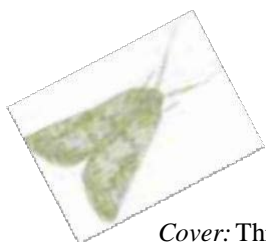


2006 Plan of Management  
**KOSCIUSZKO**  
NATIONAL PARK

As amended in 2010, 2014 and 2021





*Cover:* Thredbo Valley viewed from Porcupine Rocks, photograph by Barry Wrenford.

Drawing of a Bogong moth, by Rowena Evans, Cooma.

The Bogong moths are a significant feature of the high country, migrating every summer to congregate in their millions amongst the boulders. This annual migration attracted Aboriginal people to the mountains from near and distant places, where they roasted and feasted on the rich, nutty-flavoured moths. These gatherings were also important for conducting ceremonies, and maintaining political, trade and social links between different language groups. The moths remain an important seasonal food source for many animal species, including the diminutive mountain pygmy-possum.



Plan of Management  
**KOSCIUSZKO**

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**NATIONAL PARK**

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Part of the Australian Alps  
Cooperative Management Program



## Acknowledgments

The NSW National Parks and Wildlife Service (NPWS), part of the Department of Planning, Industry and Environment, is grateful to all the organisations and individuals who contributed to this plan of management particularly the NPWS Snowy Mountains and South West Slopes Advisory Committees, the Kosciuszko National Park Aboriginal Working Group, Aboriginal elders from Monaro Ngarigo, Wiradjuri, Wolgalu and Ngunnawal countries, the Community Forum, the Independent Scientific Committee and DPIE staff for their invaluable ideas, comments and suggestions.

NPWS would also like to acknowledge the significant contribution made by the late Rick Farley, Chair of the Community Forum, whose lasting legacy was to build consensus between competing interests and create common ground on conservation and Aboriginal issues.

**This plan of management was adopted by the Minister for the Environment in 2006. It has been amended in accordance with the NSW *National Parks and Wildlife Act 1974* on 26 May 2010 (geotechnical and water), 10 December 2010 (increase volunteer ski patrol beds), 10 February 2014 (horse riding in wilderness trial) and 14 December 2014 (cycling).**

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## Preliminary

### **1. Title**

This plan is known as the Kosciuszko National Park Plan of Management 2006.

### **2. Authority**

This plan is made under Part 5 of the *National Parks and Wildlife Act 1974*

### **3. Commencement**

This plan commences on 14 June 2006.

### **4. Cancellation of Kosciuszko National Park Plan of Management 1982**

This plan cancels the Kosciuszko National Park Plan of Management 1982 and associated amendments (1988, 1994, 1999).

### **5. Snowy Management Plan**

This plan incorporates the Snowy Management Plan set out in Schedule 2 of the Snowy Management Plan Procedures Agreement dated 3 June 2002.

Despite any other provision of the Kosciuszko National Park Plan of Management, the management objectives of the Kosciuszko National Park and all management units within Kosciuszko National Park include the objective of providing for the continuation of the works, activities or things proclaimed under section 40 of the *Snowy Hydro Corporatisation Act 1997* as in force at the date of the making of the Kosciuszko National Park Plan of Management.



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## Foreword

Kosciuszko National Park, which encompasses 673,542 hectares, is the largest national park in New South Wales and one of the most complex conservation reserves in Australia.

Kosciuszko National Park is part of the 1.6 million hectare chain of national parks and reserves across the Australian alps. The NSW Government is committed to working with the Victorian, ACT and Commonwealth governments to protect this area by cooperating in regional programs established through the Australian Alps Memorandum of Understanding.

The park contains the continent's highest mountains, unique glacial landscapes, and unusual assemblages of plants and animals, a number of which are found nowhere else. The park encompasses significant water catchments, the principal seasonally snow-covered region in Australia and extensive tracts of forest and woodland.

Many people have a strong attachment to Kosciuszko National Park. Local Aboriginal communities have deep cultural connections and many non-Aboriginal people have links to the land associated with previous and present uses. The park has a rich Aboriginal and European history and in some cases, the mountains, their people and their exploits have become part of Australian folklore and helped shape our national identity.

