springbrook National Parks in Queensland, the planning area contains the largest remaining area of subtropical rainforest in Australia and probably the world. This combined area comprises one of only two major refuges of rainforest in mainland Australia, the other being in North Queensland. Furthermore, it is the main refuge in Australia of ancient rainforest communities, plants and animals with evolutionary links to Gondwana as recognised by its listing under the World Heritage CERRA property (see *World Heritage*). Small remnants of subtropical rainforest at low elevation are of particular significance due to their high species diversity and rarity.

Dry rainforest is also well represented, particularly in the western part of Border Ranges NP. Temperate rainforests are of smaller extent occurring at mid to high

elevation on the plateaus and above the escarpments of the planning area. They are of particular importance being close to their northern distribution in Australia.

Both wet and dry sclerophyll forest are also well represented in the planning area at mid to low elevation. Small areas of heath also occur on exposed ridges, escarpments and rock outcrops throughout the planning area.

The diversity of vegetation provides a range of habitat types which support a wide range of native animal groups and species (See Appendix 3). Of particular significance are the rainforests of the border region containing Border Ranges NP and Limpinwood and Numinbah NRs which has the highest concentration of marsupial, bird, snake and frog species in Australia (Adam, 1987). No comprehensive fauna or flora studies has been undertaken for all the parks and reserves of the planning area, however, NPWS has data from the CRA Process, the 1991 NE Forests Biodiversity Surveys and opportunistic sightings recorded in the NPWS Wildlife Atlas.

The intricate network of permanent and ephemeral waterways also sustains a diversity of plants and animals within and beyond the NPWS estate. In particular, these waterways provide a diversity of aquatic and riparian habitat. The high elevation rainforest streams of the Tweed and McPherson Ranges in Border Ranges NP provide restricted habitat for threatened animals such as the Loveridges frog (*Philoria loveridgei*). These waterways also host a range of aquatic invertebrates such as spiny crayfish (*Euastacus sulcatus*). However, little is known regarding the diversity and temporal and spatial distribution of these and other aquatic animals.

The high biodiversity of the planning area is also demonstrated by the large number of threatened plant and animal species present. There are 35 plant species and 55 animal species known to occur in parts of the planning area that are listed as threatened species under the *TSC Act*.

Many of these species are restricted to and/ or have a major proportion of their occurrence in the region or are at their geographic limit of distribution. This includes animal species listed as endangered under the *TSC Act* such as the black-breasted button quail *Turnix melanogaster* found in dry rainforest and Hastings river mouse *Pseudomys oralis* and northern sub-species of the eastern bristlebird *Dasyornis brachypterus monoides* found in some areas of open sclerophyll forest. Endangered plant species essentially restricted to the planning area include *Elaeocarpus* sp Minyon, southern ochrosia (*Ochrosia moorei*), red-fruited ebony (*Diospyros mabacea*) and peach myrtle (*Uromyrtus australis*) found in rainforest and wet sclerophyll forest. An undescribed rainforest tree species known as the 'Nightcap oak' has also been recently discovered in the Nightcap Range. This species is thought to belong to the newly described *Eidothea* genus.

Threatened species require special management consideration to reduce further decline and promote the recovery of their populations. Under the *TSC Act 1995*, Recovery Plans are to be prepared for threatened species to outline specific management actions to promote the recovery of threatened plant and animal populations. At the time of writing, there were 21 plans in preparation for threatened species found in the planning area, with some of these plans affecting multiple species

(see *Appendix 2b*). Upon completion of Recovery Plans, this Plan of Management will need to be reviewed to ensure consistency. In the interim, there are a number of existing programs in place or proposed for the management of threatened species habitat as summarised below.

The endangered herb *Euphrasia* spp. aff. *bella* has been recorded near The Pinnacle in Border Ranges NP in association with heath vegetation communities at the escarpment edge. At this site, significant vegetation damage, erosion and soil compaction was being caused by track braiding and high visitor use, with approximately 10 000 - 14 000 bushwalking visits being recorded per annum. In 1995, a 200 m section of the walking track was graded, terminating at a raised walkway and lookout platform which was installed to reduce degradation in this fragile habitat. In addition, an 800 m section of informal track was closed as were a number of alternative tracks. Ongoing erosion control works for these closed sections of track are required.

An ongoing monitoring program demonstrates that the track, raised walkway and platform have reduced bushwalking impacts in the habitats for this endangered species.

Future surveys for this species will ultimately determine the impact of this development and bushwalking at this site. However, previous records of *Euphrasia* spp. aff. *bella* have only been obtained after periods of prolonged drought which appears to stimulate vegetative growth and flowering in this species. Hence, future flora surveys will be opportunistic when these conditions prevail. Future site management will be reviewed based on the results of these surveys.

Border Ranges NP also contains principal habitats of the endangered northern subspecies of the eastern bristle bird (*Dasyornis brachypterus monoide*). The total adult population which is centred on Border Ranges NP is estimated at fewer than 50 individuals. Some known territories for this species have been assessed to be of poor habitat quality due to inappropriate fire regimes. These territories occur in dry sclerophyll open forest or woodland with a grassy understorey.

A fire interval of approximately seven years is currently considered appropriate to maintain suitable habitat for the northern sub-species of the eastern bristle bird and other coexisting animal species. To achieve this, a habitat management burn program has been prescribed for some eastern bristle bird territories in accordance with the draft Recovery Plan for this species and the draft Fire Management Strategies for Border Ranges NP and Limpinwood NR.

The mid to low elevation rainforest creeks of Mt Warning, Border Ranges and Nightcap NPs provide principal habitats for threatened frogs which include the Fleay's barred frog (*Mixophies fleayii*). Due to potential impacts on water quality, swimming has been prohibited below Protesters Falls in Nightcap NP which is known habitat for this species of frog.

A project to establish an arboretum for rare and threatened rainforest species of the planning area commenced at a previously degraded site near the Korrumbyn Creek

day use area in Mt Warning NP in 1988. This project was funded under the National Rainforest Conservation Program. Approximately 40 rare and threatened species are represented in several planted clumps amongst rainforest pioneer and early secondary stage species totalling approximately 2000 plantings.

The site now supports significant portions of the gene pools of many endangered rainforest species of the region. Regular weed control works are required during this establishment phase of the arboretum plantings. The site is currently unsuited to public access. The future management of this site needs to be determined in the context of the role of Regional botanic gardens' at Tweed, Lismore and Coffs Harbour.

The planning area provides core areas of high quality habitat, corridors facilitating the movement of animals and a range of specific habitat niches such as ecotones or boundary areas between forest types. Native vegetation on adjoining lands augment this habitat and provide important ecological links between remnant areas of forest.

Adjoining ecological corridors of particular importance include: lands around Mt Lindesay linking Border Ranges NP to Mt Barney NP in Queensland; lands around Bald Mountain and Chillingham linking Limpinwood and Numinbah NRs to the Tweed valley; Wollumbin NP and SCA and adjoining Tweed Shire Council land linking Mt Warning NP to Mebbin and Border Ranges NPs; lands around Uki linking Mt Warning and Mt Jerusalem NPs; lands around Huonbrook and Wanganui that link Snows Gully NR, Nightcap, Mt Jerusalem and Goonengerry NPs; and Whian Whian SF and the adjoining Rous County Council land which are contiguous with Nightcap NP.

Cooperative arrangements between the NPWS and neighbouring landholders can be pursued under the NPWS Voluntary Conservation Agreement or Land for Wildlife Programs, in addition to the Native Vegetation Incentive Program administered by the Department of Land and Water Conservation. Complementary management of adjoining habitat is also pursued under the protection programs of other agencies such as Local Government. In particular, cooperative management between the NPWS and QPWS for the border region is essential to maintain ecological processes and the integrity of these core areas of habitat.

The draft NSW Biodiversity Strategy (NPWS 1997) identifies the key threats to biodiversity such as fire, introduced plants and animals and inappropriate human activities. This Strategy also identifies corresponding actions to maintain biodiversity. These have been incorporated in the development of this plan and are contained under the following sections: 3.1.8 *Introduced Plants*, 3.1.9 *Introduced Animals*, 3.1.10 *Fire Management*, 3.2 *Visitor Use*, 3.3 *Management Operations*.

### **DESIRED OUTCOMES**

- ◆ **The full range of native plant and animal species found are conserved including the habitat and populations of threatened species.**
- ◆ **Habitat on neighbouring lands is managed in a compatible way through cooperative agreements.**

## **GUIDELINES & ACTIONS**

### ***Threatened Species Recovery***

- **Protect habitats of the endangered herb *Euphrasia spp. aff. bella* at The Pinnacle lookout in Border Ranges NP through the following:**
  - undertake erosion control works for former sections of track that have been closed to assist regeneration;
  - continue to monitor the site annually to ensure there are no future unacceptable impacts associated with track and lookout. Monitoring is to include soil testing and a species survey in August or September each year in addition to during drought periods; and
  - subject to the above monitoring program, visitor access to the site may be restricted during periods when visitors may adversely impact on this species.
- **Implement the habitat management burn program for specified eastern bristle bird territories in Border Ranges NP in accordance with the Fire Management Strategies for Border Ranges NP and Limpinwood NR and the eastern bristle bird Recovery Plan.**
- **Continue to enforce no swimming downstream of Protesters Falls in Nightcap NP to assist in maintaining high water quality for the threatened Fleays barred frog.**
- **Continue to maintain the site containing arboretum plantings of rare or threatened species of the planning area near Korrumbyn Creek day use area in Mt Warning NP.**

### ***Complementary Management of Adjoining Habitat***

- **Prepare and implement a Memorandum of Understanding with QPWS regarding complementary management of the border region including Border Ranges NP, Limpinwood and Numinbah NRs in NSW and Lamington and Springbrook NPs in Queensland and include the provisions detailed elsewhere in this plan (see 3.1.5 *Wilderness & Wild Rivers*, 3.2.3 *Camping Areas*, 3.2.4 *Bushwalking*).**
- **Encourage neighbouring landholders and agencies to identify, protect and manage adjoining habitat and ecological corridors.**

#### **3.1.8 Introduced Plants**

Introduced plants, commonly known as weeds, are those species that are not indigenous to the area. Weeds can out-compete native plants which can change forest structure, prevent natural regeneration and reduce habitat values.

The NPWS policy 1.9 (Exotic Plant Species) broadly identifies the issues, priorities and methods for weed management. Restoration and Rehabilitation Plans for specific parks and reserves are the principal planning instruments for weed management on NPWS estate. These plans identify weed distribution, determine the significance and control priorities for weed occurrences and where possible integrate weed control and

regeneration strategies. Regional Pest Species Management Strategies also provide management direction for weed control albeit at a broader level.

Restoration and Rehabilitation Plans have been prepared and are being implemented for Limpinwood and Numinbah NRs, in addition to Snows Gully NR. Further plans are recommended in accordance with priorities assigned in *Rainforest Rehabilitation Priorities for the Northern Field Branch of NPWS* (Hunter, 2000a). In conjunction with this project, a *Review of Current Rainforest Rehabilitation Projects for the Northern Directorate of NSW NPWS* (Hunter, 2000b) was undertaken to review all current rehabilitation projects to ensure best practises are implemented.

Weeds occur in many areas of the planning area, particularly in localities that have been highly disturbed, are subject to frequent human activity and in riparian areas. They are dispersed by a variety of means including wind, water, birds, vehicles, walkers and introduced animals including livestock and foxes.

In the planning area, targeted control programs are in place for weeds declared noxious under the *Noxious Weeds Act 1993*. Priority for control is dependent on their classification under this Act and their distribution. Weed species that are isolated in occurrence but have a high capacity to disperse are also considered a high priority.

At the time of writing, control programs are undertaken for groundsel bush (*Baccharis halimifolia*) in disturbed areas in the west of Border Ranges NP, Tyalgum and Hidden Valley Creeks and in Limpinwood NR and on the creek flat in Snows Gully NR. Control programs are also undertaken for giant Parramatta grass (*Sporobolus indicus var. major*) in some roadside areas in the west of Border Ranges NP and Nightcap NP. This species has also been reported to occur in properties adjoining Goonengerry NP. Targeted control programs are also undertaken for mistflower (*Ageratina riparia*) and Crofton weed (*Ageratina adenophora*) on the escarpment near The Pinnacle lookout in Border Ranges NP for the conservation of the threatened herb, *Euphrasia* spp. aff. *bella*.

Dense thickets of lantana (*Lantana camara*) are found throughout the planning area, particularly in regenerating wet sclerophyll forest and dry sclerophyll forest with limited fire history. The Queensland Department of Natural Resources are researching a biological control agent for this species using the Brazilian moth (*Ectaga garcia*) in Mt Warning NP and Limpinwood NR. At the time of writing, the moth had only successfully established in Mt Warning NP and further monitoring is scheduled.

Camphor laurel (*Cinnamomum camphora*) is a rainforest weed and occurs mainly on krasnozems soils throughout the planning area. There are a large number of seedlings on the rainforest edges, particularly on roadsides. With sufficient disturbance of the rainforest and available light, nutrients and moisture these seedlings can mature and spread. Camphor laurel is found in some highly disturbed forest and riparian zones of the planning area. This plant is declared noxious in Kyogle and Lismore Local Government Areas and is soon to be declared noxious in Tweed Local Government Area. As such, Camphor laurel is a priority in the Regional Pest Management Strategy.

There are other introduced plant species in and adjoining the planning area that, whilst not declared noxious, can rapidly invade native vegetation communities and require resource-intensive control works. For example, introduced vine species such as madeira vine (*Anredera cordifolia*) can smother canopy trees in riparian zones and subtropical rainforest. There is a control program targeting Madeira vine at Breakfast Creek in Mt Warning NP and at an old hut site in the upper reaches of Oxley Creek in Limpinwood NR. There are reports of giant devil's fig (*Solanum hispidum*) in upper Tuntable Creek adjoining Nightcap NP being rapidly dispersed by birds.

Roadsides are also an area requiring targeted control programs as conditions favour introduced plant species. Ongoing roadside weed control is undertaken via slashing, slope mowing and selective spraying. 'Equipment hygiene' for road maintenance machinery needs to be maintained to reduce the spread of roadside weeds.

Some of the parks of the planning area also contain timber plantations established during previous State Forest tenure. These include softwood plantations in Mebbin NP which consist mostly of hoop pine (*Araucaria cunninghamii*), a small plantation (approximately 0.5 hectare) of kauri pine (*Agathis robusta*) in addition to a plantation of introduced pine (*Pinus spp.*) near Cutters Camp. Native hardwood plantations also occur in Mebbin, Nightcap, Mt Jerusalem and Goonengerry NPs. The majority of these plantations contain locally occurring tree species such as flooded gum (*Eucalyptus grandis*) and blackbutt (*E.pilularis*). In addition, there are some small areas of plantation containing hardwood timber species that are not native to the area. This includes approximately 4 ha of Gympie messmate (*E.cloeziiana*) in Mebbin NP and some small stands of large-fruited blackbutt (*E.pyrocarpa*) in Goonengerry NP. There is also a small experimental planting of Queensland maple (*Flindersia braeyleana*) in the former Big Scrub Flora Reserve in Nightcap NP.

At the time of writing, the NPWS was assessing transitional arrangements for former hardwood plantations in Mebbin, Nightcap and Goonengerry NPs accordance with the *Forest Agreement for the Upper North-East of NSW 2000*. Some plantation areas require active management to prevent spread of non-local species and encourage natural vegetation structure and regeneration to improve ecological integrity including that of the indigenous plant gene pool.

Some weed control programs are coordinated with other agencies, such as the Far North Coast County Council, to ensure strategic and efficient weed management. Liaison with park neighbours and adjoining Landcare Groups also occurs on an opportunistic basis for integrated weed control programs.

Additional information on the distribution and abundance of weeds in and adjoining the planning area is required for effective weed control and forest restoration. Restoration and Rehabilitation Plans are the main instrument to identify priorities for control programs and weed related research.

The control of introduced plants and the regeneration of indigenous plant communities is an important objective of this plan.

## **DESIRED OUTCOME**

- ◆ Introduced plant species are controlled, eradicated where possible and replaced with native species in such a way that the processes of natural regeneration and succession will operate for the long-term viability of the native plant and animal communities (Joseph, 1995).

## **GUIDELINES & ACTIONS**

### ***Weed Management Planning***

- Implement the Restoration and Rehabilitation Plan for Limpinwood/Numinbah NRs which prioritise the control of mistflower on the McPherson Range escarpment and Madeira vine in the upper reaches of Oxley Creek.
- Continue to implement the Restoration and Rehabilitation Plan for Snows Gully NR which targets the control of groundsel bush as required.
- Prepare and implement Restoration and Rehabilitation Plans for the other parks and reserves of the planning area in accordance with the following priority listing:
  1. Nightcap NP;
  2. Mt Warning NP;
  3. Border Ranges NP;
  4. Mt Jerusalem NP;
  5. Mebbin NP;
  6. Goonengerry NP.

### ***Weed Control & Forest Rehabilitation***

- Until the preparation of the Restoration and Rehabilitation Plans, weed control and regeneration works will be in accordance with the following:
  - the *Pest Management Strategy for the Northern Rivers Region NPWS* which targets the control of weeds that:
    - are declared noxious weeds;
    - threaten areas of high conservation significance or threatened species in accordance with Recovery Plans;
    - are distributed in small, isolated occurrences where targeted control will prevent future infestation; and
    - are known roadside weeds that are easily dispersed by vehicles and road plant and equipment.
  - The systematic and integrated approaches recommended in the *Review of Current Rainforest Rehabilitation Projects for the Northern Directorate of NSW NPWS* (Hunter, 2000); and
  - Continue to undertake targeted weed control programs for groundsel bush, giant Parramatta grass, mistflower, crofton weed and Madeira vine as specified above.
- Monitor the outcomes of weed control programs and regeneration projects and review strategies accordingly.
- Retain introduced plants of historic significance whilst inhibiting their capacity to spread (see 3.1.4 *Historic Heritage*).



### *Plantations*

- **Undertake measures to control the dispersal of introduced timber species such as Gympie messmate and exotic pine in Mebbin NP, large fruited blackbutt in Goonengerry NP and Queensland maple in Nightcap NP. Identify methods in Restoration and Rehabilitation Plans for these respective parks. In Mebbin NP, consider timber removal as a method to assist in the rehabilitation of these plantation areas.**
- **Undertake other measures considered necessary to encourage natural vegetation structure and regeneration in plantation areas. Identify methods in Restoration and Rehabilitation Plans for respective parks.**

### *Cooperative Arrangements*

- **Continue to coordinate with other agencies such as the Far North Coast County Council, park neighbours and Landcare Groups regarding integrated weed control programs.**

### **3.1.9 Introduced Animals**

Introduced animals include animals that do not naturally occur in the area. Introduced animals known to occur in the planning area include red fox (*Vulpes vulpes*), wild dog (*Canis spp.*), feral cat (*Felis catis*), European rabbit (*Oryctolagus cuniculus*), black rat (*Rattus rattus*) and cane toad (*Bufo marinus*). Further research is required to determine their distribution and abundance in the region.

Whilst the ecological impacts of introduced animals in natural areas is not fully understood, a range of impacts can be attributed to some of these animals. The wild dog, fox and cat compete with and prey on native animals which can stress native animal populations, particularly mammals, birds and reptiles. The fox and rabbit can cause soil erosion from disturbance of vegetation and digging of dens and burrows respectively. They can also compete with native ground dwelling animals for shelter. Cane toads are thought to compete with and prey on native frogs and may poison frog-eating native animals.

The management of introduced animals is in accordance with a number of legislative and policy provisions. The *Rural Lands Protection Act 1989* identifies statutory requirements relating to the management of declared noxious pests which include wild dog and European rabbit.

The NPWS policies 2.3 (Introduced Animals) and 2.6 (Wild Dogs) identify the issues and control strategies for the management of introduced animals on NPWS estate. These policies require that any on-park control programs will only be permitted following appropriate environmental assessment and in accordance with any conditions of approval to minimise potential impacts on non-target animal species.

Recovery Plans and Threat Abatement Plans prepared under the *TSC Act* also include specific control programs for introduced animals. A fox threat abatement plan has

been prepared and is currently being implemented. A cat threat abatement plan is currently in preparation . These plans will identify priorities and best practises for control throughout NSW.

The principle strategy for the management of introduced animals in the planning area is the *Pest Management Strategy for the Northern Rivers Region NPWS*. This strategy identifies priorities, guidelines and actions to address the control of introduced animal species. Pest Management Plans for individual parks and reserves also provide detailed strategies to control introduced animals.