The park is perhaps best known as a recreational destination and is one of the most popular national parks in NSW. While the recreational activities undertaken in the park include vehicle-based sightseeing, bushwalking, fishing, canoeing, cycling and caving, the seasonal presence of snow is the principal drawcard for many visitors. In winter, the alpine resorts become the focus of visitor activities, though many people venture further afield to experience the expanses of undeveloped snow country.

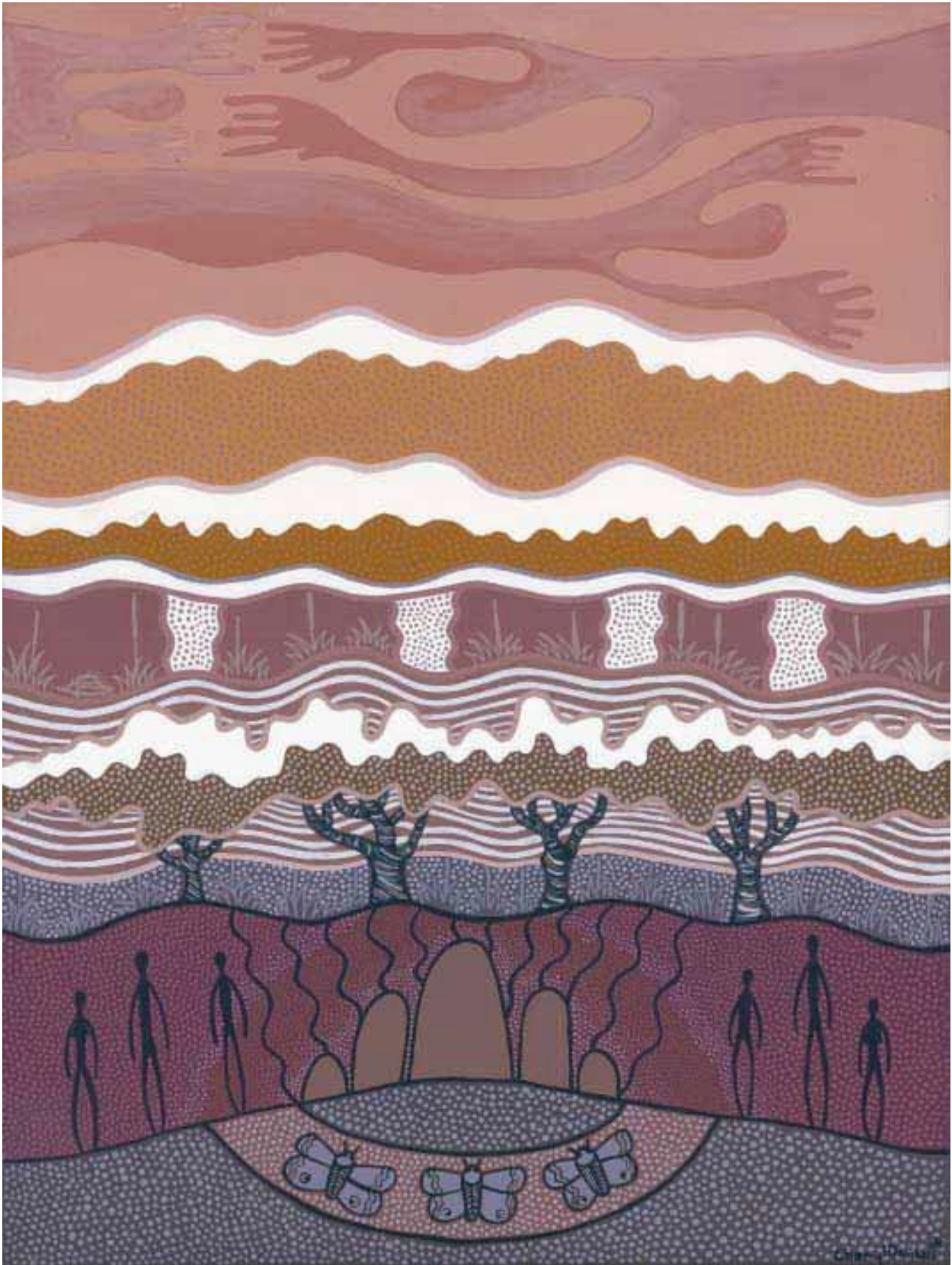
This plan of management has been prepared to provide a framework of objectives, principles and policies to guide the long-term management of the broad range of values contained in the park. It contains a suite of actions to be undertaken by the National Parks and Wildlife Service and other organisations to protect and conserve the values of the park.

The provisions of this plan are based upon an appreciation of international and national significance of many of the values of the park, and recognition that it is a very important place for many people. The plan is a product of extensive community involvement and scientific contribution.

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



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



### **Our country, our life, our spirit**

“This artwork is a depiction of the Snowy Mountains landscape and the spirit that looks over it. The land is our mother and is bringing the traditional people of the mountains back together to share our stories of family and culture. The river to our people is the life source of the land that keeps the cycle of life continuing, from the plants to the animals and the people. When travelling through the land the one thing that I feel in awe of is the giant boulders that spread across the landscape like monuments of a once strong and proud people who were the caretakers of this beautiful country.”

**Cheryl Davison, Monaro Ngarigo, 2005.**

## Yerribie<sup>1</sup>/Dhirrayn<sup>2</sup>

Our Mother binds us to our laws/lores.

This country is our Mother. We - the Aboriginal<sup>3</sup> People of the Mountains - belong to this country. She is our beginning, giving us our identity and culture. She brings us together, and takes us away.

The Mountains are very old and an ongoing life force that strengthens the ancestral link of our people. We have a living, spiritual connection with the mountains. We retain family stories and memories of the mountains, which makes them spiritually and culturally significant to us. Our traditional knowledge and cultural practices still exist and need to be maintained.

We recognise the diversity of Aboriginal clans and People of the Mountains - Wiradjuri, Wolgalu, Ngunnawal, Monaro Ngarigo. We recognise that Wiradjuri, Wolgalu and Ngunnawal are known by their totem, and acknowledge the matrilineal (mother's) bloodline of the Monaro Ngarigo people. We also acknowledge that many other clans have associations with the mountains. The mountains recognise the language names given by our people and naming of places strengthens our living culture.

Our people travelled from many directions over long distances to gather peacefully on the mountains for trade, ceremony, marriages, social events and to settle differences.

The cycle of life and many seasons influence the movement of our people through the mountains to the sea and the desert. The stars, clouds, sun and the moon guided people to and from places of importance. These travel routes continue to be used and spoken about today.

Living by natural cycles, the land provides our people with life, ceremony, family lore/law, and resources, such as tools, plant medicine, plant food, waters, fish, animals and insects e.g. the Bogong moth, while the melting of the snow gives life to the many creeks and rivers that flow out of the mountains. There are places of spiritual and physical significance to our people, and we are committed to working in partnership with others to protect, maintain and manage these places.

Forced separation from our land had a profound impact on our family life. European governance disrupted and destroyed our traditional ways. We were moved away from our country, and many people were herded onto missions. Aboriginal family lives were torn apart with the removal of children, and people were threatened with death in some instances if they tried to practice their traditional ways, especially lore, language and culture.

Let us not forget the past while we look forward to the future. Past and present practices make us strong and we are committed to making this a better country for all.

It is our vision for the future to cooperatively and collaboratively work with the National Parks and Wildlife Service to manage the park and maintain its spiritual, natural and cultural values. This will build a strong cultural and economic base for future generations of our people. The development and provision of employment, training and economic opportunities will deliver benefits to our people and communities. Our culture will be strengthened by access to our traditional lands and the development and participation of our people in cultural camps and cultural maintenance programs. By passing on knowledge to future generations of Aboriginal children, our culture will stay alive and strong.