At the time of writing, cooperative wild dog control programs were systematically coordinated by the Tweed-Lismore and Casino Rural Lands Protection Boards for some neighbouring lands to minimise attacks on livestock. The Rural Lands Protection Boards regularly liaise with the NPWS regarding these programs.

Dingoes or their hybrids are known to occur in the planning area. A dingo genetic sampling program is proposed for the planning area to improve understanding of their genetic composition and the level of interbreeding with wild dogs.

In Border Ranges NP west of Mt Gipps, a wire mesh fence is located along the NSW – QLD border to restrict the movement of rabbits. However, this fence may also restrict the movement of native animals where there are areas of contiguous forested habitat across the border. This fence is maintained by the Darling Downs – Moreton Rabbit Board (Qld) and the NSW Department of Agriculture.

Stock fencing is also in place along park and reserve boundaries that adjoin grazing land. Appropriate fencing standards are necessary to avoid environmental damage caused by stray livestock.

Isolated records of cane toads exist in Border Ranges NP along the Lions Road and Tweed Range Scenic Drive and on the summit track in Mt Warning NP. Cane toads are abundant in adjoining lowland areas. A seasonal community-based cane toad ‘muster’ occurs off-park in some of these adjoining areas. New records of this species need to be documented to ascertain population distribution and abundance.

With the exception of European honey bees, very little is known about introduced invertebrate species in the planning area and their effect on natural systems. Further research is required in this area.

Whilst the control of introduced animals in the planning area is an important objective of this plan, it may not always be feasible to implement programs on-park due to the potential impact on non-target animal species. This plan endorses the strategic control of introduced animals through integrated programs coordinated by the Rural Lands Protection Boards on adjoining lands.

### **DESIRED OUTCOMES**

- ◆ **A reduction in the distribution, abundance and impacts of introduced animals.**

- ◆ **Improved information on the impact of introduced animals and the border fence in the planning area.**

### **GUIDELINES & ACTIONS**

#### ***Pest Animal Control***

- **Control introduced animals in accordance with priorities of the Pest Management Strategy for the Northern Rivers Region of NPWS.**
- **Prepare and implement pest management plans for each park and reserve within the planning area.**
- **Implement any pest animal control programs in accordance with:**
  - **the pending Threat Abatement Plans for red fox and feral cat; and**
  - **Recovery Plans for threatened species.**

#### ***Border Rabbit Fence***

- **Review the necessity for, design and maintenance of the border rabbit fence in consultation with the Darling Downs-Moreton Rabbit Board (Qld), QPWS, NSW Department of Agriculture and relevant neighbour representatives.**

#### ***Cooperative Arrangements***

- **Continue to coordinate with the Tweed-Lismore and Casino Rural Lands Protection Boards and park neighbours regarding pest animal control programs on adjoining lands.**
- **Prepare and implement a fencing strategy for relevant parks and reserves in consultation with park neighbours to ensure boundary fencing excludes livestock.**
- **Facilitate information exchange for adjoining landholders on adequate fencing in accordance with NSW Department of Agriculture standards.**

#### ***Research and Monitoring***

- **Encourage research into the distribution, abundance and monitoring of control programs for wild dog, red fox, feral cat, black rat, cane toad and invertebrate pests in the planning area.**
- **Encourage research into the impact of the border rabbit fence on the movement of native animals in Border Ranges NP, west of Richmond gap.**
- **Conduct the dingo genetic sampling program in Border Ranges NP subject to obtaining the necessary approvals.**

#### **3.1.10 Fire Management**

The NPWS have a legislative responsibility Under the *Rural Fires Act 1997 (NSW)* to protect life and property within and adjoining NPWS estate and to manage fire to maintain biodiversity. Wildfire can also degrade cultural values and pose a risk to human safety and park infrastructure.

A recent review of fire management throughout the Northern Field Branch by NPWS has resulted in a modified approach to fire planning based on the level of complexity involved. In regard to the planning area, the NPWS considers that the area requires separate, map based fire management strategies. Annual hazard reduction programs are also submitted to the district Bush Fire Management Committees.

Fire management strategies will be prepared for the planning area, focusing on the ecological requirements of vegetation communities, fire management zoning, cooperative arrangements, resource and neighbouring land protection considerations and the identification of assets at risk. The planning area will be divided into management zones that will, as far as possible, be bounded by existing roads, management trails and natural boundaries.

To minimise adverse impacts on biodiversity and cultural resources, proposed fire management activities identified by Fire Management Strategies such as prescribed burns or the development of management trails are subject to detailed environmental assessment. Activities assessed to have unacceptable impacts are not approved or modified accordingly.

At the time of writing, draft Fire Management Strategies were being finalised for Border Ranges NP/ Limpinwood NR, Mt Jerusalem NP and Nightcap NP/ Snows Gully NR. These draft plans are scheduled to be placed on public exhibition in 2001. Fire Management Strategies are scheduled to be completed for the other parks and reserves of the planning area by 2005.

Fire Management Strategies for the parks and reserves of the planning area need to address a number of key issues to protect life and property and maintain biodiversity and cultural resources.

There are some areas of fire prone forest types such as the dry sclerophyll forests in the west of Border Ranges, Mebbin and Mt Jerusalem NPs. Fire records since the mid-1960's indicate that the majority of wildfires in these and other areas start in adjoining off-park areas. Arson is also a significant cause of wildfires in the area, particularly along remote roads and trails. Unauthorised campfires have also caused some wildfires. Restrictions apply to the lighting of open fires (see 3.2.3 *Camping*). Few ignitions have resulted from natural causes such as lightning. Wildfire incidents are recorded and mapped by the NPWS.

Neighbouring properties, which are principally rural land uses with low density settlement, are mostly located down slope reducing the threat of fire from the planning area entering these properties. In fire prone areas, the maintenance of fuel reduced areas around assets is a key strategy to reduce the risk of damage from wildfire.

The majority of NPWS infrastructure are visitor facilities located at day use and camping areas. With the exception of some lookout platforms, most facilities are located within 'wet' forest reducing the risk of damage by wildfire.

Whilst the vegetation communities of the planning area are predominantly non-fire prone rainforest and wet sclerophyll forest, fires that do occur are a key threat to biodiversity. Inappropriate fire regimes, that is, the frequency, season, intensity and spatial extent of fire, can cause change to forest structure and species composition leading to the formation of other forest types. As such, inappropriate fire regimes are listed as a key threatening process under the TSC Act. The complex relationship between the landscape's physical features, fire regime and the ecological response to fire is not fully understood and further research is required.

To maintain biodiversity, fire regime thresholds have been developed for different vegetation groups based on current knowledge of the life cycles and fire responses of plants (see *appendix 4*). The role of fire management is proposed to manage the frequency of fire accordingly. For example, rainforest, including dry rainforest, is intolerant of fire and hence the objective is to exclude fire from these vegetation communities.

Whilst there is little knowledge on the response of native animals to fire, it is considered best practice to manage fire to ensure the viability of the plant communities that animals rely on as habitat. The habitat requirements of some native animal groups or species may include certain fire age class vegetation communities.

Fire is a disturbance event and can influence the distribution of introduced plant and animal species. Following fire, introduced plants may spread and out-compete native plants. Predation by foxes or cats may increase due to reduced vegetation cover to harbour native animals. Fire regimes must be managed to reduce the presence and distribution of pest species.

Fire and related management activities can also impact on culturally significant Aboriginal and historic sites through either physical damage, displacement by machinery or post fire soil erosion. Aboriginal sites in the planning area most susceptible to damage from bushfire and related management activities include scar trees and artefact scatters. Historic items most susceptible to damage include building remnants from periods of early settlement and logging.

Accelerated soil erosion and sedimentation of waterways can also occur due to fire removing detritus and vegetation that protect the soil. Maintaining ground vegetation along waterways is important to filter sediment from overland flow before entering waterways. Fire management in domestic water supply catchments of the planning area is of particular importance due to the potential of wildfire to impact on the quality of potable water.

Whilst Fire Management Strategies determine the required fire management assets (eg management trails, water sources), this Plan identifies the basic level of management trails required for fire management. Upon the completion of Fire Management Strategies, the trail network may be modified. Furthermore, during some wildfire incidents, the reopening of old tracks and the creation of temporary fire control lines may also be required. These temporary trails are closed and rehabilitated as soon as practical after the fire is declared out.

In the planning area, the use of management trails by unauthorised vehicles has led to incidences of arson and the dumping and burning of vehicles. In addition, unauthorised use, especially during wet conditions, has led to damage to trails and the environment which increases the requirement for trail maintenance. Furthermore, despite many of these trails being signed as a 'dry weather trail only,' there have been numerous incidents of visitor vehicles becoming bogged on these trails requiring costly vehicle recovery. This Plan seeks to address this issue through controlling public access to management trails in accordance with NPWS policy 5.2 (Vehicle Access).

Until Fire Management Strategies are adopted, Shire-wide Bush Fire Risk Management Plans and corresponding Plans of Operations address general fire protection and control measures for each local government area including NPWS estate. These plans have been prepared by District Bushfire Management Committees which have representation from all fire authorities including the NPWS. With regard to the planning area, Committees and corresponding Plans are in place for the Tweed, Lismore, Byron and Kyogle Shires. These and other cooperative arrangements are essential to ensure integrated fire management across the landscape.

Whilst this plan principally relies on Fire Management Strategies and Shire-wide Bushfire Risk Management Plans, it also states the specific guidelines to protect life and property and maintain biodiversity and cultural resources in the planning area.

### **DESIRED OUTCOMES**

- ◆ **Life and property including adjoining dwellings and park infrastructure are protected from fire.**
- ◆ **Fire is excluded from rainforest and wet sclerophyll forest. Fire frequencies for other vegetation communities are managed within identified thresholds to maintain habitat values.**
- ◆ **Aboriginal sites and historic remnants are protected from the impacts of fire and related management activities.**

### **GUIDELINES & ACTIONS**

#### ***Fire Planning***

- **Finalise and implement the Fire Management Strategies for Border Ranges NP/ Limpinwood NR, Mt Jerusalem NP and Nightcap NP/ Snows Gully NR by 2006.**
- **Prepare and implement Fire Management Strategies for the other parks and reserves of the planning area by 2008 in accordance with the following priority listing and scheduled timeframes:**
  1. **Goonengerry NP;**
  2. **Mebbin NP;**
  3. **Numinbah NR; and**
  4. **Mt Warning NP.**
- **Until a Fire Management Strategies is prepared for a park or reserve, fire management will be in accordance with the relevant shire-wide Bush Fire**

**Risk Management Plans and corresponding Plans of Operations in addition to the following guiding principles.**

***Biodiversity Conservation***

- **Manage fire regimes to protect biodiversity in accordance with the identified fire frequency thresholds for each vegetation group across the landscape. This includes excluding fire from rainforest and wet sclerophyll communities. Appropriate fire regimes are identified in Appendix 4, *Acceptable Fire Thresholds for Plant Groups* (Bradstock et al, 1995).**

***Cultural Site Protection***

- **Involve local Aboriginal stakeholders in the preparation of Fire Management Strategies to ensure fire management activities do not impact on Aboriginal sites.**
- **Wherever possible, utilise rubber tyred tractors with slashers to establish temporary fire control lines to avoid damage to cultural sites not yet identified.**

***Catchment Protection***

- **Wherever possible, exclude fire from riparian zones to maintain ground vegetation to filter overland flow.**

***Management Trails***

- **Maintain the management trail network identified in Figure 1. Additional existing trails may be retained for management purposes following the completion of the more detailed Fire Management Strategies. Maintain management trails to a dry weather four-wheel drive accessible standard.**
- **Install locked gates at management trail entrances where necessary to reduce the incidence of arson and assist in maintaining trails in a trafficable condition.**
- **Clearly identify fire trails of strategic value within the fire management strategies prepared for individual parks and reserves.**

***Cooperative Arrangements***

- **Continue active participation in the Tweed, Lismore, Byron and Kyogle District Bushfire Management Committees.**
- **Encourage appropriate fire management on neighbouring properties.**
- **Maintain cooperative detection and response systems with other fire authorities and park neighbours.**

### **3.2 VISITOR USE**

The far north coast of NSW is nationally renowned for its pleasant year-round subtropical climate, vast areas of natural beauty and as a cauldron of alternative cultures. The parks and reserves of the planning area feature prominently in this image and provide an integral component of the nature based recreation and tourism opportunities in the region.

In particular, the World Heritage rainforests of the planning area provide stunning landscapes for recreation and tourism. Along with the nearby Byron Bay and Tweed coasts, these idyllic settings of lush rainforest, rugged mountains and scenic waterfalls are the backbone of the region's tourism industry.

The region is well positioned for tourism due to its proximity to the Gold Coast and Brisbane with good transport links via road, rail and air. The current and planned future upgrades of the Pacific Highway between Brisbane and Coffs Harbour and the Summerland Way linking to South-east Queensland will further improve access from the growing urban populations of the region.

The regional centres and smaller townships of the Byron, Tweed, Lismore, Kyogle and Ballina local government areas are the main 'gateways' to the planning area. They provide a range of complementary facilities and services including visitor information centres, accommodation and retail outlets which contribute to local economic and community development.

Collectively, the planning area receives around 250 000 visitors per year. The most popular and accessible parks are Mt Warning, Border Ranges and Nightcap NPs. Whilst most visitors live on the Far North Coast of NSW and South-East Queensland, these parks are also a popular destination for domestic tourists and for a small percentage of international visitors (Griffin & Archer, 2001; Gaile, 1998).

Recent visitor surveys (Griffin & Archer, 2001) cite that the main reason for visiting some of the parks of the planning area is for the natural environment, to undertake recreational activities and to sightsee and relax with family and friends. The most popular activities conducted are nature appreciation, scenic driving, bushwalking and camping. Other activities that occur at lower levels include cycling, horse riding and adventure activities.

Collectively, the planning area contains 11 day use areas and three camping areas linked by a network of scenic roads and walking tracks. These destinations are geographically spread across the planning area and have a low to moderate level of facility development. This provides visitors with an opportunity to experience a range of natural settings in reasonable comfort whilst not detracting from the tranquillity, natural beauty and high ecological values of the area.

Given these visitor destinations are well located, the emphasis of this plan is improving the management of existing visitor areas rather than the development of any new ones. Furthermore, visitor use will not be encouraged in Limpinwood, Numinbah and Snows Gully NRs in accordance with the requirements of the NP&W



Act where the provision of recreation opportunities is not a primary management objective for nature reserves (see *2.1 Legislative & Policy Context*).

The intent is to provide visitor areas for day use and camping that are complementary within the regional context and the level and type of use of these areas is managed to maintain the desired recreational setting and environmental integrity of the area. This requires defining the desired setting and capacity for these areas to avoid incremental and ad hoc development. The Recreation Planning Framework for NSW National Parks (NPWS, 2004) has been used to determine settings and capacities at visitor areas.

The range of nature based recreation and tourism opportunities of the planning area are augmented by opportunities offered by other providers, both public and private sector. These include Council parks and recreation grounds, local government visitor information centres, commercial tours and accommodation at nearby townships.

At the regional level, the adjacent Lamington and Springbrook NPs in Queensland complement the generally ‘low-key’ nature based recreation opportunities offered within the planning area. These adjoining National Parks can be accessed in under two hours from the region via the Murwillumbah – Numinbah Road or Pacific Highway. They contain ‘higher order’ facilities including visitor information centres, accommodation, dining facilities, a network of graded walking tracks over 150 km in length and an extensive range of commercial tours.

This plan seeks to provide nature-based recreation and tourism opportunities that are compatible with and promote the understanding and enjoyment of the World Heritage and other natural and cultural values of the planning area.

### **3.2.1 Public Vehicle Access**

The planning area is well linked to the main road system of the far north coast of NSW and south-east Queensland region. All of the parks are accessible by public road and are within two hours driving time from most parts of this region.

The network of public roads leading to the planning area parks are managed by Local Government (see Figure 1). Whilst the NPWS have no legal responsibility for public roads outside of the NPWS estate, coordination with Local Government provides opportunities to maximise motorist safety and experience, asset protection and economies of scale for maintenance. This includes communication with the following Local Government authorities regarding the identified roads:

- Kyogle Shire Council regarding public road links to the Tweed Range Scenic Drive in Border Ranges NP;
- Tweed Shire Council regarding Mt Warning Road linking to Mt Warning NP, Cadell Road linking to Mebbin NP and Rolands Creek, Manns and Rockface Roads linking to Mt Jerusalem NP;
- Lismore City Council regarding Terania Creek, Nightcap Range, Fox Roads and Upper Coopers Creek Roads linking to Nightcap NP; and

- Byron Shire Council regarding Repentance Creek Road linking to Nightcap NP, Upper Main Arm, Manns and Koonyum Range Roads linking to Mt Jerusalem NP and Mill Road linking to Goonengerry NP.

There are two 'scenic drive' destinations in the planning area which are generally all-weather two-wheel drive accessible. The 64 km Tweed Range Scenic Drive in Border Ranges NP is the longest distance rainforest drive in the CERRA World Heritage property. It is also reputed to be the most accessible and spectacular rainforest drive in Australia.

A Maintenance Strategy (McElroy et al, 1999) has been prepared for this road which identifies long term management strategies. It includes a recommendation to bitumen seal the steep approaches to the plateau section of the Drive. These consist of two sections of road approximately 1 km in length. This is required to reduce long-term management costs, sedimentation of adjoining waterways, dust impacts on roadside vegetation and to improve motorist safety.

The other scenic drive is the 30 km Whian Whian Forest Drive which is partly located in Nightcap NP and the newly declared (in 2003) Whian Whian State Conservation Area (the former Whian Whian SF). The popular coastal tourist destination of Byron Bay is only a 30 minutes drive away. This scenic drive is predominantly in the adjoining Whian Whian State Conservation Area which is not within the planning area and will be considered in a subsequent amendment to this plan of management.

In addition to scenic drives, there are also other internal park roads that provide public vehicle access to destinations such as day use and camping areas. Some car parking areas associated with these visitor nodes require improvements to reduce parking encroachment onto adjoining areas and improve parking patterns and traffic and pedestrian movement. These improvements are principally the installation of bollards.

The Breakfast Creek car park at Mt Warning NP is considered to be at its maximum capacity based on environmental and infrastructure constraints. This area is principally a track head for the popular Summit Walk and ancillary short walk to the Lyrebird Lookout and is the most popular visitor destination in the planning area. This area receives approximately 100,000 visitors per annum which has significantly increased from 76,000 visitors per annum in 1994 (Gale, 1998). A detailed review of alternative visitor access options is required to reduce visitor impacts, maintain the desired recreation setting and improve parking patterns.

The Mount Warning (Wollumbin) National Park Aboriginal Steering Committee has expressed concerns relating to the conduct of adventure activities in, and public access to the summit of, Mount Warning National Park because of the need to protect Aboriginal cultural heritage values.

Whilst the park road network is predominantly all-weather two-wheel drive, roads are typically narrow, winding and have gravel surfaces requiring visitors to drive slowly and carefully to suit conditions. Some park roads are maintained as dry

weather two-wheel drive only as they do not provide access to day use or camping areas or alternative roads to visitor nodes are available.

Due to the prevailing natural conditions such as high rainfall, difficult terrain and erosive sub-soils, it is resource intensive to maintain park roads. Regular grading, re-sheeting and drainage works are required to ensure roads are trafficable, safe and well drained. Hence, the road network needs to realistically reflect available resources to ensure its viability into the future.

Some park roads and management trails, termed ‘Ministerial roads’ (refer to section 1.2), provide continuing access for adjoining private lands or state forests (refer to Table 2, below, and see the maps), which exacerbates road deterioration and requires a higher standard of maintenance than otherwise would be necessary for park management purposes. Due to the addition of Whian Whian State Forest into the NPWS estate in 2003, SFNSW may no longer require access through Nightcap National Park. Where there is no feasible alternative for neighbours to access their property other than by park roads, formal arrangements may be necessary. These arrangements may include provisions relating to public safety, public liability insurance and indemnity, visitor access, traffic levels, vehicle speed and weight, environmental protection, NPWS use, maintenance standards and contributions to maintenance costs.