Written by members of the Kosciuszko Aboriginal Working Group on behalf of Aboriginal people associated with the mountains.  
Kosciuszko Aboriginal Working Group

**Monaro Ngarigo** Sharon Anderson, John Dixon, Paul McLeod, Phillip McLeod, Carl Mundy, Doris Paton, Matthew Stewart, Iris White, Pat Davison (Community Forum representative)

**Wiradjuri & Wolgalu** Ramsay Freeman, Phyllis Freeman, Alice Williams, Mary Williams

**Ngunnawal** Carl Brown, Dorothy Dickson, Tina Williams

**Ngyimpa** Richard Kennedy (for Mungabareena Aboriginal Corporation, Albury)

### **Elders and others**

**Monaro Ngarigo** Aunty Deanna Davison, Aunty Margaret Dixon, Aunty Rachel Mullet, Aunty Rae Solomon-Stewart, Aunty Valmai Tungai, Colleen Dixon, Stan Mundy

**Wiradjuri & Wolgalu** Aunty Margaret Berg, Uncle Vince Bulger

**Ngunnawal** Louise Brown

1 Yerribie means going, moving in the Ngarigo language.

2 Dhirrayn means mountain in the Wiradjuri language.

3 Aboriginal is defined in this statement as Aboriginal people who are descendants of the traditional owners of this country.

## How to use this plan

The Kosciuszko National Park Plan of Management is divided into the following four parts:

### Part A Background (Chapters 1-3)

Part A of the plan contains background information about the national park and provides an overview of the various values, obligations and constraints that form the basis of the management strategies described in Part B. This part of the plan consists of three chapters:

1. **Introduction** – Background information about the Australian Alps region, the size, location and values of Kosciuszko National Park, and a brief history of the reservation of the park.
2. **Statement of Significance** – A summary of the significance of the values of the park.
3. **Management Framework** – General information on the various international, national, statewide, regional and local considerations that guide the management of the park including key legislation, strategies and policies. This is followed by descriptions of the purpose and scope of the plan of management and a schedule for reviewing the plan.

### Part B Management Strategies (Chapters 4-17)

Part B of the plan contains more detailed descriptions of the values, uses, threats and places in the park together with appropriate management strategies. These strategies consist of interrelated sets of management objectives, policies and actions. Part B of the plan contains the following 14 chapters:

4. **Key Management Directions** – Descriptions of the overarching principles that guide the management of the park together with lists of the key desired outcomes sought from management and key milestones to be achieved in given timeframes.
5. **Park Zoning** – A description of the zoning scheme for the park.
6. **Elements of the Landscape** – Management strategies for protecting the natural values of the park.
7. **People and the Landscape** – Management strategies for protecting the cultural values of the park.
8. **Recreation** – Management strategies for recreational activities and facilities.
9. **Areas of Exceptional Natural and Cultural Significance** – Detailed provisions concerning the management of three parts of the park that contain natural and cultural values of exceptional significance (Main Range, Yarrangobilly and Cooleman Plain areas).
10. **Areas of Exceptional Recreational Significance** – Detailed provisions concerning the management of four parts of the park that contain recreational values of exceptional significance (Charlotte Pass, Thredbo, Selwyn and Perisher Range alpine resorts).
11. **Restoration and Protection** – Strategies to manage soil erosion, introduced plants and animals, fire and environmental quality.
12. **Operations and Authorised Uses** – Environmental protection strategies governing the management of all operations and infrastructure in the park.
13. **Communication and Cooperation** – Management provisions for park interpretation, education, public relations and promotion and for fostering community cooperation and involvement in managing the park.

## How to use this plan continued

14. **Boundaries and Adjacent Areas** – Strategies to encourage sympathetic management of those areas adjacent or close to the park.
15. **Research** – Management requirements for the conduct of research in the park.
16. **Monitoring, Evaluation and Reporting** – Management requirements for monitoring, evaluation and reporting on the success or otherwise in achieving stated management objectives for the park.
17. **Plan Implementation** – Plan implementation priorities.

Most of the chapters contained in this part of the plan are subdivided into sections that are generally presented under the following headings:

- **Background** General information on the particular value, use, threat or place;
- **Significance** A summary of the significance of the particular park value or place;
- **Issues and Opportunities** A brief description of the key issues and opportunities associated with the management of the value, use, threat or place;
- **Management Objective** – A concise statement about what is to be achieved by management; and
- **Policies and Actions** – Sets of policies and actions designed to achieve the management objective.