**Table 2 Ministerial roads in the planning area**

	Designation	Access provision
<b>Nightcap National Park</b>		
Gibbergunyah Range Road	Park road	SFNSW
Baldwins Road	Park road	SFNSW & Private
North Rocks Road	Park road	SFNSW & Private
<b>Mebbin National Park</b>		
O’Briens Road	Management trail	Private
Cadell Road	Park road	Private
Bog Onion Road– forms small western portion of O’Briens Road	Management trail	Private
<b>Goonengerry National Park</b>		
Garrong Road	Management trail	Private
Unnamed road	Management trail	Private
<b>Mount Jerusalem National Park</b>		
Koonyum Range Road	Park road	Private
Boogarem Road	Park road	Private
South Chowan Road	Park road	Private
Rockface Road	Park road	Private
Main Arm Road	Park road	Private
Manns Road	Park road	Private
Middle Ridge Road (between Middle Ridge Trail and Manns Road)	Park road	Private
Portions of the Loop Trail and Lookout Track (at northern end of Boogarem Rd within the park)	Park road	Private
Four unamed roads	Park road	Private

## **DESIRED OUTCOMES**

- ◆ The designated park road network is generally maintained to all-weather, two-wheel accessible standards unless otherwise specified.
- ◆ Car parking at designated day use areas have improved traffic flow and parking patterns whilst protecting adjoining vegetation and maintaining existing car parking capacities.
- ◆ Public roads that link to park roads are managed with a coordinated approach between the NPWS and other agencies.

## **GUIDELINES & ACTIONS**

### ***Park Roads***

- Close Mount Jerusalem Road at the park boundary to discourage access to the former flying fox site.
- Public vehicles are permitted on the park road network as designated in Figure 1.
- Maintain the park road network to an all-weather, two-wheel drive accessible standard with the exception of the following roads which will be maintained to at least a dry weather two-wheel drive standard:
  - Cadell Road in Mebbin NP;
  - North Rocks Road, Nightcap NP; and
  - Boogarem, Koonyum Range and Middle Ridge Roads and Loop and Lookout Trails in Mt Jerusalem NP.
- Reduce the speed limit on all park roads to a maximum of 40 km/h and sign high use roads accordingly. Implement other safety measures as required.
- Negotiate management arrangements with relevant park neighbours regarding park roads used to access adjoining private properties where there are no feasible alternatives.
- Roads that will be maintained at least to four-wheel dry weather only standard and signposted accordingly are:
  - O'Connors and Lemon Tree Roads (to the Giant Ironbark) in Mebbin NP and
  - South Chowan Road in Mount Jerusalem NP.

### ***Forest Drives***

- Implement the Tweed Range Scenic Drive Road Maintenance Strategy (McElroy et al, 1999) for Border Ranges NP. Prior to implementation, undertake a review of traffic safety issues and implement safety measures in conjunction with the proposed road works.
- Continue to prohibit buses with a seating capacity greater than 20 persons and caravans on the Tweed Range Scenic Drive in Border Ranges NP and sign accordingly.

### *Breakfast Creek, Mt Warning NP*

- **Undertake a feasibility study for a transport system such as a shuttle bus service to transfer visitors to and from the walking track head at Breakfast Creek. This would operate during peak visitation periods with the intent to reduce traffic and parking congestion whilst maintaining visitation at a sustainable level.**
- **Identify parking bays at Breakfast Creek to improve parking patterns including an emergency vehicle bay and bus parking and turnaround if feasible.**
- **Promote alternative visitor opportunities in the Tweed region to reduce visitor pressure on the Summit Walking Track in Mt Warning NP (see 3.2.10 *Information, Interpretation and Education*).**
- **In consultation with the local Aboriginal community, information will be provided at the Mt Warning car park to explain the cultural values and significance of the mountain to Aboriginal people and to discourage inappropriate use of the mountain.**

### *Car Parking*

- **Improve parking patterns and reduce encroachment on adjoining vegetation at day use areas at Breakfast Creek in Mt Warning NP; Brindle Creek, The Pinnacle and Blackbutts in Border Ranges NP; and Terania in Nightcap NP. This may involve the installation of bollards, rehabilitation and resurfacing works.**

### *Public Roads*

- **Coordinate with local government and relevant agencies regarding the integrated management of public roads linking with park roads to provide consistent road standards and more efficient road maintenance.**

## **3.2.2 Day Use Areas**

Day use areas are the main destination for the vast majority of visitors to NPWS estate. Whilst day use areas typically contain picnic facilities, they often provide for a range of other day uses such as bushwalking, interpretation and education activities.

The planning area is well serviced with day use areas including 11 day use areas with picnic facilities and six constructed lookouts (see Figure 1). These destinations are geographically dispersed and provide a range of physical and social settings. Some day use areas are primarily a constructed lookout or ‘track head,’ that is, the start and finish point of a walking track system.

Due to the existing range of day use areas across the region, the emphasis of this plan is to improve the management of existing day use areas rather than develop any new areas. The intent is to ensure they are complementary within their locational context and managed to maintain the desired recreational setting and environmental integrity of the area.

To assist in this regard, a classification table has been prepared which defines the primary function and capacity for day use areas (see Table 3). The type of facilities to be provided at day use areas has also been identified. This table has been prepared based on the Recreation Management Strategy for the Northern Field Branch of NSW (NPWS, 2001) to ensure settings and capacities of different visitor areas are complimentary across the far north coast of NSW.

The most popular visitor destinations in the planning area are the Summit walk in Mt Warning NP, Minyon Falls and Minyon Grass Day Use Areas in Nightcap NP and day use areas interspersed along the Tweed Range Scenic Drive in Border Ranges NP.

It is proposed to relocate visitor facilities at Antarctic Beech day use area in Border Ranges NP to address environmental impacts associated with the existing area. The existing visitor facilities are located amongst an antarctic beech (*Nothofagus moorei*) vegetation community. There is evidence of vegetation damage, soil compaction and pollution around this sensitive vegetation community which is near its northern range of distribution and habitat for many threatened species.

The adjoining former quarry area which is currently used for car parking is more suitable for visitor facilities as it is clear of vegetation, level, opposite the walking track head to Brindle Creek and offers views to the McPherson Range. Relocating day use activities to this area will improve the integrity of the antarctic beech vegetation community. Facilities to be provided will be in accordance with existing site capacity limits (refer to Table 3).

Recent works have been undertaken at Minyon Falls and Minyon Grass day use areas in Nightcap NP to revitalise facilities and address environmental impacts whilst being in accordance with former site capacity limits (refer to Table 3). These areas compliment visitor opportunities provided in nearby off-park recreation areas. These include Rummery Park day use and camping area in Whian Whian SF managed by SFNSW and Rocky Creek Dam day use area managed by Rous County Council. Due to their close proximity and complementary nature, there are opportunities to manage and promote these areas in an integrated way.

Other day use areas are provided in Nightcap and Mebbin NPs. These are generally 'low-key' settings that experience lower levels of use with the exception of some weekends and public holidays. Whilst many existing visitor facilities at day use areas are not to NPWS standards, most are functional in their present state and will only be replaced when they are no longer economical to maintain.

NPWS will discourage unacceptable use of the Chowan Creek area by removing the barbecue and picnic table, and will prevent vehicle access to the stream due to the erosion vehicles and trail bikes are causing to the creek bank.

The provision of services such as rubbish collection has been reviewed. In comparison with campers who may stay a number of days, day visitors can take their own rubbish away with them at little inconvenience and recycle waste along with

their household rubbish. This reduces the high costs associated with a rubbish collection service due to the frequency, travel distances and waste disposal costs associated with this service. Restrictions apply to the lighting of open fires in day use areas (see 3.2.3 *Camping*).

Further research is required to improve knowledge of visitor use patterns. Some quantitative data is regularly collected from numerous traffic and pedestrian counters at many of these areas. This data is analysed to monitor visitor use levels and patterns.

A number of questionnaire surveys have also been conducted at various parks over the past 10 years. During 2000, a systematic questionnaire survey program was being conducted under a Cooperative Research Centre 'Tourism Indicators' Project at Sheepstation Creek day use and camping area in Border Ranges NP and Minyon Falls in Nightcap NPs. The results of these surveys provide important information on visitor use, attitude and preference.

Day use areas across the planning area need to be strategically managed to ensure recreation opportunities are sustainable, complementary, meet demonstrated visitor needs and are economically viable.

### **DESIRED OUTCOME**

- ◆ **Day use areas are managed in accordance with the designated settings and capacities to provide day use opportunities that are sustainable and complement other opportunities nearby.**

### **GUIDELINES & ACTIONS**

#### ***Day Use Areas***

- **Manage day use areas identified in figure 1 in accordance with the functions, level of facilities and site capacity defined in Table 3.**
- **Relocate the visitor facilities at Antarctic Beech day use area to the cleared area while removing facilities in the sensitive forested area in which they are currently located. Rehabilitate the existing facilities area as required.**
- **Remove the barbecue and picnic table and close the trail leading to these facilities at the car park on South Chowan Road. Install a locked gate and sign accordingly.**

#### ***Rubbish Removal***

- **Remove rubbish bins from all day use areas following adequate notification of park visitors through signage, park brochures and media releases.**

#### ***Adjacent Day Use Areas***

- **Prepare a joint recreation strategy with Rous County Council for Rocky Creek Dam. This strategy should address the provision of complementary**

**recreation facilities and opportunities between Rocky Creek Dam (located off-park) and those provided in Nightcap NP and Whian Whian SCA.**

- **Prepare an amendment to this plan to address recreation management issues in Whian Whian SCA. This strategy should address the following issues:**
  - **the provision of recreation opportunities at Rummery Park and elsewhere in Whian Whian SCA;**
  - **walking tracks between the Historic Nightcap Track and the Minyon Loop.**
  - **interpretive material and signage; and**
  - **scenic driving and road based recreation opportunities.**

### ***Monitoring***

**Monitor the following parameters relating to day use areas, analyse data and review management accordingly:**

- **Visitor use via analysing traffic count data;**
- **Visitor experience via opportunistic questionnaire surveys and recording visitor feedback; and**
- **Visitor impacts via mapping and photographing site modification of day use areas. Actions in response to impacts may include bollarding/fencing, soil stabilising and revegetation works and temporary closures to maintain groundcover vegetation.**



Table 3 Day Use Area Classification

<b>Recreation Node</b>	<b>Facilities Primary Function</b>	<b>Picnic Facilities</b>	<b>Lookout Platform</b>	<b>Toilets</b>	<b>Shelter Structure</b>	<b>Car Park Max. Limit</b>
<b>Brindle Creek, Border Ranges NP</b>	Track Head	yes	no	yes	no	10
<b>Antarctic Beech, Border Ranges NP</b>	Picnic Area	yes	no	yes	yes	10
<b>Tweed Valley, Border Ranges NP</b>	Lookout	no	no	no	no	5
<b>The Pinnacle, Border Ranges NP</b>	Lookout	no	yes	no	no	5
<b>Blackbutts, Border Ranges NP</b>	Lookout	yes	yes	yes	no	10
<b>Bar Mountain, Border Ranges NP</b>	Picnic Area	yes	no	yes	yes	15
<b>Border Loop, Border Ranges NP</b>	Picnic Area	yes	yes	yes	no	10
<b>Breakfast Creek, Mt Warning NP</b>	Track Head	no	yes	yes	no	50
<b>Summit, Mt Warning NP</b>	Lookout	no	yes	no	no	N/A
<b>Korrumbyn Creek, Mt Warning NP</b>	Picnic Area	yes	no	yes	no	10
<b>Cutters Camp, Mebbin NP (see 3.2.3)</b>	Camping	yes	no	yes	yes	10
<b>Best of All, Numinbah NR</b>	Lookout	no	yes	no	no	N/A
<b>Minyon Falls, Nightcap NP</b>	Lookout	yes	yes	yes	yes	30
<b>Minyon Grass, Nightcap NP</b>	Picnic Area	yes	yes	yes	yes	15
<b>Mt Nardi, Nightcap NP</b>	Picnic Area	yes	no	yes	yes	15
<b>Terania, Nightcap NP</b>	Picnic Area	yes	no	yes	yes	15

### 3.2.3 Camping

There are three designated camping areas in the planning area (refer to Figure 1). Most camping at these areas is vehicle based and on average campers stay two to three nights (Griffin & Archer, 2001).

The most popular camping area is at Sheepstation Creek in Border Ranges NP. This camping area is located in open forest at the base of the Tweed Range at the entry/ egress of the Tweed Range Scenic Drive. Camping areas often experience high levels of use and wet conditions sometimes require temporary closure to maintain groundcover and minimise erosion.

Forest Tops camping area, also in Border Ranges NP, is located 5 km by road (via Scenic Drive) or 10.5 km via the Booyong walk (full day walk) from Sheepstation Creek. It provides a different setting in high elevation rainforest and contains only basic facilities.

Sheepstation Creek and Forest Tops Camping Areas in Border Ranges NP also provide opportunities for day use. For this reason, they have previously been referred to as 'Rest Areas.' It is proposed to change this terminology which is not in accordance with NPWS standards and may cause confusion for visitors.

The other camping area is Cutters Camp in Mebbin NP. This large camping area is located near the entrance of the park and contains a moderate level of facilities in addition to a day use area.

Overnight camping has previously been permitted at Terania Picnic Area in Nightcap NP. Camping and associated activities at Terania Creek are, however, causing unacceptable impacts on the natural and cultural values of the area. The Terania Creek area will be available for day use area only.

Management of camping areas includes rotation of camping sites to enable ground cover to re-establish. Whilst a rubbish collection service is available for visitors, many bins are in poor condition and not to NPWS standards.

Many off-park camp grounds are available in areas adjacent to the planning area. These include:

- NPWS camping areas at Iron Pot Creek in Toonumbar NP and Peacock Creek in Richmond Range NP.
- Private camp grounds near Uki, Nimbin and The Channon which are highly complementary to day use opportunities in the nearby Mt Warning and Nightcap NPs respectively.
- Other private camp grounds off the Lions Road tourist drive that supplement NPWS camping areas in Border Ranges NP.
- SFNSW camp grounds adjoining the east of Nightcap NP at Rummery Park and Telegraph Road in Whian Whian State Forest. Camping at Rummery Park is particularly popular and complements day use at the nearby Minyon Falls and Minyon Grass in Nightcap NP.

NPWS policy 5.5 (Camping and Caravanning) provides for a range of acceptable camping opportunities but does not promote higher order camping facilities and other accommodation on-park. Other accommodation such as motels, guest houses, bed and breakfast and backpackers lodges are available in adjacent areas to the planning area. In particular, the main park gateway townships of Byron Bay, Lismore, Kyogle and Murwillumbah are well endowed with higher order accommodation.

Generally, there is a low level of remote camping that occurs in wilderness areas and off walking tracks in remote areas of the planning area. Remote camping typically occurs in combination with long distance self-reliant bushwalking (see 3.2.4 *Bushwalking*). Remote campers are required to be self sufficient and practise low impact camping as no visitor facilities are provided (see 3.1.5 *Wilderness*). Remote camping in the region is characterised by stays of approximately 2 nights, a high level of repeat visitation and average group size of 4 persons (QPWS, 1994).

The most popular remote camping sites are along the NSW – QLD border in Limpinwood NR and the adjoining Lamington NP. These designated sites are associated with long-distance bushwalking along the McPherson Range escarpment between Mt Hobwee and Point Lookout. There are approximately 500 to 1000 bushcamper nights per annum spent at these sites (QPWS, 1999). Whilst most remote camping is associated with use of the Border Track between Mt Hobwee and Echo Point, some is associated with the adjoining self-reliant route that leads south-west from Echo Point to Point Lookout.

Many of these remote camping sites are amongst Antarctic Beech *Nothofagus moorei* vegetation communities which are near their northern limit of distribution, slow to regenerate and provide habitat for many threatened and uncommon species. Whilst current usage is relatively low, there is evidence of vegetation damage, erosion and pollution in these fragile areas from camping.

The QPWS principally manage this area as the majority of bushwalking and bushcamping is within Lamington NP in Queensland. This includes administering a permit system for remote camping at designated sites that link with a variety of bushwalking itineraries and an ongoing impact monitoring program for these sites in cooperation with bushwalking clubs. The QPWS apply a seasonal closure to remote camping in this area during December and January every year to “rest” designated remote camp sites.

Whilst this plan endorses a continuation of existing ‘low key’ camping opportunities in the planning area, this is to be provided in the context of camping grounds and accommodation provided in adjoining areas off-park.

### **DESIRED OUTCOMES**

- ◆ **Existing camping areas are managed in accordance with the designated settings and capacities to provide camping opportunities that are sustainable and complement other opportunities nearby.**

- ◆ Remote camping caters for self sufficient use in accordance with minimal impact practices.

### **GUIDELINES & ACTIONS**

#### ***Camping Areas***

- Provide for camping at the existing camping areas identified at Figure 1 in accordance with the level of facilities and site capacity defined in Table 4.
- Overnight camping at Terania Day Use Area in Nightcap NP will not be permitted.

**Table 4. Camping Areas**

<b><i>Facilities</i></b>	<b><i>Primary Function</i></b>	<b><i>Picnic Facilities</i></b>	<b><i>Lookout Platform</i></b>	<b><i>Toilets</i></b>	<b><i>Shelter Structure</i></b>	<b><i>Camp Site Max. Limit</i></b>
<b>Recreation Node</b>						
<b>Sheepstation Ck., Border Ranges NP</b>	Camping	yes	yes	yes	yes	40
<b>Forest Tops, Border Ranges NP</b>	Camping	yes	yes	yes	yes	20
<b>Cutters Camp, Mebbin NP</b>	Camping	yes	yes	yes	yes	20

#### ***Rubbish Removal***

- Retain a rubbish collection service at camping areas.

#### ***Campfires***

- Open fires are only permitted in wood fired barbecue places provided in some day use and camping areas.

#### ***Remote Camping***

- Continue to coordinate with the Queensland Parks and Wildlife Service (QPWS) regarding the management of remote camping along the McPherson Range in Border Ranges NP, Limpinwood NR and the adjoining Lamington NP in Queensland. This should include the following provisions:
  - continue to allow remote camping at existing designated sites at Point Lookout, Echo Point and Bithongabel subject to the QPWS permit system. These sites will be complemented by remote camping zones designated by QPWS within the adjoining Lamington NP (at the time of writing being Stinson, Rat-a-tat and Tuckeroo remote camping sites);

- continue to monitor remote camping including levels of use, site modification and visitor attitudes in cooperation with bushwalking clubs. In response to impacts, actions may include temporary closure of designated sites and limits on remote camping numbers;
- ensure QPWS and NPWS staff have reciprocal enforcement capabilities under the *Queensland Nature Conservation Act (1992)* and *NSW National Parks and Wildlife Act (1974)*;
- integrate future signage for the State border area to include the regulatory provisions of both agencies where appropriate; and
- close Limpinwood NR to remote camping during December and January each year to compliment the seasonal closure applied by QPWS for the adjoining Lamington NP to “rest” designated remote camping sites.
- In other areas, remote camping is permitted in areas at least 500 metres from park roads, 30 metres from watercourses and external from rock shelters.
- No open fires are permitted.
- Promote information and codes of practice on low impact remote camping.

### *Monitoring*

- Monitor the following aspects of camping, analyse data on an annual basis and review management accordingly:
  - Camping levels via camping permit records for camping areas and recording visitor enquiries for remote camping;
  - Visitor experience via opportunistic questionnaire surveys and recording visitor feedback; and
  - Visitor impacts at camping areas via mapping and photographing site modification. In response to impacts, actions may include bollarding/fencing, soil stabilising and revegetation works and temporary closures to maintain groundcover vegetation.

### **3.2.4 Bushwalking**

The planning area provides a range of bushwalking opportunities with varying degrees of social interaction, physical challenge and self-reliance.

In particular, Border Ranges and Nightcap NPs offer a range of walking tracks of varying length, challenge and environments (refer to Figure 1). These walking tracks typically meander through rainforest clad creeks or in the temperate forests of the caldera escarpment. Many of these walks are reputed to be the best in the region.

Most visitors to these parks prefer a short duration walk (15 minutes - 2 hours) on formed tracks with interpretive information (Griffin & Archer, 2001). The most popular short bushwalks include The Pinnacle lookout at Border Ranges NP which receives between 10 000 - 14 000 visitors per annum and Minyon Grass to lower Minyon Falls in Nightcap NP which receives approximately 12 000 visitors per annum.

With the exception of the Lyrebird walk at Breakfast Creek, there is a notable lack of short bushwalks that are easily accessible for the Tweed visitor catchment. It is

therefore proposed to extend the Byrrill Creek walk from Cutters Camp day use and camping area in Mebbin NP to a short loop to offer a more interesting and slightly longer walk. The existing walking track is very short (450 m) and has a steep return along the same route.

The most popular bushwalk in the planning area is the 4 hour walk to the Summit Lookout in Mt Warning NP which receives approximately 100 000 visitors per annum. The Summit walk originates at the Breakfast Creek day use area where there are a number of site management issues (see 3.2.2 *Day Use Areas*). Maintenance of the existing track is ongoing. Aboriginal members of the Mt Warning (Wollumbin) Aboriginal Steering Group have indicated their concern at the damage to cultural sites that the current summit track is causing. The Steering Group has asked that options for an alternative track to avoid the sensitive summit area be considered. The NPWS has agreed to further consider this issue and will consult with the broader community. Any new track or closure of the track will be subject to an amendment to this plan.

Many walking tracks in the planning area are degraded from foot traffic, short-cutting and insufficient track drainage. Management of existing tracks is a high priority to minimise impacts and enhance visitor safety and experience. The Australian Standard 2156.1-2001 (Standards Australia, 2001) for walking tracks has been utilised to classify walking tracks and to assist in determining maintenance standards, priorities and to guide visitor expectations.

Monitoring of walking track use is undertaken via pedestrian counters at Mt Warning, Border Ranges and Nightcap NPs. This information also assists in prioritising maintenance. Where resources permit, detailed walking track strategies are prepared for individual parks to program specific maintenance works.

A feasibility study has been prepared investigating options for a long distance walking track in the far north coast of NSW and south-east QLD (EDAW, 2000). This study concluded that existing tracks should be enhanced in accordance with a Regional Walking Track Strategy to be prepared by the NPWS, QPWS, Environment Australia and other stakeholders including private sector operators. The Walking Track Strategy would identify track linkages, infrastructure improvements and guide management and promotion of existing walking tracks whilst limiting the need for any new track construction.

The array of bushwalking experiences in the planning area are complemented by other walking opportunities provided in adjoining areas. In particular, the less developed walks of the planning area complement the more developed 180 km track network in Lamington and Springbrook NPs across the State border in Queensland.

A small proportion of visitors who are experienced and equipped for self-reliant bushwalking utilise the large wilderness and remote areas of the planning area. These walks are typically combined with remote camping (see 3.2.2 *Camping*). The most popular route meanders along the State border between Echo Point and Point Lookout on the McPherson Range in the Lost World Wilderness Area of Border Ranges NP and Limpinwood NR and the adjoining the Lamington NP in Queensland. This route

is principally managed by the QPWS and management works must be consistent with the management principals for Wilderness (see 3.1.5 *Wilderness*)

Given the vast network of existing walking tracks in the region, this Plan promotes a more strategic and integrated approach to managing existing tracks to improve visitor experience and minimise impacts rather than major proposals for new walking tracks.

### **DESIRED OUTCOMES**

- ◆ **A range of bushwalking opportunities are maintained that are sustainable and complement other opportunities nearby.**
- ◆ **Visitors experience a safe and high quality experience on walking tracks.**
- ◆ **Self-reliant bush walking is conducted in accordance with minimum impact and safe practices.**

### **GUIDELINES & ACTIONS**

#### **Walking Track Network**

- **Manage the walking track network identified in Figure 1 in accordance with the designated standard of track (see the maps and refer to *Standards Australia, 2001* for walking track standards).**
- **Prepare and implement maintenance strategies for walking tracks in Mt Warning, Border Ranges, Nightcap and Mebbin NPs in accordance with this plan.**
- **Extend the walking track down to Byrill Creek from Cutters Camp in Mebbin NP to a short loop subject to detailed feasibility and environmental assessment.**
- **With the exception of the Byrill Creek extension mentioned above, no new walking tracks will be constructed in the planning area.**
- **In cooperation with other relevant agencies, contribute to the preparation of a Regional Walking Track Strategy in accordance with the recommendation of the *Cross Border Recreational Tracks and Trails Feasibility Study* (EDAW, 2000).**

#### ***Self-Reliant Bushwalking***

- **Remote bushwalking off the walking track network may be conducted in accordance with NPWS codes of conduct for ‘Walking in Wilderness’ (see also 3.1.5 *Wilderness*).**
- **Discourage the promotion of remote walks that are inappropriate due to environmental and safety constraints. Review bushwalking and travel guides accordingly.**

#### ***Monitoring***

- **Monitor visitor use of walking tracks using pedestrian counter data and review track conditions annually to assist in maintaining tracks to designated standards.**

### 3.2.5 Horse Riding

A relatively low level of horse riding occurs in some of the parks of the planning area. Horse riding occurs on parts of the road and trail network in Mebbin NP and the adjacent Wollumbin NP and SCA, the east of Nightcap NP and the adjoining Whian Whian State Forest and Mt Jerusalem and Goonengerry NPs. Horse riding in these areas is generally only part of the overall route used by riders, which typically include adjoining public roads.

Horse riding activities in the above parks are characterised by small groups of up to 10 riders (mostly 3 or 4) and for a moderate duration (2 hours to a full day). Most horses are ridden into parks from adjacent areas. Few horses are transported into parks by horse float.

Many local horse owners and riding groups seek to ride on roads and trails in forested settings with little traffic. These opportunities have diminished over recent years due to local public roads experiencing increased traffic and some natural areas becoming unavailable for horse riding, particularly in coastal areas.

Under NPWS policy 5.8 (Horse Riding), horse riding is permitted in National Parks providing it does not have unacceptable impacts or conflict with other recreation activities. However, under this policy, horse riding is prohibited in Nature Reserves and Wilderness Areas.

Overnight or organised activities in parks require permission from the NPWS Regional Manager, however, commercial horse riding is not considered appropriate in the planning area. Camping areas in the parks of the planning area are not suitable for overnight camping with horses due to a lack of holding areas and potential conflict with other park users and park values. Whilst group activities of a recreational nature may be considered appropriate, NPWS policy does not encourage competitive events (see 3.2.8 *Large Group Events*).

This Plan seeks to designate park roads and management trails for horse riding that are safe, sustainable and strategically linked with adjoining off-park opportunities. These are parts of the identified park road and management trail network that:

- are structurally sound, well drained and not steeply aligned to facilitate sustainable riding;
- provide thoroughfare or key linkages to adjoining off-park opportunities which enable extended and variable rides; and
- have low traffic volumes, clear lines of sight and formed road verges which offer refuge while vehicles pass to promote visitor safety.

At the time of writing local horse riding groups were preparing a Bridle Path Study for Byron Shire that includes Mt Jerusalem and Goonengerry NPs. This study is to propose a bridle path network across the Shire. Upon the completion of this or other similar studies affecting the region, the road and trail network designated for horse riding in this Plan may be reviewed. Additional roads or trails may be designated for horse riding if it can be justified based on the above criteria. No horse riding or



public vehicle use will be permitted on former logging tracks not identified for retention as a management trail in this Plan or subsequent Fire Management Strategies.

Low impact horse riding can be promoted through riders complying with the *National Parks Horse Riding Code* 1994. This includes riders minimising the potential dispersal of weeds through coat brushing, hoof picking prior to entering a Park and feeding horses processed pellet type food only prior to entering the park.

Additional information regarding horse riding activities and impacts is required to assist ongoing management. Local horse riding groups have indicated interest in assisting the NPWS in monitoring horse riding use and impacts.

### **DESIRED OUTCOME**

- ◆ **Opportunities for horse riding are provided on designated routes that are safe and sustainable and provide links to adjoining off-park riding opportunities.**

### **GUIDELINES & ACTIONS**

#### *Horse Riding*

- **Horse riding may be conducted on park roads and management trails designated in Figure 1. Install signage where necessary to identify horse riding trails.**
- **Horse riding is prohibited on all other park roads and trails not designated for horse riding, off-trail, and on walking tracks.**
- **Overnight camping with horses and the erection of holding yards will not be permitted due to the lack of sites capable of sustaining this use.**
- **Horse riding groups are limited to a maximum of 10 riders.**
- **Horse riding in the planning area will be monitored for its environmental and social impact and public safety. If the impact is considered to be unacceptable by the NPWS the affected trail or area may be closed temporarily or permanently depending upon the nature of the impact or safety implications.**
- **Commercial horse riding will not be permitted within the planning area.**

#### *Codes of Conduct*

- **Horse riding under the provisions of this plan is to be conducted in accordance with the “National Parks Horse Riding Code (1994).”**

#### *Cooperative Arrangements*

- **Provide input to the Byron Shire Bridle Path Study and other similar studies undertaken by local horse riding groups to provide integrated horse riding opportunities across all land tenures. Should the NPWS consider that these**

**studies demonstrate the need to modify the horse riding network, an amendment may be made to this plan of management.**

- **Develop cooperative agreements with horse riding groups to promote safe and low impact riding on designated park roads and trails. Seek opportunities for cooperative monitoring with horse riding groups on horse riding use and conditions in the planning area.**

### **3.2.6 Cycling**

A relatively low level of cycling occurs in some parks of the planning area. Cycling takes many different forms including cycle touring, recreational riding and mountain bike riding. The most popular area is in the east of Nightcap NP and the adjoining Whian Whian SF.

Cycling activities in the planning area is typically undertaken on the park road system which is shared with vehicles. Potential conflict between cyclists and other vehicles on narrow roads can be minimised by safe and courteous road use. Recreational cycling is typically characterised by small groups (1 – 5 riders), short to moderate duration (1 - 4 hours) with most visitors transporting their bicycles to the park by car. The only exception is commercial activities which involve larger groups for longer duration.

Under NPWS interim policy 5.13 (Cycling), cycling is permitted on park roads and management trails but is not permitted on walking tracks or off-roads or trails.

This Plan seeks to promote recreational cycling on the park road network. Whilst cycling is permitted on management trails under this policy, this Plan discourages such use due to the prevailing wet conditions of many management trails rendering them susceptible to erosion caused by riding. Cycling is also not permitted on former logging tracks not identified for retention as a management trail in this Plan or subsequent Fire Management Strategies.

Mountain biking has become an increasingly popular recreational past time and sport. Whilst group mountain biking activities of a recreational nature can be accommodated on the park road system, NPWS policy does not encourage competitive events which can be more appropriately catered for off-park (see 3.2.8 *Large Group Events*).

Additional information regarding cycling activities and impacts is required to assist ongoing management. The NPWS have consulted with local cycling representatives who have indicated interest in cooperative arrangements in monitoring use and impacts.

#### **DESIRED OUTCOME**

- ◆ **Opportunities for recreational cycling are provided that are safe and sustainable and provide links to adjoining off-park cycling opportunities.**

#### **GUIDELINES & ACTIONS**

### *Cycling Opportunities*

- **Cycling may be conducted on all park roads and management trails identified in Figure 1.**
- **Cycling is not permitted on walking tracks, former logging tracks which are to be closed and rehabilitated or off roads or trails.**
- **Cycling is prohibited on all other park roads and trails not designated for cycling, off-trail, and on walking tracks.**

### *Codes of Conduct*

- **Cycling is to be conducted in accordance with codes of conduct for cycling in natural areas developed in consultation with appropriate user groups (refer to NPWS et al. undated, and NPWS et al. August 1994).**

### *Cooperative Arrangements*

- **Develop cooperative agreements with representative cycling groups to promote safe and low impact cycling. Seek opportunities for cooperative monitoring of cycling use and conditions on park roads and trails**

### *Monitoring*

- **Monitor any degradation attributed to cycling. Periodic, occasional or permanent closure of management trails to cycling can be imposed and indicated by signage should there be evidence of erosion, vegetation damage and off-trail use.**

### **3.2.7 Adventure Activities**

Adventure activities include hang gliding, rock climbing and abseiling. Whilst there is only a very small number of visitors to National Parks that undertake these activities, the popularity of adventure activities including 'extreme sports' has increased over recent years.

The main adventure activities that occur in the parks of the planning area are hang gliding and abseiling which occur infrequently at a few sites. These visitors consider such opportunities as an important component of the wider range of options available elsewhere in the region. Additional information regarding adventure activity use and impacts is required to assist ongoing management.

Hang gliding is conducted infrequently from two established launch sites in Mt Jerusalem NP. These sites are accessible by road, clear of obstructing vegetation, well grassed and receive very little use by other park visitors. There is also a launch site on the Tweed Range in Border Ranges NP. This site is also established and has pedestrian access from the nearby Tweed Range Scenic Drive.

Rock climbing and abseiling occurs infrequently at a number of sites in the planning area. One of the more popular sites off Rockface road in Mt Jerusalem NP is used for

introductory abseiling including activities by a licensed outdoor education operator. There is some evidence of site modification and erosion associated with walking pads at the top and base of the abseil.

At other known sites, no active management is considered necessary at this stage due to the low numbers, frequency and high rotation between sites. However, any increased use or inappropriate practices at particular sites may cause vegetation damage, rock destabilising, erosion, wildlife disturbance, pollution and damage to cultural sites.

NPWS Policy 5.9 (Adventure Activities) permits adventure activities where it can be conducted in a manner that is safe, in minimal conflict with other visitors and ensures the protection of natural and cultural values. This policy stipulates that no specific facilities or provisions are to be made for adventure activities and circumstances that may risk visitor safety require prior NPWS consent. Regularly used sites require site management to be formalised with user groups to ensure safe and low impact use and for user groups to be accountable.

This plan seeks to continue to allow adventure activities providing it is maintained at low levels and in accordance with best practices to ensure visitor safety and sustainable use.

### **DESIRED OUTCOME**

- ◆ **Hang-gliding, rock climbing and abseiling are conducted at the existing low levels with improved management of designated sites to promote safe and sustainable use.**

### **GUIDELINES & ACTIONS**

- **Abseiling, rock climbing and other adventure activities are not permitted within Mount Warning National Park.**

#### ***Hang Gliding***

- **Hang gliding is permitted from the two existing launch sites on the Koonyum Range in Mt Jerusalem NP and the launch site on the Tweed Range in Border Ranges NP, subject to NPWS licensing and the site management requirements identified below.**

#### ***Climbing & Abseiling***

- **Abseiling is permitted at the site off Rockface Road in Mt Jerusalem NP subject to the site management requirements identified below.**
- **Rock climbing and abseiling are permitted at other sites subject to NPWS consent and providing existing low use levels, environmental integrity and visitor safety are maintained.**

### *Site Management*

- **Prepare and implement a site management plan in consultation with user groups for regularly used hang gliding, climbing and abseiling sites identified above. The plan should address issues including road access, records of use, safety procedures, sanitation, equipment use, vegetation management, erosion control, maintenance contributions, monitoring and habitat and landscape protection.**
- **Periodic, occasional or permanent closure of sites can be imposed should there be evidence of recreation conflict, unsafe practises, vegetation damage, erosion or other threats to natural or cultural values.**

### *Codes of Conduct*

- **Activities are to be conducted in accordance with recognised codes to promote minimum site disturbance, compliance with safety and incident procedures and possession of relevant equipment.**

### *Monitoring & Review*

- **In partnership with user groups, monitor use levels and impacts on cultural heritage, environmental and social values by analysing NPWS consents, observations and user records and review management accordingly.**

### **3.2.8 Large Group Events**

On occasions there are requests to conduct one-off or annual events such as educational excursions, recreation events, competitive events and large social gatherings. These events are typically based at day use areas and involve large numbers of people.

Any group activities involving more than 40 persons require prior consent from NPWS as per the NP&W Regulation 2002. Proposals for large group events should consider whether the activity is nature-based, the availability of more appropriate off-park venues, conflict with other visitors, visitor safety and impacts on natural and cultural values. Conditions may be imposed regarding group size, supervision, transport, activities and monitoring of potential impacts for re-occurring activities.

Some events are principally nature-based recreation or educational activities and assist in facilitating understanding and appreciation of park values if conducted in an appropriate way. These include field days for naturalist, photography and art groups and 'new age' rituals (eg solstice and equinox). These events are conducted infrequently and may be approved providing there are adequate facilities and activities involved do not cause environmental damage or conflict with other visitors.

Whilst educational excursions are encouraged, there have been some instances of large school and university groups visiting sites without the consent of the NPWS. In some cases, excessive group numbers and poor supervision has impacted on park values and visitor experience.

Competitive events include activities such as vehicle rallies, endurance rides and fun runs. NPWS policy 5.1 (Recreation) stipulates that the key emphasis is to provide nature-based recreation opportunities that facilitate understanding and enjoyment of the natural environment rather than activities of a sporting nature. Competitive events can often be more appropriately accommodated in off-park venues available in adjacent areas.

Dance parties, also known as ‘raves’ or ‘doofs,’ have occurred on numerous occasions in some areas. These events involve portable amplified music played for up to 24 hours duration with more than 500 people often in attendance. These events incur unacceptable impacts such as noise disturbance, damage to unsealed roads, vegetation damage, litter, unsanitary sewage disposal and conflict with other visitors. Safety is also an issue due to variable road conditions, dark surroundings and dangerous terrain.

Activities such as dance parties contravene a number of the NP&W Regulation 2002. Crowd dispersal of these unauthorised events is principally a police matter. A Memorandum of Understanding has been drafted between the NPWS and relevant local area commands of the NSW Police Department to manage unauthorised events.

This plan seeks to accommodate large group events that are nature-based and can be accommodated without compromising park values including the desired recreation setting.

### **DESIRED OUTCOME**

- ◆ **Large group events are nature based, low impact and do not compromise the desired recreation setting and experience of other visitors.**

### **GUIDELINES & ACTIONS**

#### ***Large Group Events***

- **Consent may be provided for large group events that promote the understanding and enjoyment of the natural and cultural environment. These events are to be conducted within a day use or camping area with the capacity to cater for large groups (see Table 3, 3.2.2 *Day Use Areas* and Table 4, 3.2.3 *Camping*)**

#### ***Educational Excursions***

- **Advise educational institutions known to conduct excursions in the area of the requirements for NPWS consent.**

#### ***Competitive Events***

- **Events that are principally competitive or of a sporting nature will not be encouraged. However, these events will be assessed on a case by case basis and will be subject to NPWS consent.**

*Dance Parties etc.*

- **Dance parties will not be permitted and those occurring illegally will be stopped with the assistance of the NSW Police Department.**
- **Any other activities with amplified sound or causing excessive noise will not be permitted.**

### 3.2.9 Commercial Tourism

Under the NP&W Act 1974, commercial activities are defined as the conduct of trades, businesses or occupations in a national park. Commercial licences must be granted for these activities under Section 151 of the Act. Licensing provides a method to ensure commercial use is appropriate to the protection of the natural and cultural resources on which it depends. At the time of writing, the NPWS is finalising a State-wide review of commercial licensing to improve the licensing process, appropriate use, visitor experience and linkages with the tourism industry.

NPWS Policy 5.6 (Commercial Recreational Activities) outlines the provisions relating to these activities on NPWS estate. This policy requires the activity to be consistent with the conservation of natural and cultural resources, demonstrate safe and effective operation and avoid conflict with other users and be in accordance with the normal provisions relating to public access and use of the area.

As at the 1/1/04 there were 8 operators holding NPWS commercial licences to conduct activities in some parks of the planning area. These are predominantly guided vehicle tours at popular day use areas such as along the Tweed Range Scenic Drive in Border Ranges NP and Minyon Falls in Nightcap NP. Most activities are of short duration at each site and they are typically only part of tour itineraries which also include other off park destinations.

Guided tours should deliver high quality services and information to ensure appropriate use and interpretation of park values. To assist in this regard, a tour operators training course for the CERRA World Heritage parks was conducted in 1996 and a training kit provided to operators. Activities that involve interpreting Aboriginal heritage often lack input from local Aboriginal people.

Other activities include guided bushwalks such as at the summit walk in Mt Warning NP, a mountain bike tour in Nightcap NP and the adjoining Whian Whian SF and an outdoor education operation that includes abseiling in Mt Jerusalem NP. These activities typically involve longer duration visits at specific sites.

A former SFNSW occupation permit existed near Jerusalem Mountain in Mt Jerusalem NP for a commercial tourist attraction known as 'Nightcap Thunder'. This proposal was to provide a flying fox adventure ride to an adjoining private property. The proposal has not proceeded beyond partial construction and is no longer an active

proposal. This proposal is inconsistent with NPWS policy as it is not nature based, promotes exclusive use and incurs unacceptable management costs and public liability risks.

Nature-based tourism activities typically occur with high frequency, large groups and at popular sites. These activities should be managed to maintain the desired recreational setting and integrity of the surrounding environment. The constraints of some park roads and day use areas for tour buses and other larger vehicles can affect traffic safety, flow and parking capacity at day use areas. The intensity and duration of use can impact on the experience of other visitors due to competition for facilities and overcrowding at popular sites.

Commercial operators can assist park management through encouraging appropriate visitor use and understanding of park values as well as monitor park conditions. They contribute to the range of recreation, interpretive and educational opportunities for visitors and may provide experiences that otherwise may not be available.

Whilst the vast majority of overall use are independent activities undertaken by the general public, nature-based tourism is a fast growing industry in the region. An increase in the level and range of commercial tourism activities is expected over the next decade due to an increasing regional population, improvements to regional road links and a greater emphasis on destination marketing by the local tourism industry. Activities provide a source of income and employment for local operators. In addition, the associated secondary spending of visitors (through accommodation, dining, buying provisions, etc.) also contributes to local economic development, particularly in the Tweed, Byron, Ballina, Lismore and Kyogle local government areas.