### Part C Schedules

Part C consists of eleven schedules that provide detailed information in relation to matters addressed in Part B of the plan.

### Part D Appendices

Part D contains a glossary and a list of the sources for the quotations used throughout the plan.

## How to use this plan continued

In late 2001, the NSW National Parks and Wildlife Service (NPWS) commenced a detailed review of the 1982 Plan of Management for Kosciuszko National Park. A summary of the review process is provided below.

The Service established three formal advisory groups as part of the plan of management review process:

### **Independent Scientific Committee**

An Independent Scientific Committee was formed in June 2002 to provide the Service with advice on the values of the park. The committee brought together 18 prominent scientists and experts who were asked to provide advice on the significance, condition and threats to the natural, cultural, recreational, economic and social values of the park. An interim report of the committee's findings was released for public comment in December 2002 and a final report completed in March 2004.

### **Community Forum**

The Community Forum was also established in June 2002. The forum commenced with 21 members representing a broad range of interest groups and had 19 members on completion. The forum was independently chaired. It included representatives from local government, Aboriginal communities, the alpine resorts, Snowy Hydro Limited, recreational user groups, conservation groups, tourism authorities, local communities, NSW Farmers Association, Kosciuszko Huts Association and NPWS Regional Advisory Committees. Over the course of two years, the forum met 16 times to identify and discuss key management issues and solutions.

### **Aboriginal Working Group**

Formed in late 2002, the Aboriginal Working Group consisted of 15 members and elders representing some of the many Aboriginal communities that have connections with the mountains. The group met nine times during the period of plan preparation to discuss and resolve Aboriginal heritage issues pertinent to the plan.

### **Other Consultation**

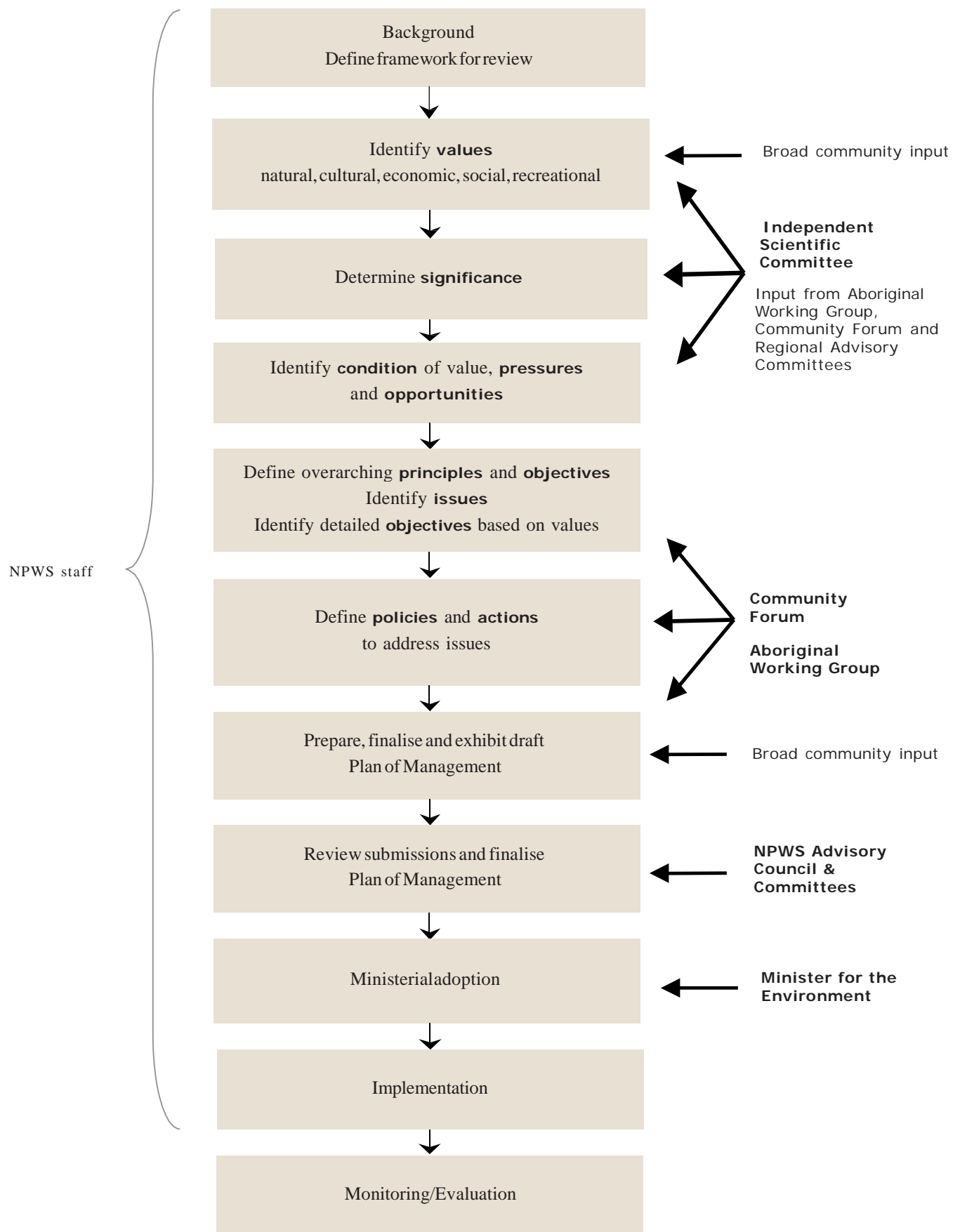
Guidance was also sought from members of the NPWS Snowy Mountains and South West Slopes Regional Advisory Committees.