The NPWS Northern Rivers Region participate in a number of industry based nature tourism organisations in the region including the following:

- NSW Tourism who have launched the ‘Tropical NSW’ promotion for the area;
- Northern Rivers Regional Development Board who prepared the Far North Coast Eco-Tourism Plan 1995;
- Nature Tourism Task Force (Northern Rivers) whose charter is to coordinate the implementation of the above plan;
- Tweed and Coolangatta Tourism Inc;
- Northern Rivers Cultural Tourism Organisation; and
- Lismore Tourism Advisory Panel and other local government area tourist information centres.

The nature based tourism industry provide industry codes and accreditation schemes that promote sustainable use, high visitor safety and satisfaction and reduced management costs.

Commercial tourism activity on-park is monitored by operators, NPWS staff and feedback from visitors and park neighbours. There is generally a high level of compliance by operators with NPWS commercial licensing requirements.



This plan seeks to ensure that commercial tourism activities, when integrated with other visitor use, is sustainable to ensure both the long-term viability of the tourism industry and the natural and cultural values of the planning area.

### **DESIRED OUTCOME**

- ◆ **Commercial tourism activities are conducted in accordance with NPWS licensing and in a manner that is sustainable, safe, compatible with other visitor use and culturally appropriate.**

### **GUIDELINES & ACTIONS**

#### ***Commercial Tourism Activities***

- **Permit only those commercial activities that comply with the following criteria:**
  - **have a primary focus on facilitating the understanding and enjoyment of natural, cultural and World Heritage values of the planning area;**
  - **the type and duration of activity and group size is compatible with the capacity and desired setting of the day use area where it is to be conducted. Suitable day use areas for larger group tours include Cutters Camp in Mebbin NP and Mt Nardi and Minyon Falls in Nightcap NP (see Table 3, 3.2.2 *Day Use Areas* and Table 4, 3.2.3 *Camping*).**
  - **continue to restrict buses using the Tweed Range Scenic Drive and Terania Creek day use area to vehicles with a maximum seating capacity of 20 passengers due to variable road conditions.**
  - **commercial operators and activities are to demonstrate compliance with industry standards, accreditation schemes and relevant best practices regarding environmental protection and high visitor safety and experience.**
- **The former SFNSW occupation permit held for the proposed flying fox tourist attraction in Mt Jerusalem NP will not be renewed and its operation not permitted. The fencing and flying fox materials are to be removed and the site closed.**

#### ***Codes of Conduct***

- **Encourage the nature tourism industry to self-regulate the conduct of commercial operators through industry codes and accreditation schemes.**
- **Monitor industry marketing and liaise with operators to ensure presentation of park values and recreation opportunities are accurate and appropriate.**
- **Encourage commercial operators to involve local Aboriginal people where Aboriginal culture is interpreted or cultural sites are visited.**

#### ***Cooperative Arrangements***

- **Continue to participate with regional and local tourism agencies in the strategic planning and management of nature-based tourism opportunities.**

## ***Monitoring***

- **Monitor commercial activities via NPWS patrols, public feedback and liaison with operators to ensure compliance with licensing provisions and minimum impact on park values and the experience of other visitors.**

### **3.2.10 Information, Interpretation & Education**

The provision of information, interpretation and education opportunities are important facets in the use and management of the planning area. Interpretive opportunities improve visitor understanding and appreciation of the natural and cultural heritage values and significantly contribute to visitor experience. Advisory information for visitors on park conditions and regulations is important to promote safe and sustainable use. Together, interpretive and advisory information provide the necessary background to facilitate appropriate use and ongoing support for the conservation of these areas.

Interpretive and advisory information is principally obtained on-park via signage and park brochures collected pre-visit. Guided interpretive activities are also available to visitors under the NPWS 'Discovery' program and by commercial providers (see 3.2.9 *Commercial Tourism*). Educational activities are also conducted by education institutions at all levels, particularly at day use areas in Mt Warning and Nightcap NPs. At the time of writing, an educational package was being prepared by the NPWS aimed at primary school students and teachers in the region to improve awareness, understanding and sustainable use of natural and cultural heritage, with a particular focus on rainforests.

Recent visitor surveys (Griffin & Archer, 2001) also show that when planning a visit, many visitors obtain general information from local NPWS offices, visitor information centres and publications such as park brochures. These surveys indicate that the majority of visitors are satisfied with information received from the NPWS. Important to note is that 'word of mouth' is one of the main sources of information on how visitors initially find out about the parks of the planning area. There is also growing trend of using new technological means such as Internet sites and CD ROM to obtain information about parks.

Signage is an important component of this information. Park name signs located roadside at park boundaries promote a sense of entry and identify change of tenure. Some park entries require installation or replacement of this signage. Directional signage is ranked by visitors as one of the most important park facilities (Griffin & Archer, 2001). Off-park directional signage on public roads directing visitors to parks is inadequate in some locations. In some instances, information on road conditions should be included to guide visitor expectations and encourage safe driving.

Safety and regulatory signage is required in some instances to encourage appropriate and safe visitor use and to complement enforcement of park regulations. Some existing signage is outdated and should be replaced to improve compliance. In addition, some park signage is inappropriate and does not conform to current NPWS

standards regarding style, location, quantity and condition. This reduces the effectiveness of the sign and the visual quality of the setting.

Interpretive shelters and signage are in place in most day use and camping areas although many contain information that requires updating. This infrastructure is an important component of visitor experience.

The interpretive themes promoted across the planning area in many cases is uncoordinated. Themes are also typically limited to the region's geology, plants and animals with occasional emphasis on World Heritage and cultural values. These latter themes are generally under-emphasised as is interpretation of the unique biodiversity of the region.

The 'presentation' of the planning area's World Heritage values is an obligation under the World Heritage Convention. The World Heritage CERRA's outstanding universal values should be a principal interpretive theme for those parks and reserves that are World Heritage listed to promote awareness and support for World Heritage and ensure use and management is consistent with these values (see *3.1.1 World Heritage*).

Major off-park displays are in place at the World Heritage Rainforest Information Centre at Murwillumbah and the Lismore Tourist Information Centre although these require redevelopment. There are also minor displays at the NPWS offices in Kyogle and Alstonville, Ballina Visitor Centre and park 'gateway' towns in the region such as at Woodenbong and Wiangaree near Border Ranges NP.

Brochures for individual parks are available from NPWS offices, visitor information centres and retail outlets in nearby towns. These contain information on park values, access and use and are in high demand. Many will require updating upon implementation of components of this plan.

Colour souvenir booklets for Border Ranges and Mt Warning NPs are available as a saleable item from NPWS offices and local visitor information centres. These contain comprehensive information on park values and use but were in low demand at the time of writing.

There is a lack of integrated marketing of the wider recreation opportunities available across the region for NPWS estate, State Forests and Council reserves that provide complementary recreation opportunities. A more cooperative approach may more evenly disperse recreation use and inform visitors on areas which best cater for their desired recreation experience.

A Regional Interpretations Strategy is to be prepared by the NPWS that addresses many of these issues and will guide the development of signage plans for each park.

This plan seeks to promote the availability of information and a range of interpretive opportunities to enhance visitor experience and assist in park management and the protection of park values.

## **DESIRED OUTCOMES**

- ◆ **Increased visitor understanding and appreciation of natural and cultural heritage, particularly the area's World Heritage status, rich biodiversity and local Aboriginal culture.**
- ◆ **Visitors are well informed of recreation opportunities and facilities available across the region and enjoy safe and sustainable use.**
- ◆ **Visitors and the local community are supportive of park management programs that protect natural and cultural values.**

## **GUIDELINES & ACTIONS**

### ***Regional Interpretations Strategy***

- **As part of the Regional Interpretations Strategy for the Northern Rivers Region of the NPWS, review advisory, regulatory, promotional and interpretive information for the planning area to ensure information is up-to-date, consistent and complementary. This should identify interpretive themes and signage requirements for individual parks and reserves including those identified below.**

### ***Interpretive Themes***

- **In the context of the Regional Interpretations Strategy, identify appropriate locations to promote the following themes:**
  - **The World Heritage CERRA for those parks that are part of this property;**
  - **Declared wilderness management and recreation,**
  - **The unique biodiversity of the planning area, with an emphasis on threatened species; and**
  - **The rich Aboriginal culture of the region as considered appropriate by local Aboriginal representatives.**

### ***Educational Programs***

- **Provide information to educational institutions on request to assist in the preparation of curricula to improve awareness, understanding and sustainable use of the natural and cultural resources of the area.**

### ***Publications***

- **Review and update park brochures as necessary.**
- **Review marketing of the colour souvenir booklets for Border Ranges and Mt Warning NPs to improve their viability as a saleable item.**

### ***Park Signage***

- **Review park signage in the context of the Regional Interpretations Plan including the following:**

- **directional signage on public road entries to Border Ranges, Mebbin and Nightcap NPs.**
- **park name signage at road entry points to parks, particularly in Mebbin, Nightcap, Mt Jerusalem and Goonengerry NPs.**
- **advisory and regulatory signage, particularly to address the following issues:**
  - **the availability and use of toilets in Mt Warning NP to improve hygiene at the Summit;**
  - **safe and low impact practises for remote bushwalking and camping in Border Ranges NP and Limpinwood NR;**
  - **water quality and safety issues associated with swimming at Protester Falls, Rocky Creek and Minyon Falls in Nightcap NP;**
  - **unlawful use of vehicles and trail bikes at Mebbin and Mt Jerusalem NPs;**
  - **discouraging the feeding of native animals at day use and camping areas in Border Ranges, Mebbin and Nightcap NPs.**
- **Replace park signage that does not conform to current NPWS standards, particularly in Mebbin, the east of Nightcap, Mt Jerusalem and Goonengerry NPs.**

### **3.2.11 Research**

The planning area is an important region for scientific research due to its diverse values and easy access.

In particular, the large tracts of relatively intact rainforest provide an important resource to determine scientific benchmarks against which conditions in other rainforest remnants can be measured. This is particularly the case with Border Ranges NP and Limpinwood and Numinbah NRs which provide valuable refuge areas where natural processes and wildlife can be studied with little human disturbance.

Many other unique attributes of the planning area are of high scientific interest such as its geological history, plants and animals with evolutionary links to Gondwana and high biodiversity and number of threatened and endemic plants and animals. These attributes are internationally significant as recognised by much of the planning area's listing as part of the World Heritage CERRA property. Research related to these World Heritage values is an obligation under the World Heritage Convention and hence is a priority research topic for the planning area.

There is a history of research undertaken on natural heritage themes over the past 40 years, particularly in Border Ranges, Mt Warning and Nightcap NPs. Many of these are continuing studies and provide extensive information on the changing dynamics of natural systems. This research improves the understanding of complex natural processes and provides important information for decisions on managing threatening processes.

Partnerships between the NPWS and research institutions are important to address the many significant information gaps. Research conducted by other agencies and institutions provides a valuable component of management information. However,

information from research projects is sometimes not adequately distributed, stored or analysed which results in lost opportunities to improve park management.

Proposals to conduct research are regularly received from other agencies and individuals to conduct research. Research proposals need to be assessed and managed to ensure appropriate use and mutually beneficial outcomes. The NPWS policy 6.0 (Research in Service Areas) identifies the requirements for research to be conducted on NPWS areas. This includes guidelines on objectives, consent process, methodology, project management and reporting.

This plan endeavours to support nature-based and cultural heritage research which will improve understanding and management of the diverse values of the planning area. Research on park values and processes threatening these values is essential for best management. This plan identifies priority areas of research. Important research topics are also detailed in other sections of this plan.

### **DESIRED OUTCOMES**

- ◆ **Research programs conducted are undertaken in a coordinated and sustainable manner.**
- ◆ **Knowledge is increased regarding the area's World Heritage values, biodiversity and cultural resources and is incorporated into park management decision making.**

### **GUIDELINES & ACTIONS**

#### ***Existing Research***

**Continue existing ongoing research projects as identified below:**

- **The long-term research study of forest succession in upper Sheepstation and Gradys Creeks in Border Ranges NP in the Lost World Wilderness;**
- **Trial of the Brazilian moth lantana biological control agent in Limpinwood NR and Mt Warning NP;**
- **Threatened species surveys for eastern bristle bird, rufous scrub bird, Fleays barred frog and Hastings River mouse;**
- **Visitor use monitoring using park traffic and pedestrian counter data; and**
- **University student projects as approved on an annual basis.**

#### ***Research Priorities***

**Prepare a research prospectus for the region or individual parks and distribute to interested Universities to encourage research in priority areas. These include:**

- **Understanding and monitoring of World Heritage attributes including their spatial extent in each park and reserve, prioritising those that contribute to more than one of the World Heritage criteria eg species that are Gondwanan relicts and listed as threatened.**
- **Biodiversity data, in particular:**

- inventory data on the distribution and abundance of native and introduced plant and animal species and groups, including lower life forms eg invertebrates, mosses, lichens and fungi;
- distribution, abundance and biology of threatened species, particularly research stipulated under Threatened Species Recovery Plans;
- comparative genetic studies for rainforest species that are disjunct in distribution to map the history of isolation of rainforest remnants; and
- the succession and dynamics of rainforest for disturbed and undisturbed sites to improve knowledge of rainforest regeneration processes.
- The cause of eucalypt die back in Nightcap and Border Ranges NPs.
- The impact of the border rabbit fence in Border Ranges NP (see 3.1.9 *Introduced Animals*);
- The occurrence of chytrid fungus that may affect frogs in the area.
- The trial of new management practises to address threats to biodiversity such as introduced species, fire and visitor impacts.
- Fire behaviour, hazard and risk assessment and impact on plant and animal communities.
- Identification of Aboriginal cultural values of the region and visitor impacts on cultural sites in partnership with the local Aboriginal community (see 3.1.3 *Aboriginal Heritage*).
- Identification of historic resources, their condition and significance (see 3.1.4 *Historic Heritage*).
- Visitor use patterns, attitudes, preferences and impacts (see 3.2.2 *Day Use*; 3.2.3 *Camping*; 3.2.4 *Bushwalking*; 3.2.5 *Horse Riding*; 3.2.6 *Cycling*; 3.2.7 *Adventure Activities*).
- State of the environment reporting to evaluate management programmes.

#### ***Research Outcomes***

- Disseminate research findings to relevant NPWS staff and incorporate within NPWS databases.
- Alter park management practises in accordance with scientific research findings that demonstrate opportunities to improve park management.

### **3.3 MANAGEMENT OPERATIONS**

The planning area is managed by the Northern Rivers Region of the NPWS where the regional office is located at Alstonville. The Region is divided into three operational areas, all of which are involved in the management of the planning area. These are:

- The Tweed operational area which manage Mt Warning, Mebbin and Mt Jerusalem NPs and Limpinwood and Numinbah NRs located at Murwillumbah;
- The Richmond River operational area which manage Nightcap and Goonengerry NPs and Snows Gully NRs located at Alstonville; and
- The Kyogle operational area which manage Border Ranges NP located at Kyogle and Urbenville.

The above NPWS operational areas are responsible for the maintenance of park infrastructure which includes access infrastructure and visitor facilities.

Access infrastructure includes roads, trails, tracks and bridges which are integral to visitor use and park management. There is an extensive network of this infrastructure throughout the parks of the planning area.

In addition, many internal tracks remain from former logging operations which were not intended or promoted for public access. Many are now either untrafficable, in poor condition, not required for ongoing management or are overgrown. There are also some vehicle trails that are for fire management purposes only (see *3.1.10 Fire Management*).

There are two small road base quarries in Border Ranges NP. Material is infrequently extracted to maintain adjacent park roads. These quarries have limited resource life remaining in the defined quarry areas, estimated to be less than 5 years. Most road material is imported into the park from licensed quarries off-park in adjacent areas.

Visitor facilities such as lookout platforms, toilets, water tanks and taps, BBQs, tables, shelters and signage are important visitor conveniences at day use and camping areas. These facilities require regular inspection and maintenance to ensure their structural integrity and functioning. Civil engineering reports have been prepared on the structural and geotechnical integrity of all lookout platforms and other cantilevered structures (Sergent, 1999, 2000).

There are many on-site sewage treatment systems located at day use and camping areas. These systems have the potential to cause environmental pollution and health impacts if not designed and managed appropriately.

Site works such as road and track maintenance and removal and installation of infrastructure are regularly undertaken by NPWS and in some cases under contract arrangements with other agencies. These works often involve vegetation removal, earthworks, heavy vehicle traffic and storage of equipment and materials and require environmental assessment to NPWS requirements.



## ***DESIRED OUTCOMES***

- ◆ Road base quarries and former logging tracks that are no longer required are closed and rehabilitated.
- ◆ Park infrastructure is maintained to high visitor and environmental standards.
- ◆ Site works are conducted in accordance with best management practises for environmental protection.

## **GUIDELINES & ACTIONS**

### ***Road Base Quarries***

- There will be no further expansion of the road base quarry near Bar Mountain day use area in Border Ranges NP. Close and rehabilitate the quarry upon utilising the existing road base material on the quarry floor.
- Close and rehabilitate the former road base quarry on Manns Road in Mt Jerusalem NP.

### ***Track Closures***

- Progressively close and rehabilitate former logging tracks unless required to be retained as identified on Figure 1.

### ***Lookout Platforms***

- Implement the recommendations of the civil engineering reports for lookout platforms and other cantilevered structures such as the replacement of specified materials and the scheduling of regular assessments (Sergent, 1999, 2000).

### ***On-Site Waste Disposal***

- Undertake a review of all on-site sewage treatment systems in the planning area to ensure appropriate location, design, performance, licensing and maintenance.
- Progressively replace pit toilets with systems that suit local conditions including access, terrain, climate, hydrology, loading rates, recreation setting and serviceability.

### ***Site Works***

As part of any site works, undertake best management practises including the following as applicable:

- Plan and design site works taking into account drainage, vegetation and ground conditions to minimise impacts.
- Contain site works within a disturbance zone delineated by markers or temporary fencing to avoid damage to adjoining habitat.

- **Re-use disturbed sites for temporary activities such as storage of plant, equipment and materials to avoid the proliferation of disturbance.**
- **Implement best management practises for the following:**
  - **importing materials such as soils and gravels that are locally sourced, physically and chemically similar and free of contaminants (eg weeds, soil pathogens) as far as possible;**
  - **erosion and sediment control measures during and post earth works; and**
  - **rehabilitation of work sites such as ground decompaction, ground profiling, drainage, access control and revegetation works.**

### **3.4 OTHER LAND USES**

There are number of non-park related land uses in the planning area such as Crown reserve in-holdings and leases, licences and easements for public utilities and primary production. Public utilities include communications towers, electricity transmission lines and private water supply infrastructure. Primary production land uses include apiculture and grazing.

These tenures and land uses were pre-existing to park gazettal. At the time of park gazettal, the NSW government gave commitments to allow the continuation of many of these pre-existing uses in the form of leases or licences to occupy or use land gazetted as National Park. These tenures can be considered as non-conforming park uses due to the NPWS estate status and in some cases World Heritage listing of these lands.

This plan aims to restrict any further non-park related land uses in the planning area and manage existing tenures to minimise potential impacts.

#### **3.4.1 Crown Reserve In-Holdings**

Crown reserve in-holdings refer to unformed crown roads and other Crown reserves that are located within park boundaries.

There are a number of unformed crown road reserves within some of the planning area. Construction of these roads is not required and is unlikely to be feasible due to environmental constraints.

A Crown reserve of approximately one hectare is reserved for trigonometry station purposes on the Koonyum Range in Mt Jerusalem NP. There is no survey infrastructure in place and it is unlikely to be required with the advent of modern surveying and mapping technology.

These lands are unlikely to be required for their original purpose and their natural values are undifferentiated from adjacent areas of park. It is proposed that they be amalgamated with the adjoining parts of the planning area.

#### **DESIRED OUTCOME**

- ◆ **Crown reserve in-holdings are incorporated and protected within the NPWS estate.**

#### **GUIDELINES & ACTIONS**

- **Seek closure of and incorporation within the NPWS estate unformed road reserves such as in Numinbah NR, Nightcap and Goonengerry NPs.**
- **Seek to amalgamate the crown reserve in-holding on the Koonyum Range within Mt Jerusalem NP.**

### **3.4.2 Apiary Licenses & Grazing Leases**

Apiarists have traditionally located hives temporarily in some areas of eucalypt forest in Mebbin and Mt Jerusalem NPs under apiary licences which were pre-existing to the gazettal of these parks. There are 24 apiary sites linked to 11 licenses in these two parks.

Beekeeping on NPWS estate is required to be licensed under Clause 16 (2) of the NP&W Regulation 2002. Beekeeping is permitted only in accordance with NPWS Policy 2.4 (Beekeeping) which details issues, objectives, policies, procedures and conditions relating to this activity.

Funds collected from license fees may not be commensurate with management costs if hives are poorly located on roads that are not otherwise required. Access to apiary sites typically requires roads suitable for trucks. This needs to be considered in the context of the road network identified in this plan.

Cattle grazing in the west of Border Ranges NP pre-dates park gazettal. There is a permissive occupancy at Little O'Donnell Creek for 13.59 ha in the park with a dwelling which is occupied by the lessee. There is also a perpetual crown lease at Camberra Creek that has recently been relinquished.

#### **DESIRED OUTCOMES**

- ◆ Existing apiary use of Mebbin and Mt Jerusalem NPs are managed to minimise impacts.
- ◆ Grazing and associated uses in the Border Ranges NP is phased out to improve environmental integrity and reduce the indirect threat of fire.

#### **GUIDELINES & ACTIONS**

##### ***Beekeeping Licenses***

- Bee keeping will be managed in accordance with the NPWS Policy 2.4 (Beekeeping) including appropriate use, consent and relocation protocols for existing licences. Under this policy, no new or additional sites will be permitted.

##### ***Grazing Leases***

- Pursue removal of grazing and associated uses in Border Ranges NP and undertake site rehabilitation.

### 3.4.3 Transmission Lines and Towers

Transmission lines exist at the following locations:

- Border Loop in Border Ranges NP (State Rail Authority);
- Burringbar Range in Mt Jerusalem NP (Northpower);
- Mt Nardi in Nightcap NP (Northpower).

The cleared corridors for transmission lines fragment habitat and are potential paths for wildfire and weed dispersal. Vegetation management under power lines is undertaken by the respective service providers.

Mt Nardi in Nightcap NP contains two major multi-purpose transmitter towers and associated buildings and transmission lines. The respective lease agreements were being reviewed at the time of writing. Site issues such as the management of vegetation, fire, hazardous materials, transmission lines, stormwater, road access and visual quality have the potential to impact on park values and visitor safety and experience.

The location of communications and transmission infrastructure on-park is inconsistent with the conservation purposes of NPWS estate. More appropriate locations off-park in the adjoining area are often available and have less potential to cause environmental damage.

Transmission infrastructure on-park which cannot be relocated should be managed in a way that is compatible with the surrounding park area. Cooperative arrangements between the NPWS and other agencies are necessary to ensure appropriate access and use and that assets are protected from fire.

#### **DESIRED OUTCOMES**

- ◆ **There are no new transmission lines or towers developed in the planning area.**
- ◆ **Existing transmission sites are managed to minimise impacts on natural, cultural and scenic values and park roads and management trails.**

#### **GUIDELINES & ACTIONS**

##### ***Transmission Lines***

- **Request the State Rail Authority to re-route the power line at Richmond Gap in Border Ranges NP to the adjoining railway easement. Should this occur, rehabilitate the existing easement and access trails.**
- **Ensure vegetation management under power lines is undertaken by service providers in accordance with best practice such as those described in the Agreement between NPWS and Transgrid for the inspection and maintenance of Transgrid infrastructure in NPWS areas.**
- **Ensure any approved replacement, upgrading or additional transmission lines incorporate best environmental design such as bundled or underground cable.**

### *Transmitter Towers*

- **Ensure any future lease agreement and management of the transmitter tower sites at Mt Nardi in Nightcap NP satisfactorily address site management issues identified above.**

### *Cooperative Arrangements*

- **Enter into tenure agreements with relevant transmission agencies. Include provisions regarding appropriate management of transmission sites including the following:**
  - **The management of roads, trails, vegetation, fire and stormwater at these sites; and**
  - **NPWS consent requirements for any proposed works.**

### *Proposed Infrastructure*

- **Proposals for any new public utility infrastructure on-park will be discouraged. Proposals may only be considered if there are no alternative locations outside of the planning area and environmental impacts are assessed to be acceptable.**

#### **3.4.4 Water Supply**

There are two large municipal dams in Nightcap and Mt Jerusalem NPs respectively. These dams pre-existed to park gazettal.

Rocky Creek Dam at Dorroughby encroaches on and contains catchment within Nightcap NP and the adjoining Whian Whian SF. This dam is managed by Rous County Council and supplies Lismore, Ballina, Byron and Richmond Valley local government areas. It is subject to former SFNSW occupation permits. There is also an existing policy agreement between the County Council and SFNSW regarding appropriate activities in the catchment.

Clarrie Hall Dam near Uki encroaches on and contains catchment within Mt Jerusalem NP. This dam is managed by Tweed Shire Council and supplies this local government area. No record of former or existing legal agreements have been identified for the dam.

Public access, recreation, weed control and fire management within water supply catchments have the potential to affect the quality of potable water. The introduction of aquatic weeds and pollution are the main threats. Joint management agreements need to be established by the various authorities to ensure cooperative management of these catchments.

There is also an old disused dam on Korrumbyn Creek in Mt Warning NP. An assessment of the structural integrity of the dam wall needs to be undertaken, whilst

recognising that this structure may have historic significance (see 3.1.4 *Historic Heritage*).

There is a proposed municipal dam adjoining Mebbin NP. However, this is not scheduled for construction in the life of this plan but should be considered for future park management.

There are also a number of park neighbours that draw water from on-park waterways for domestic and agricultural use on their adjoining properties. Many of these were subject to former SFNSW Occupation Permits and/ or water licenses granted by the Department of Land and Water Conservation (DLAWC) that were pre-existing to park gazettal. These uses are considered an 'existing interest' under Section 39 of the NP&W Act. There are a number of these permits affecting Mt Jerusalem NP. There are also a number of park neighbours that draw water from Korrumbyn Creek in Mt Warning NP. A private water supply pipeline is also present in Snows Gully NR.

The construction and existence of dams and drawing of water alters the natural hydrology and can impact adjoining and downstream habitat. As such, this plan seeks to manage 'existing interests' relating to private water supplies located on-park through licensing appropriate uses. In addition, this plan discourages any additional water extractions for non-park related purposes to minimise any cumulative impact on the environmental integrity of waterways and riparian habitat.

### **DESIRED OUTCOMES**

- ◆ **Municipal water supply catchments are managed to provide high water quality in downstream reservoirs.**
- ◆ **Existing authorised water supply arrangements are formalised.**
- ◆ **No new water extractions are granted for non-park related purposes.**

### **GUIDELINES & ACTIONS**

#### ***Municipal Water Supply***

- **Review 'existing interests' relating to municipal water supply arrangements with Rous County Council and Tweed Shire Council to address dam encroachment and catchment issues in Nightcap and Mt Jerusalem NPs respectively for the purpose of licensing these uses. Under any licences, include provisions for designated dam areas, access, permitted activities, consent requirements and management responsibilities.**
- **Ensure any recreation and management activities in dam catchments are appropriate to avoid pollution of the water supply system with soil, human pathogens and imported contaminants and toxins.**

#### ***Structural Assessments***

- **Undertake a civil engineering assessment of the dam on Korrumbyn Creek in Mt Warning NP. Implement any works recommended to ensure the**

structural integrity of the dam wall in a manner that is compatible with its historic significance (see 3.1.4 *Historic Heritage*).

*Park Neighbour Water Supply*

- Review ‘existing interests’ relating to private water supply arrangements with park neighbours such as in Mt Warning and Mt Jerusalem NPs and Snows Gully NR for the purpose of licensing appropriate uses. Under any licences, include provisions for access, vegetation management and environmental protection.
- Where there is no ‘existing interest,’ a licence will not be issued and water supply equipment will be removed.
- No additional non-park related water extractions will be permitted.



## 4. IMPLEMENTATION, EVALUATION & REVIEW

### 4.1 Plan Implementation

This plan of management is part of the system of management developed by the NPWS. The system includes the NP&W Act, the Service's Corporate Plan, associated strategies and management policies. It also includes Northern Field Branch and regional operational planning.

The orderly implementation of this plan of management will be undertaken within the annual programs of the NPWS Northern Region. Priorities will be determined during the development of these programs and will be subject to regional priorities, the availability of funding and staff and to any specific requirements of the Director-General or the Minister.

District programs are subject to on-going review within which works and any other activities carried out in planning area will be evaluated in relation to objectives laid down in this plan.

The environmental impact of all development proposals will be assessed in accordance with established environmental assessment procedures.

In accordance with Section 81 of the NP&W Act, this plan shall be carried out and given effect to and no operations shall be undertaken in relation to the planning area unless those operations are in accordance with the plan of management. If after adequate investigation operations not included in the plan are found to be justified, the plan may be amended in accordance with Section 75 of the Act.

As a guide to the implementation of the specific actions in this plan, relative priorities have been assigned (high, medium, low) to each action which is summarised in Table 5 below.

*Table 5. Implementation Table*

Section	Key activities	Priority
<b>3.1.1 World Heritage</b>	Assess potential additions to the World Heritage CERRA.	Low
	Research World Heritage values and their spatial distribution.	Low
	Continue to participate in the World Heritage CERRA Committees.	Medium
	Seek plan endorsement under a bilateral agreement in accordance with the EPBC Act.	Low
	Monitor World Heritage values via State of the Parks reporting.	Low
	Train NPWS staff on World Heritage values & threats.	Medium

<b>Section</b>	<b>Key activities</b>	<b>Priority</b>
<b>3.1.2</b>	Manage vegetation at designated lookouts.	Medium
<b>Landforms &amp; Visual Landscapes</b>	Progressively rehabilitate disturbed sites such as old log dumps and decommissioned road base quarries.	Medium
<b>3.1.3</b>	Prepare cooperative management agreements or similar protocols where appropriate and if supported by local Aboriginal groups.	High
<b>Aboriginal Heritage</b>	Prepare & implement cultural heritage studies for identified cultural sites in Mt Warning, Nightcap & Mt Jerusalem NP.	High
	Update the NPWS Aboriginal Sites Register	High
	Monitor visitor impacts at specified cultural sites in Mt Warning, Nightcap & Mt Jerusalem NP and implement conservation actions	High
<b>3.1.4 Historic Heritage</b>	Assess the cultural significance of historic resources including those identified in <i>Appendix 5</i> .	Medium
	Develop a statement of significance for historic resources to assist in determining priorities for conservation planning and works.	Medium
	Prepare & implement conservation guidelines/ plans for significant historic sites such as Long Creek tramway in Border Ranges NP & Kunghur flying fox in Nightcap NP.	Medium
	Assess the historic significance of plantings at the Long Creek village site in Border Ranges.	Low
<b>3.1.5</b>	Continue to maintain existing sections of the Palm Forest Walk, Booyong Walk, Rosewood Loop, Red Cedar Loop, Falcorostrom Loop, Bar Mountain Circuit and the Border Track in Wilderness Areas of Border Ranges NP and Limpinwood NR to a Class 3 Australian Standard walking track. Directional signage will be maintained for public safety. No additional signs will be placed along the wilderness sections of these tracks.	High
<b>Wilderness</b>	Assist QPWS to review lookout sites on the 'Border Track' in Limpinwood NR.	Medium
<b>3.1.6 Water Catchment</b>	Liaise with the Northern Rivers Catchment Management Authority regarding catchment management initiatives.	Medium

<b>Section</b>	<b>Key activities</b>	<b>Priority</b>
<b>3.1.7 Biodiversity</b>	Undertake erosion control works of former tracks at The Pinnacle in Border Ranges NP.	Medium
	Continue the monitoring program for the endangered herb <i>Euphrasia spp. aff. bella</i> at The Pinnacle in Border Ranges NP.	Medium
	Implement the habitat management burn program for eastern bristle bird territories in Border Ranges NP.	High
	Continue to maintain the arboretum plantings of rare or threatened species at Korrumbyn Creek in Mt Warning NP.	Low
	Prepare and implement a MOU with the QPWS regarding complementary management of the State border region.	Medium
<b>3.1.8 Introduced Plants</b>	Prepare & implement Restoration & Rehabilitation Plans.	High
	Continue to undertake identified weed control programs, monitor outcomes & review strategies.	High
	Control the dispersal of introduced timber species and encourage regeneration of plantations in Mebbin, Goonengerry & Nightcap NPs.	Medium
<b>3.1.9 Introduced Animals</b>	Prepare and implement pest animal management plans.	High
	Implement pest animal control programs in accordance with the Threat Abatement Plans for red fox and feral cat.	Low
	Prepare & implement a fencing strategy for relevant parks and reserves in consultation with park neighbours.	Medium
	Encourage research into the distribution, abundance and monitoring of control programs for wild dog, red fox, feral cat, black rat, cane toad and invertebrate pests.	Medium
	Research the impact and review the border rabbit fence in consultation with other relevant agencies.	Low
	Conduct dingo genetic sampling in Border Ranges NP.	Low
<b>3.1.10 Fire Management</b>	Finalise, prepare & implement Fire Management Strategies.	High
	Maintain the management trail network identified in Figure 1.	Medium
	Install locked gates at management trail entrances	High
<b>3.2.1 Public Vehicle Access</b>	Close Mount Jerusalem Road at the park boundary to discourage access to the former flying fox site.	Medium

<b>Section</b>	<b>Key activities</b>	<b>Priority</b>
	Maintain the park road network to an all-weather, two-wheel drive standard with the exception of the selected roads.	High
	Reduce the speed limit on all park roads to a maximum of 40 km/h and sign high use roads accordingly.	High
	Negotiate access agreements with park neighbours that use park roads for private access.	Medium
	O'Connors and Lemon Tree Roads (to the Giant Ironbark) and South Chowan Road will be maintained to four-wheel dry weather only standard and signposted accordingly.	Medium
	Implement the Tweed Range Scenic Drive Road Maintenance Strategy in conjunction with a review of motorist safety measures	Medium
	Undertake a feasibility study for a visitor transport system to operate during peak visitation periods at Mt Warning NP.	Low
	Identify parking bays at Breakfast Creek to improve parking patterns including an emergency vehicle bay and bus parking and turnaround if feasible.	Medium
	Information will be provided at the Mt Warning car park to explain the cultural values and significance of the mountain to Aboriginal people.	Medium
	Improve parking patterns at identified car parks in Mt Warning, Border Ranges & Nightcap NPs in accordance with specified capacities.	Medium
	Coordinate with other relevant agencies regarding integrated road maintenance.	Medium
<b>3.2.2 Day Use Areas</b>	Manage day use areas identified in figure 1 in accordance with the facilities and site capacity in Table 3.	High
	Relocate the visitor facilities at Antarctic Beech day use area. Rehabilitate the existing site as required.	Medium
	Remove visitor facilities and close the trail at the car park on South Chowan Rd. Install a locked gate and sign accordingly.	Medium
	Remove rubbish bins from all day use areas.	Low
	Prepare a joint recreation strategy with Rous County Council for Rocky Creek Dam.	Low
	Prepare an amendment to this plan to address recreation management issues in Whian Whian SCA.	High
	Monitor day use through traffic counts, visitor surveys & photographing site modification on an annual basis.	Low
<b>3.2.3 Camping</b>	Manage the camping areas identified in Figure 1 in	High

<b>Section</b>	<b>Key activities</b>	<b>Priority</b>
	accordance with the level of facilities and site capacity defined in Table 4.	
	Continue to coordinate with QPWS regarding remote camping along the border route including designating campsites, monitoring, signage and seasonal closures.	Medium
	Monitor camping through permit records, visitor surveys & photographing site modification on an annual basis.	Low
<b>3.2.3 Bushwalking</b>	Manage the walking track network identified at Figure 1 in accordance with the designated standards	High
	Prepare and implement maintenance strategies for walking tracks in Mt Warning, Border Ranges, Nightcap & Mebbin NPs.	Medium
	Extend the Byrrill Creek walking track in Mebbin NP.	Medium
	Contribute to the preparation of a Regional Walking Track Strategy with other relevant agencies.	Low
	Monitor bushwalking via pedestrian counter data and review track conditions annually.	Low
<b>3.2.5 Horse Riding</b>	Install signage where necessary to identify horse riding trails.	Medium
	Monitor horse riding in the planning area for its environmental and social impact and public safety.	Medium
	Provide input to the Byron Shire Bridle Path Study and other similar studies.	Low
	Develop cooperative agreements with representative horse riding groups regarding safe & low impact riding & monitoring.	Low
<b>3.2.6 Cycling</b>	Monitor cycling impacts on management trails on an annual basis using photographic reference points.	Low
	Develop cooperative agreements with representative cycling groups regarding safe & low impact cycling & monitoring.	Low
	Monitor any degradation attributed to cycling.	Low
<b>3.2.7 Adventure Activities</b>	Prepare and implement a site management plan in consultation with user groups for regularly used hang gliding, climbing and abseiling sites.	Medium
	In partnership with user groups, monitor use levels and	Medium

<b>Section</b>	<b>Key activities</b>	<b>Priority</b>
	impacts on cultural heritage, environmental and social values.	
<b>3.2.8 Large Group Events</b>	<i>Guidelines Only</i>	<i>N/A</i>
<b>3.2.9 Commercial Tourism</b>	Remove fencing and other materials and close the defunct flying fox site in Mt Jerusalem NP.	Low
	Continue to participate with regional and local tourism agencies in the strategic planning and management of nature-based tourism opportunities.	Medium
	Monitor commercial activities	Medium
<b>3.2.10 Information, Interpretation &amp; Education</b>	As part of the Regional Interpretations Strategy, review advisory, regulatory, promotional and interpretive information.	Medium
	Review and update park brochures as necessary.	Medium
	Review signage and interpretive material as part of the Regional Interpretations Plan	Medium
	Replace park signage that does not conform to current NPWS standards.	Medium
	Review marketing of the colour souvenir booklets for Border Ranges and Mt Warning.	Low
<b>3.2.11 Research</b>	Continue existing ongoing research projects as identified in the plan.	High
	Prepare a research prospectus for Universities listing the identified research priorities.	Medium
	Alter park management practises in accordance with scientific research findings.	Medium
<b>3.3 Management Operations</b>	Investigate the road base quarry at Pine Plot trail for road works in Mebbin NP.	Medium
	Close and rehabilitate road base quarries in Border Ranges NP and Mt Jerusalem NP upon extraction of stock piled material.	Low
	Progressively close and rehabilitate former logging tracks unless required to be retained as identified on Figure 1.	Medium

<b>Section</b>	<b>Key activities</b>	<b>Priority</b>
<b>3.3 Cont.</b>	Implement recommendations of civil engineering reports for cantilevered structures.	High
	Undertake a review of all on-site sewage treatment systems in the planning area.	High
	Progressively replace pit toilets with systems that suit local conditions.	High
<b>3.4.1 Crown Reserve In-Holdings</b>	Close & incorporate unformed road reserves within Numinbah NR, Nightcap and Goonengerry NPs & the crown reserve in Mt Jerusalem NP.	Low
<b>3.4.2 Apiary &amp; Grazing Leases</b>	Pursue removal of grazing and associated uses in Border Ranges NP & rehabilitate sites.	Low
<b>3.4.3 Transmission Lines &amp; Towers</b>	Request the State Rail Authority to re-route the transmission line at Richmond Gap in Border Ranges NP & rehabilitate previous easement.	Low
	Enter into tenure agreements with relevant transmission agencies.	Low
<b>3.4.4 Water Supply</b>	Review existing interests relating to municipal water supply arrangements with Rous County Council and Tweed Shire Council to address dam encroachment and catchment issues in Nightcap and Mt Jerusalem NPs respectively for the purpose of licensing these uses.	Medium
	Undertake a civil engineering assessment of the dam on Korrumbyn Creek in Mt Warning NP.	Low
	Review 'existing interests' relating to private water supply arrangements with park neighbours such as in Mt Warning and Mt Jerusalem NPs and Snows Gully NR for the purpose of licensing appropriate uses.	Medium

## 4.2 Plan Evaluation

NPWS Area Manager staff shall monitor the implementation of this plan on an annual basis. This would identify actions that have been implemented in the previous year, continuation of those that are ongoing and identification of priorities for following financial years.

Timing of this evaluation shall coincide with the NPWS financial management process, in particular, immediately prior to developing proposals for the following financial years budget. This will facilitate appropriate resourcing of actions scheduled for implementation in subsequent years.

Upon implementation of the plan's guidelines and actions, their effectiveness shall be evaluated by the Northern Rivers Regional Manager, Northern Rivers Region.

### **4.3 Plan Review**

The plan may be amended at any time due to additional information being obtained from research or monitoring or changed circumstances.

A formal comprehensive review of this plan shall be undertaken at 7 years following the adoption of this plan.



## **SELECTED REFERENCES**

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## APPENDICES

### Appendix 1. World Heritage CERRA values

The Central Eastern Rainforest Reserves (Australia) was inscribed on the World Heritage List in 1986 and was subsequently expanded and re-inscribed in 1994. The World Heritage criteria current in 1994 and against which the Central Eastern Rainforest Reserves (Australia) was listed remain the formal criteria for this property. These criteria have been included in the Values Table below. The World Heritage criteria are periodically revised and the criteria against which the property was listed in 1994 are not necessarily identical with the current criteria.

Examples of the World Heritage values for which the Central Eastern Rainforest Reserves (Australia) was listed are included in the Values Table for each criterion. These examples are illustrative of the World Heritage values of the property, and they do not necessarily constitute a comprehensive list of these values. Other sources including the nomination document and references listed below the Table are available and could be consulted for a more detailed understanding of the World Heritage values of the Central Eastern Rainforest Reserves (Australia).

Natural criteria against which the Central Eastern Rainforest Reserves (Australia) was inscribed on the World Heritage List in 1994 following extension of the original area listed in 1986.	Examples of World Heritage values of the Central Eastern Rainforest Reserves (Australia) for which the property was inscribed on the World Heritage List in 1994 following extension of the original area listed in 1986.
<p><b>Criterion (i) Outstanding examples representing the major stages of the earth's evolutionary history.</b></p>	<p>The Central Eastern Rainforest Reserves preserve outstanding examples of ecosystems and taxa from which modern biota are derived, including some of the oldest elements of the world's ferns from the Carboniferous period, one of the most significant centres of survival for Araucarians, an outstanding record of Angiosperms, an outstanding number of the oldest lineages of the <i>Corvida</i> (one of the two major groups of true songbirds that evolved in the Late Cretaceous), and outstanding examples of other relict vertebrate and invertebrate fauna from ancient lineages linked to the break-up of Gondwana. The World Heritage values include:</p> <ul style="list-style-type: none"> <li>• rainforests which are exceptionally rich in primitive and relict species, many of which are similar to fossils from Gondwana;</li> <li>• subtropical rainforest habitat;</li> <li>• warm temperate rainforest habitat;</li> <li>• ancient ferns and tree ferns;</li> <li>• conifers (e.g. hoop pine) and cycads;</li> <li>• primitive groups within Magnoliales and Laurales (e.g. pepper bushes, sassafras, <i>Trimenia</i>, <i>Wilkiea</i>, <i>Cryptocarya</i>, <i>Litsea</i>);</li> <li>• primitive groups within Rosidae and Dilleniidae (e.g. coachwood, Antarctic Beech, <i>Eucryphia jinksii</i>, turnipwood, <i>Pittosporum</i>, most common in warm temperate and subtropical rainforest types);</li> <li>• primitive group of <i>Corvida</i> (such as lyrebirds, rufous scrub-bird, bowerbirds and tree-creepers);</li> <li>• other birds dating from Gondwana (e.g. logrunner, thornbills, scrubwrens and gerygones);</li> <li>• frogs in the families Myobatrachidae and Hylidae;</li> <li>• reptiles such as chelid turtles, leaf-tailed gecko and angle-headed dragon;</li> <li>• monotremes and marsupials; and</li> <li>• invertebrate fauna with origins in Gondwana, including fresh-water crays, land snails, velvet worms, mygalomorph spiders, flightless carabid beetles, bird-wing butterfly and glow-worms.</li> <li>• ecosystems and taxa which demonstrate the origins and rise to dominance of cold-adapted/dry-adapted flora, including:             <ul style="list-style-type: none"> <li>- cool temperate rainforest habitat;</li> <li>- dry rainforest habitat; and</li> <li>- plant species in the families Myrtaceae, Casuarinaceae and Proteaceae.</li> </ul> </li> </ul>

<p><b>Criterion (ii) Outstanding examples representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment.</b></p>	<p>The Central Eastern Rainforest Reserves provides outstanding examples of ongoing geological processes associated with Tertiary volcanic activity, and of biological evolution. The World Heritage values include:</p> <ul style="list-style-type: none"> <li>• the caldera of the Tweed Shield Volcano is considered one of the best preserved erosion caldera in the world and is notable for its size, its age (20 million years), and for the presence of a prominent central mountain mass with all three stages of the erosion of shield volcanoes (the planeze, residual and skeletal stages);</li> <li>• centres of endemism where ongoing evolution is taking place;</li> <li>• flora and fauna of low dispersal capability that occur in more than one isolated pocket of the Central Eastern Rainforest Reserves;</li> <li>• plant taxa that show evidence of relatively recent evolution, including: <ul style="list-style-type: none"> <li>- genera in Southern Hemisphere families (e.g. Winteraceae, Monimiaceae and Lauraceae in the Magnolidae, Proteaceae, Cunoniaceae, Euphorbiaceae, Escalloniaceae, Davidsoniaceae Pittosporaceae, Myrtaceae and Sapindaceae in the Rosidae and, Elaeocarpaceae, Sterculiaceae and Ebenaceae in the Dilleniidae); and</li> <li>- monotypic endemic families (e.g. Akaniaceae and Petermanniaceae);</li> </ul> </li> <li>• animal taxa that show evidence of relatively recent evolution, including: <ul style="list-style-type: none"> <li>- 3 species of frogs in the myobatrachid genus <i>Pseudophyrne</i> believed to have diverged in the Pliocene;</li> <li>- species of frogs in the relict genus <i>Phyloria/Kyarranus</i> and the <i>Litoria pearsoniana/ phyllochroa</i> complex;</li> <li>- reptiles such as <i>Eulamprus</i> spp; and</li> <li>- invertebrates such as snails, earthworms, crays, velvet worms and carabid beetles, including taxa that show overlap and intergradation of different faunal elements (e.g. ants and dung beetles); and</li> <li>- the diversity of plant and animal species.</li> </ul> </li> </ul>
<p><b>Criterion (iv) Contain the most important and significant habitats where threatened species of plants and animals of outstanding universal value from the point of view of science and conservation still survive.</b></p>	<p>The ecosystems of the Central Eastern Rainforest Reserves contain significant and important natural habitats species of conservation significance, particularly associated with rainforest which once covered much of the continent of Australia and is now restricted to archipelagos of small areas of rainforest isolated largely by sclerophyll vegetation and cleared land. The World Heritage values include:</p> <ul style="list-style-type: none"> <li>• habitats associated with: <ul style="list-style-type: none"> <li>- subtropical rainforest;</li> <li>- wet sclerophyll forest;</li> <li>- montane heathlands;</li> <li>- rocky outcrops; and</li> <li>- ecotones between rainforest and sclerophyll communities;</li> </ul> </li> <li>• plant taxa of conservation significance (more than 200 plant taxa, particularly in the families Proteaceae, Myrtaceae and Euphorbiaceae and including species of <i>Cryptocarya</i>, <i>Tasmannia</i> and <i>Endiandra</i>);</li> <li>• species of vertebrate fauna of conservation significance (including at least 80 taxa such as Albert's lyrebird, rufous scrub-bird, marbled frogmouth, eastern bristlebird, black-breasted button quail, <i>Phyloria/Kyarranus</i> spp., pouched frog, barred frogs, parma wallaby, yellow-bellied glider, Hastings River mouse, New Holland mouse, fawn-footed melomys and golden-tipped bat); and</li> <li>• species of invertebrate fauna of conservation significance (such as the Richmond River bird-wing butterfly and <i>Euastacus jagara</i>).</li> </ul>

Note: Criterion (iii) does not apply to CERRA.

## Appendix 2 Threatened Species found in parts of the planning area

### 2a. Fauna

Common Name	Scientific Name	Status under TSC Act (E = endangered; V = Vulnerable)	Recovery Plan Status
Black-breasted Button-quail	<i>Turnix melanogaster</i>	E	In preparation
Rose-crowned Fruit-Dove	<i>Ptilinopus regina</i>	V	
Superb Fruit-Dove	<i>Ptilinopus superbus</i>	V	
Wompoo Fruit-Dove	<i>Ptilinopus magnificus</i>	V	
Bush-hen	<i>Amaurornis olivaceus</i>	V	
Black Bittern	<i>Ixobrychus flavicollis</i>	V	
Red Goshawk	<i>Erythrotriorchis radiatus</i>	E	Completed
Powerful Owl	<i>Ninox strenua</i>	V	In preparation
Masked Owl	<i>Tyto novaehollandiae</i>	V	In preparation
Sooty Owl	<i>Tyto tenebricosa</i>	V	In preparation
Coxen's Fig-Parrot	<i>Cyclopsitta diophthalma coxeni</i>	E	In preparation
Glossy Black-Cockatoo	<i>Calyptorhynchus lathami</i>	V	
Swift Parrot	<i>Lathamus discolor</i>	V	In preparation
Marbled Frogmouth	<i>Podargus ocellatus</i>	V	
Albert's Lyrebird	<i>Menura alberti</i>	V	
Rufous Scrub-bird	<i>Atrichornis rufescens</i>	V	
White-eared Monarch	<i>Monarcha leucotis</i>	V	
Olive Whistler	<i>Pachycephala olivacea</i>	V	
Barred Cuckoo-shrike	<i>Coracina lineata</i>	V	
Eastern Bristlebird	<i>Dasyornis brachypterus</i>	E	Plan complete and awaiting endorsement
Tiger Quoll	<i>Dasyurus maculatus</i>	V	In preparation
Eastern Quoll	<i>Dasyurus viverrinus</i>	E	
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>	V	
Eastern Cave Bat	<i>Vespadelus troungtoni</i>	V	
Common Planigale	<i>Planigale maculata</i>	V	
Yellow-bellied Glider	<i>Petaurus australis</i>	V	In preparation
Squirrel Glider	<i>Petaurus norfolcensis</i>	V	
Koala	<i>Phascolarctos cinereus</i>	V	In preparation
Long-nosed Potoroo	<i>Potorous tridactylus</i>	V	
Rufous Bettong	<i>Aepyprymnus rufescens</i>	V	In preparation
Red-legged Pademelon	<i>Thylogale stigmatica</i>	V	In preparation
Parma Wallaby	<i>Macropus parma</i>	V	In preparation
Black Flying-fox	<i>Pteropus alecto</i>	V	
Queensland Tube-nosed Bat	<i>Nyctimene robinsoni</i>	V	In preparation
Queensland Blossom Bat	<i>Syconycteris australis</i>	V	In preparation
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	V	In preparation
Eastern Little Mastiff-bat	<i>Mormopterus norfolkensis</i>	V	In preparation

Common Name	Scientific Name	Status under TSC Act (E = endangered; V = Vulnerable)	Recovery Plan Status
Eastern Long-eared Bat	<i>Nyctophilus bifax</i>	V	In preparation
Common Bent-wing Bat	<i>Miniopterus schreibersii</i>	V	In preparation
Little Bent-wing Bat	<i>Miniopterus australis</i>	V	In preparation
Large Pied Bat	<i>Chalinolobus dwyeri</i>	V	In preparation
Hoary Bat	<i>Chalinolobus nigrogriseus</i>	V	In preparation
Large-footed Myotis	<i>Myotis adversus</i>	V	In preparation
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	V	In preparation
Golden-tipped Bat	<i>Kerivoula papuensis</i>	V	In preparation
Great Pipistrelle	<i>Falsistrellus tasmaniensis</i>	V	In preparation
Hastings River Mouse	<i>Pseudomys oralis</i>	E	In preparation
Eastern Chestnut Mouse	<i>Pseudomys gracilicaudatus</i>	V	
	<i>Coeranoscincus reticulatus</i>	V	
Stephen's Banded Snake	<i>Hoplocephalus stephensii</i>	V	
Pouched Frog	<i>Assa darlingtoni</i>	V	
Fleay's Barred Frog	<i>Mixophyes fleayi</i>	V	In preparation
Giant Barred Frog	<i>Mixophyes iteratus</i>	V	In preparation
Loveridge's Frog	<i>Philoria loveridgei</i>	V	
Green Thighed Frog	<i>Litoria brevipalmata</i>	V	

## 2b. Flora

Scientific Name	Common Name	Status under TSC Act (E = endangered; V = Vulnerable)	Recovery Plan Status
<i>Ochrosia moorei</i>		E	
<i>Hibbertia hexandra</i>		E	
<i>Diospyros mabacea</i>	Red-fruited Ebony	E	In preparation
<i>Desmodium acanthocladum</i>	Thorny Pea	V	
<i>Sophora fraseri</i>		V	
<i>Corokia whiteana</i>		V	
<i>Endiandra hayesii</i>	Rusty Rose Walnut	V	
<i>Owenia cepiodora</i>	Bog Onion	V	In preparation
<i>Tinospora tinosporoides</i>	Arrow-head Vine	V	
<i>Eucalyptus approximans</i>		E	
<i>Syzygium hodgkinsoniae</i>	Red Lilly Pilly	V	
<i>Syzygium moorei</i>	Coolamon	V	
<i>Uromyrtus australis</i>	Peach Myrtle	E	In preparation
<i>Sarcochilus fitzgeraldii</i>	Ravine Orchid	V	
<i>Sarcochilus hartmannii</i>		V	
<i>Floydia praealta</i>	Ball Nut	V	
<i>Hicksbeachia pinnatifolia</i>		V	
<i>Macadamia tetraphylla</i>	Rough-leaved Queensland Nut	V	
<i>Clematis fawcettii</i>		V	
<i>Bosistoa selwynii</i>	Heart-leaved Bosistoa	V	
<i>Bosistoa transversa</i>	Three-leaved Bosistoa	V	
<i>Diploglottis campbelli</i>		E	In preparation
<i>Amorphospermum whitei</i>	Rusty Plum	V	
<i>Symplocos baeuerlenii</i>	Small-leaved Hazelwood	V	
<i>Isoglossa eranthemoides</i>		E	In preparation
<i>Euphrasia</i> spp. aff. <i>bella</i>		V	
<i>Fontainea australis</i>		V	
<i>Endiandra muelleri</i> ssp. <i>bracteata</i>		E	
<i>Plectranthus nitidus</i>		E	
<i>Elaeocarpus</i> sp. <i>Minyon</i>		E	
<i>Grammitis stenophylla</i>		E	
<i>Zieria adenodonta</i>		E	



### Appendix 3 Vegetation Communities of the Planning Area

Vegetation Type	Site Conditions	Vegetation Structure	Threatened & Noteworthy species	Examples of sites
Warm subtropical rainforest dominated by booyong <i>Argyrodendron spp.</i>	Warm, protected, fertile sites of basalt derived soils in areas of high rainfall below 800 m elevation	Palms, trees with trunk buttressing, woody vines and large epiphytes, rich in non-vascular plants.	<p><u>Fauna:</u> Bird species such as white-eared monarch <i>Monarcha leucotis</i>, russet-tailed thrush <i>Zoothera heinei</i>, marbled frogmouth <i>Podargus ocellatus</i>, sooty owl <i>Tyto tenebricosa</i>, Albert's lyrebird <i>Menura alberti</i> and the Coxen's fig-parrot (<i>Cyclopsitta diophthalma coxenii</i>). Also provides essential habitat for fruit eating rainforest pigeons and other birds that over-winter at lower altitude. Mammal species such as the spotted-tailed quoll <i>Dasyurus maculatus</i> and parma wallaby <i>Macropus parma</i> listed as vulnerable occur at mid to high elevation in these forests.</p> <p><u>Flora:</u> Endangered flora found in these forests include the Red-fruited ebony <i>Diospyros mabacea</i> which is confined to the Tweed Valley (Williams, 1984), southern ochrosia <i>Ochrosia moorei</i>, southern fontainea <i>Fontainea australis</i>, green-leaved rose walnut <i>Endiandra muelleri ssp bracteata</i>. Vulnerable flora species in these forests include red lily pilly <i>Syzygium hodgkinsoniae</i>, ball nut <i>Floydia praealta</i>, red bopple nut <i>Hicksbeachia pinnatifolia</i>, rough-leaved Queensland nut <i>Macadamia tetraphylla</i>, heart-leaved Bosistoa <i>Bosistoa selwynii</i> and the herb <i>Isoglossa eranthemoides</i> found at lower altitudes.</p>	The base of the Tweed escarpment, Mt Warning, the Nightcap Range, in addition to Mt Lindesay and Levers Plateau in the west of Border Ranges NP

Vegetation Type	Site Conditions	Vegetation Structure	Threatened & Noteworthy species	Examples of sites
Cool subtropical forest dominated by soft corkwood <i>Caldcluvia paniculosa</i> .	Cool fertile sites of basalt derived soils at high elevation sites (800 m – 1000 m) which record higher rainfall supplemented by fog drip at high elevation	Few buttressed trees and tree palms are not common. Ferns, mosses and liverworts are abundant.	<u>Fauna</u> : Mammal species such as the threatened golden-tipped bat <i>Kerivoula papuensis</i> , dusky antechinus <i>Antechinus swainsonii</i> and <i>A. subtropicus</i> (a newly described species), and birds species such as the rufous scrub-bird <i>Atrichornis rufescens</i> , olive whistler <i>Pachycephala olivacea</i> which is at the northern limits of its distribution, and the Albert's lyrebird <i>Menura alberti</i> , Amphibians include Loveridge's frog <i>Philoria loveridgei</i> , pouched frog <i>Assa darlingtoni</i> , Beech skink <i>Pseudemoia zia</i> and challenger skinks and primitive moss bug <i>Hackeriella veitchi</i> . Fleay's barred frog <i>Mixophyes fleayi</i> , spotted-tailed quoll <i>dasyurus maculatus</i> , long-nosed potoroo <i>Potorous tridactylus</i> , red-legged pademelon <i>Thylogale stigmatica</i> .	This includes the plateau rainforest and upper valley country of the Tweed and McPherson Ranges in Border Ranges NP and Limpinwood and Numinbah NRs. An isolated occurrence also exists on the southern sheltered valley of Mt Lindsay and the south-east aspect of the Mt Glennie plateau.
Heath dominated by <i>Leptospermum</i> spp. and <i>Pomoderris</i> spp.	Exposed ridges, escarpments and rock outcrops of low soil fertility		Endangered flora that occur in heath communities include the herb <i>Euphrasia</i> spp. aff. <i>bella</i> restricted to some exposed rocky outcrops and Guinea flower <i>Hibbertia hexandra</i> which is also found in warm temperate forest and wet sclerophyll forest. Some areas support the threatened herb <i>Gaultheria veridicarpa</i> and <i>Gaultheria merinoensis</i> in addition to <i>Plectranthus</i> sp. 'The Pinnacle,' <i>Zieria adenodonta</i> , <i>Podolepis monticola</i> and <i>Wahlenbergia scopulicola</i> which are very limited in distribution. Coral lichen <i>Cladia retipora</i> occurs on some rocky outcrops in Mt Jerusalem NP. This occurrence is considered unique on the eastern side of the Great Dividing Range.	Notable areas include Glennies tableland in the west of Border Ranges NP, Mt Jerusalem NP on Gilwah Rd, Koonyum Range and Blackbutt Plateau and high elevation areas of Mt Warning NP.

Vegetation Type	Site Conditions	Vegetation Structure	Threatened & Noteworthy species	Examples of sites
Warm temperate rainforest dominated by sassafras <i>Doryphora sassafras</i> , coachwood <i>Ceratopetalum apetalum</i> , or crabapple <i>Schizomeria ovata</i> .	Mid-mountain slopes and exposed ridges. The shallow, less fertile rhyolite derived soils combine with cool moist conditions which favours lichens and ground ferns.	Tree layer structure and composition is simpler than sub-tropical rainforests. Features such as stranglers, palms, plank buttresses and woody vines are rare or absent.	<u>Fauna</u> : As for cool subtropical forest above in addition to Albert's lyrebird <i>Menura alberti</i> . <u>Flora</u> : Threatened flora include corakia <i>Corakia whiteana</i> , rusty rose walnut <i>Endiandra hayesii</i> , small-leaved hazelwood <i>Symplocos baeuerleni</i> , peach myrtle <i>Uromyrtus australis</i> which are found in Nightcap and Mt Jerusalem NPs in addition to Nightcap oak <i>Eidothea sp. nov.</i> and Minyon quondong <i>Eleocarpus sp.</i> Minyon found in Nightcap NP.	Dominated by crabapple <i>Schizomeria ovata</i> in the west of Border Ranges NP. Dominated by sassafras <i>Doryphora sassafras</i> in the short-dense upswept thicket on the cliff rim of the adjoining Tweed and McPherson Range escarpments. Coachwood <i>Ceratopetalum apetalum</i> dominates this forest on the southern slopes of Mt Warning and around Mt Nardi in Nightcap NP.
Cool temperate rainforest dominated by Antarctic beech <i>Nothofagus moorei</i>	Fertile basalt-derived soils at high elevation (800 m - 1000 m), where cool conditions, reliable rainfall and mists occur.	Dense growth of lichen and mosses on trees as well as a moist ground layer of ferns and tree ferns.	<u>Fauna</u> : Loveridge's frog <i>Phyloria loveridgei</i> , Beech Skink <i>Pseudemoia zia</i> rufous scrub-bird <i>Atrichornis rufescens</i> , Albert's lyrebird <i>Menura alberti</i> , Loveridge's frog <i>Phyloria loveridgei</i> , olive whistler <i>Pachycephala olivacea</i> , <u>Flora</u> : Plant species occurring in association and restricted to this forest type include the beech orchid <i>Dendrobium falcorostrum</i> and orange beech fungus <i>Cyttaria septentionalis</i> which is parasitic on the beech tree, <i>Parsonsia tenuis</i> , <i>Pittosporum oreillyanum</i> , <i>Aristolochia deltantha</i> var. <i>laheyana</i> and the disjunct <i>Dicksonia youngiae</i> in the understorey.	Rare in the area. The best example occurs at Point Lookout in Limpinwood NR. Good examples also occur in the upper reaches of Warrazambil, Brindle and Gradys Creeks of Border Ranges NP. Small patches occur on the plateau and gully heads of the McPherson Range.

Vegetation Type	Site Conditions	Vegetation Structure	Threatened & Noteworthy species	Examples of sites
Dry rainforest dominated by hoop pine <i>Araucaria cunninghamii</i> .	Western and northern slopes at mid to low altitudes (to 800 m elevation) where rainfall is low for other forms of rainforest development (below 2000 mm average annual rainfall). Occurs on the margins of subtropical rainforest and sclerophyll forests	Structurally and floristically similar to subtropical rainforest.	<u>Fauna</u> : endangered black-breasted button quail <i>Turnix melanogaster</i> , the vulnerable long-nosed potoroo <i>Potorous tridactylus</i> , and the endangered Coxen's fig-parrot ( <i>Cyclopsitta diophthalma coxenii</i> ), barred cuckoo-shrike <i>Coracina lineata</i> . <u>Flora</u> : Threatened flora include bog onion <i>Owenia cepiodora</i> .	The best example in NSW is found at Levers Plateau and in the head of Long and Surveyors Creeks on basalt soils at 500 m – 700 m altitude. In Sawpit Creek in the west of Border Ranges NP, the dry rainforest is dominated by teak <i>Flindersia australis</i> or black bean <i>Castanospermum australe</i> and silky oak <i>Grevillia robusta</i> . In the west of Border Ranges NP and the 'rain shadow' to the west of Mt Warning in Mebbin NP at low elevation (175 m – 200 m) on soils derived from mudstone and coal below basalt sites. It also occurs west of Toenail point in Limpinwood NR on steep, rhyolite slopes at mid elevation (700 m – 800 m) also below basalt sites.

Vegetation Type	Site Conditions	Vegetation Structure	Threatened & Noteworthy species	Examples of sites
Wet sclerophyll open forest dominated by brush box <i>Lophostemon confertus</i> , flooded gum <i>Eucalyptus grandis</i> or tallowwood <i>E. microcorys</i> .	Moist areas on both fertile basalt and poorer rhyolite soils at low to mid elevations (to 800 m elevation)	Palms and small rainforest trees and shrubs dominate the understorey. Lantana is also highly invasive of this understorey.	<u>Fauna</u> : endangered red goshawk <i>Erythrorchis radiatus</i> , sooty owl <i>Tyto tenebricosa</i> , and the masked owl <i>Tyto novaehollandiae</i> , yellow-bellied glider <i>Petaurus australis</i> , Albert's lyrebird <i>Menura alberti</i> .	Large areas of this forest type occur in Mebbin, Mt Jerusalem and the east of Nightcap NPs
Dry sclerophyll open forest and woodland dominated by eucalypts.	Drier, less fertile sites with a history of fire.	Dominant eucalypts are bloodwood <i>Corymbia</i> spp., tallowwood <i>Eucalyptus microcorys</i> and stringybark with an acacia/she-oak understorey.	<u>Fauna</u> : Species listed as vulnerable include masked owl <i>Tyto novaehollandiae</i> , yellow-bellied glider <i>Petaurus australis</i> and koala <i>Phascolarctos cinereus</i> , the vulnerable rufous bettong <i>Aepyprymnus rufescens</i> , eastern chestnut mouse <i>Pseudomys gracilicaudatus</i> in addition to the endangered Hastings River mouse <i>Pseudomys oralis</i> and northern subspecies of the eastern bristlebird <i>Dasyornis brachypterus monoides</i> . <u>Flora</u> : Poorly conserved communities of conservation significance include Dunn's white gum <i>Eucalyptus dunnii</i> , mountain blue gum <i>E. deanei</i> and Blue Mountains ash <i>E. oreades</i> on the Mt Glennie plateau, and forest red gum <i>E. tereticornis</i> within the Sawpit and Findon Creek valleys.	Major stands occur in the west of Border Ranges NP, the northern portion of Mebbin NP and smaller stands on the Koonyum and Nightcap Ranges in Mt Jerusalem and Nightcap NPs respectively.

#### Appendix 4 Acceptable Fire Thresholds for Plant Groups

Plant Community	Threshold
Rainforest	No fire acceptable.
Wet Sclerophyll forest	Species decline expected if successive fires, of any intensity, occur less than 25 years apart. Species decline predicted if no fire for more than 60 years. Crown fires should be avoided in the lower end of the interval range.
Dry Forest complex	Species decline expected if more than two successive fires occur at intervals of less than 5 years. Species decline expected if there are no fires for more than 30 years. Species decline expected if successive fires occur which totally scorch or consume the tree canopy.
Shrubland/heath complex	Species decline expected if more than two successive fires occur at intervals of less than 7 years. Species decline expected if more than two successive fires occur at intervals of more than 15 years. Species decline expected if no fire occurs for more than 30 years.
Grassland/herbfield complex	Some intervals greater than 7 years should be included in coastal areas. There was insufficient data to give a definite maximum interval; available evidence indicates maximum intervals should be approximately 10 years.

After Bradstock et al, 1995.

## Appendix 5. Historic Sites Inventory

The following historic items have been identified through literature research:

### *Border Ranges NP*

- Cedar Getters Rock at Sheepstation Creek, where early timber getters carved their name in a rock in 1886.
- Long Creek sawmill and village established in the early 1900's and abandoned after the 1954 floods.
- Long Creek tramway, a custom built tramway which ran 16 kilometres up Long Creek to meet the bullock teams to transport logs to the Long Creek sawmill. Deterioration and heavy maintenance costs lead to the closure of the tramway in 1947 and a road was built along part of the route.
- Lemon Creek old bullock track also linking to early timber getters village at Long Creek.
- Border Loop siding near Logan Creek, associated with the linking of the railway line from Lismore to the Queensland Border in 1893.

### *Limpinwood NR*

- Old hut in the upper reaches of Oxley Creek formerly occupied by a local man (Bill Goddard) until the early to mid 1980s, after which the NPWS acquired the property as an addition to Limpinwood NR. Several exotic trees species were also planted surrounding the hut.

### *Mt Warning NP*

- The Breakfast Creek Reservoir, an early municipal reservoir.

### *Mebbin NP*

- Cutters Camp, a foresters hut and outbuildings built in 1942.
- A saw mill and camp site near the intersection of Cadell and Plantation Roads.
- Two camp sites on Cutters Camp Road associated with an early sleeper cutter, Stan Vidler.
- The Cadell tree (a giant ironbark) and monument to Tom Cadell, an early forester.
- Site containing an old timber jinker on Jinki Road.

Appendix 5. Cont. –

*Nightcap NP*

- Kunghur flying fox (and shelter) on the Googarna Track, used to lower logs 500 m to the Kunghur mill in the 1940's and 1950's.
- Historic Nightcap Track, a bridle track constructed in the late 1870s as the first overland link between the Richmond and Tweed valleys.
- Nightcap Range telegraph line, the first communications link between the Richmond and the Tweed in 1874.
- Gracie's track, a remnant section of hand built stone pathway reputed to be constructed by 'Surveyor Gracie' in the 1880's.
- Minyon Falls, the first site used for public recreation in the planning area in the 1920's.
- Nixon's former dairy and banana farm in the area between Nixon's and Gibbergunyah Range Roads. The farm was sold to SFNSW in 1958 and bananas replaced with plantation.

*Mt Jerusalem NP*

- Old scout camp site off Sand Ridge Road, the building which was reported to have been dismantled in the mid-1950's.

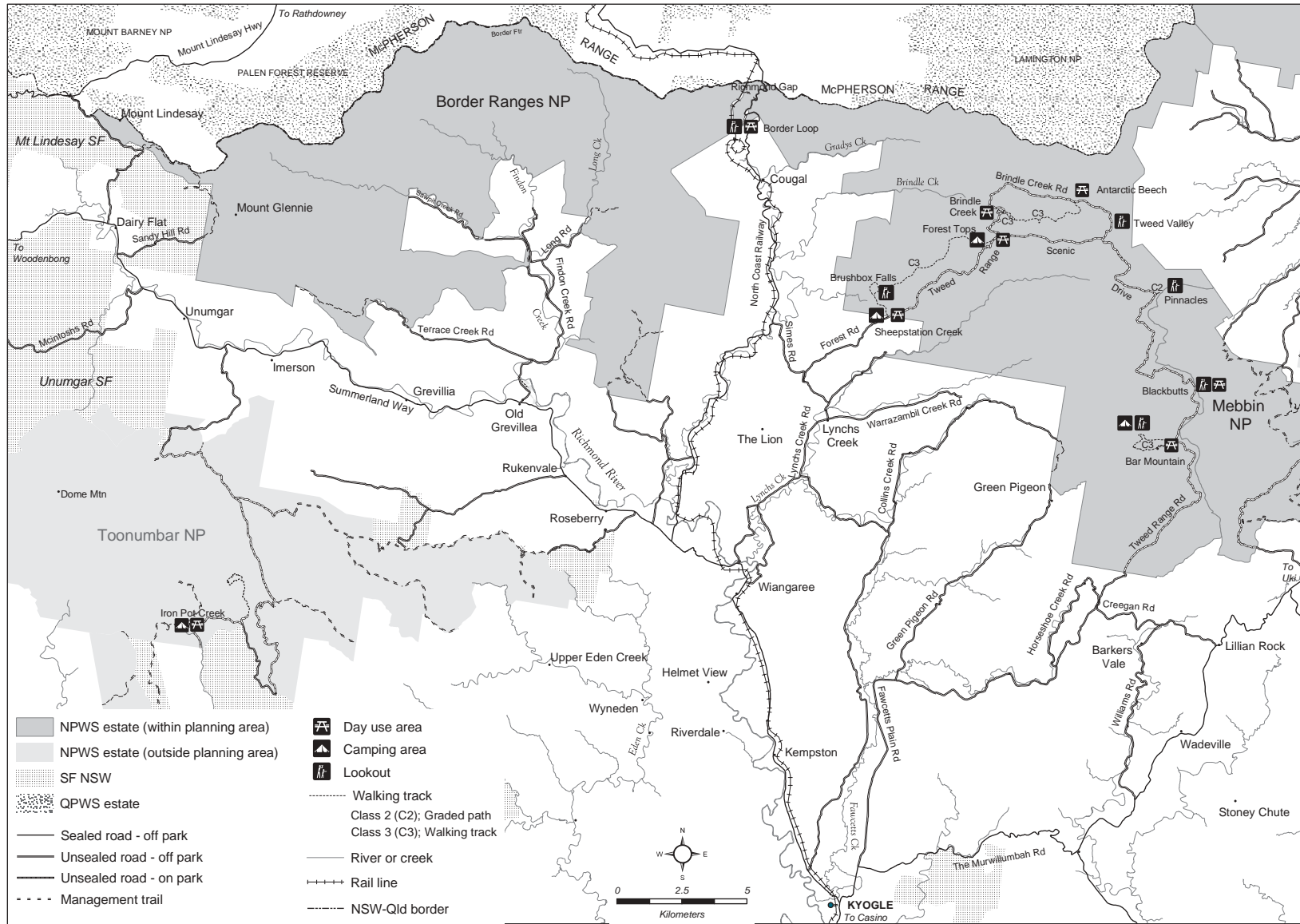
*Goonengerry NP*

- Old camp site at the picnic area, possibly associated with timber cutting whilst the land was owned by the Banana Growers Federation.

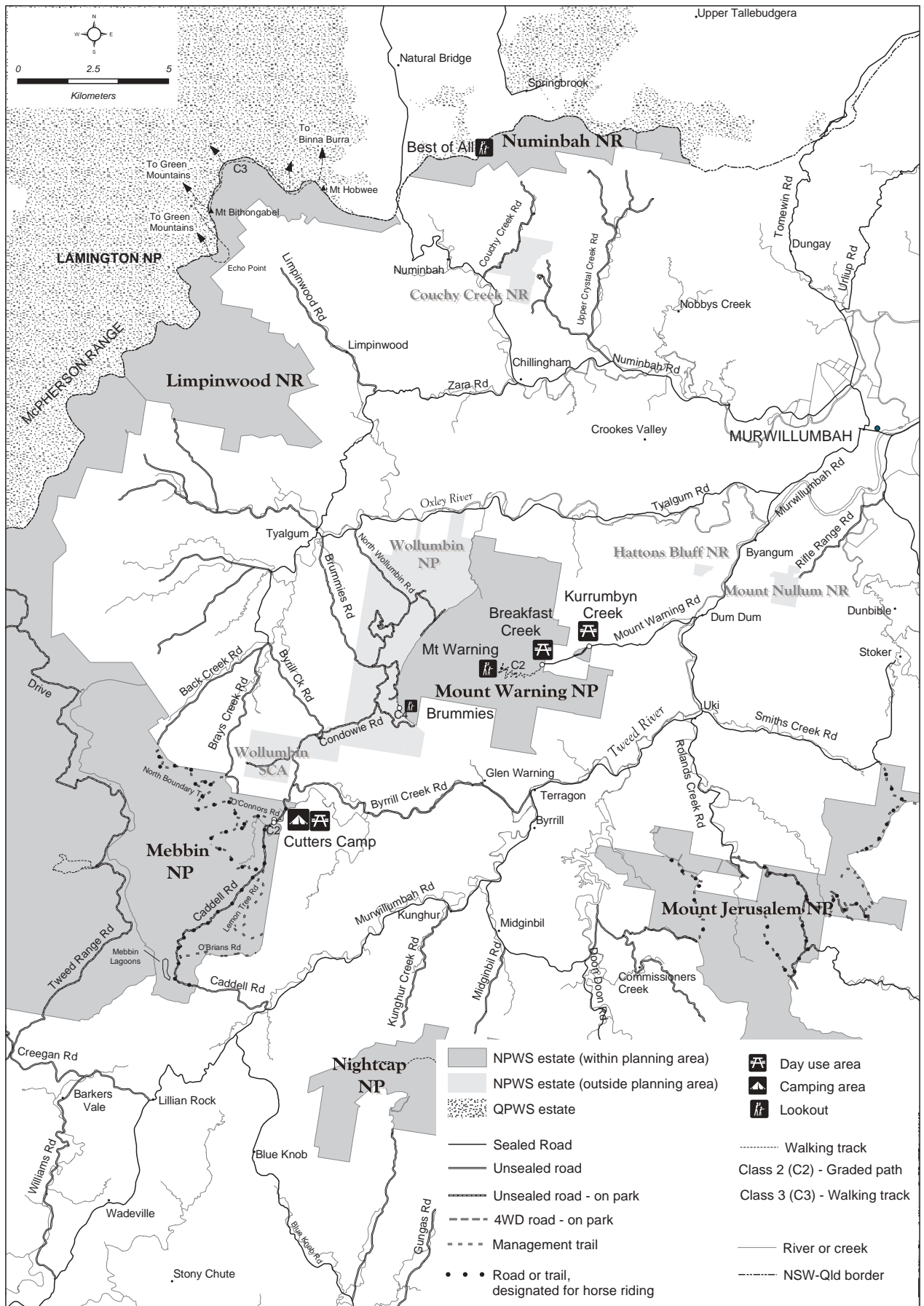
*General*

- Timber getting has left many durable artefacts from early European settlement such as clearings and remnants of timber mills and camps, old bullock tracks and logging tracks, bridges, fallen trees, tree stumps (some with spring board marks) and marker trees.

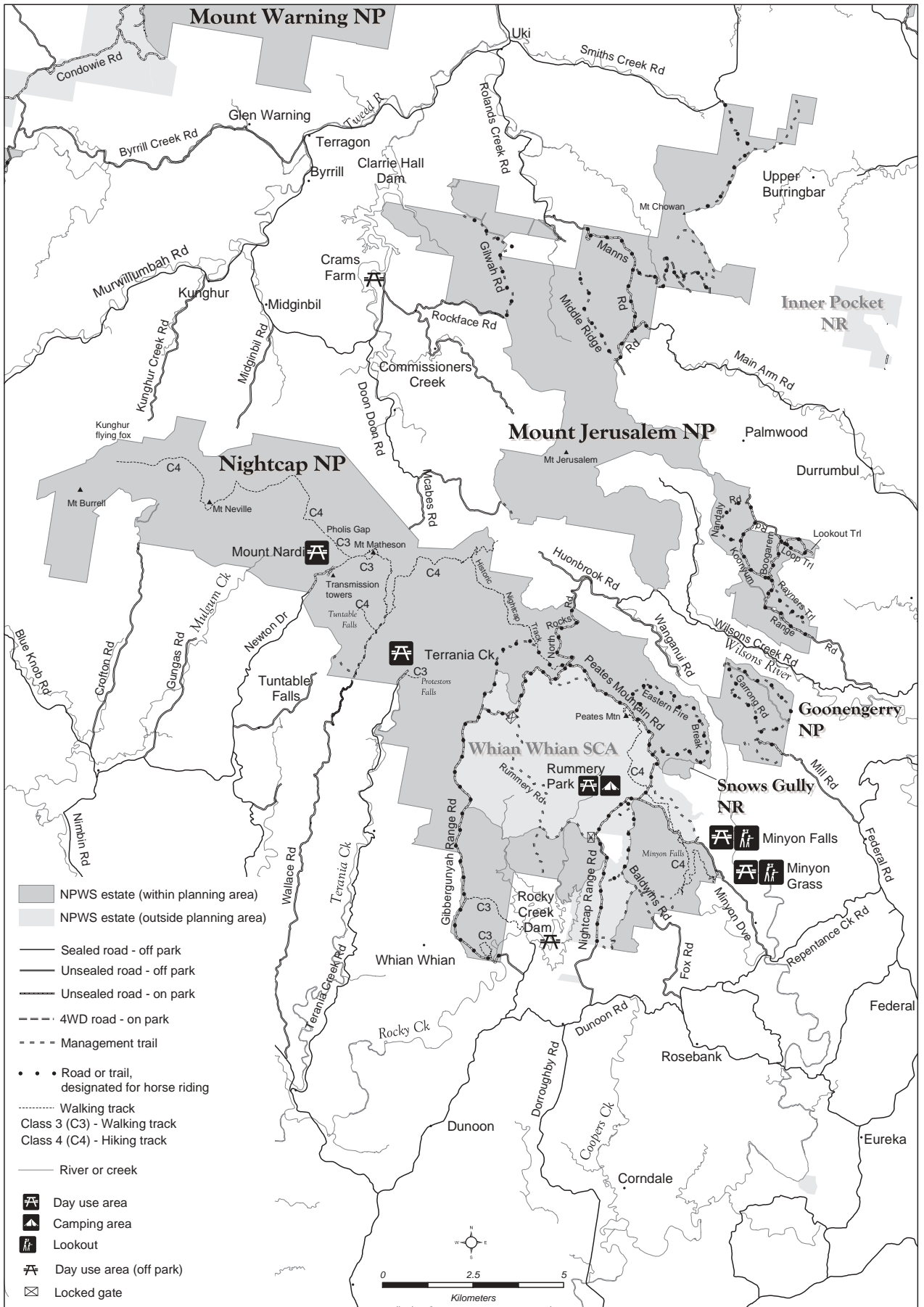




**Map 1. Border Ranges NP**



**Map 2. Mt Warning & Mebbin NPs and Limpinwood & Numinbah NRs.**



**Map 3. Nightcap, Mt Jerusalem & Goonengerry NPs and Snows Gully NR.**