Input from the general public was sought from the earliest possible opportunity in the planning process through a series of meetings and workshops held in communities bordering the park and further afield. Additional opportunities for community involvement were advertised through regular newsletters, media releases and articles, meetings with representatives of specific stakeholder groups, and online requests for community feedback.

The draft plan of management was placed on public exhibition for a period of 16 weeks between May and September 2004. The Service received and analysed a large number of written submissions, resulting in a number of changes to the plan. The amended plan was then reviewed by the local regional advisory committees and the NPWS Advisory Council before being forwarded to the Minister for the Environment for adoption.



## Planning process and consultation



## Summary of the Plan of Management

Kosciuszko National Park is a special place. It contains the highest mountains on the Australian continent, unique glacial landscapes, and unusual assemblages of plants and animals, a number of which are found nowhere else. It also encompasses significant water catchments, the principal seasonally snow-covered region in Australia, and extensive tracts of forest and woodland in the most densely populated corner of the nation. Layers of cultural remains, histories and meanings are superimposed on all of this country.

This plan of management has been prepared under the NSW *National Parks and Wildlife Act 1974* to provide a framework of objectives, principles and policies to guide the long-term management of the broad range of values contained in the park. This framework is translated into a suite of specific actions to be undertaken by the National Parks and Wildlife Service and other organisations during the life of this plan.

The provisions of the plan are based upon an appreciation of the international and national significance of many of the values of the park, and recognition that it is a very important place for many Australians. The plan is the product of lengthy and intensive community involvement and the contributions of a collection of eminent scientists and experts, who have undertaken the first comprehensive assessment of the condition of the park, and the pressures it faces, since it was established sixty years ago.

This plan is intended to build upon the legacy of those many individuals who have worked during the past six decades of conservation management to restore and maintain the condition of the park. To this end, the plan contains sets of policies and prescriptions aimed at improving the condition of the natural and cultural values of the park.

### Natural Values

The plan contains a set of actions concerning the management of the geodiversity (non-living components) and biodiversity (all living things) of the park. These include:

- Developing a geodiversity conservation strategy aimed at protecting all rocks, landforms and soils at risk of disturbance;
- Preparing and implementing strategies to improve the ecological condition of the rivers, streams and lakes of the park;
- Preparing and implementing specific management practices for all significant plant and animal species and communities;
- Evaluating the condition of native animal habitats in the park and adopting management practices aimed at achieving net gains in the extent and condition of habitats against surmised pre-European levels; and
- Evaluating programs to reintroduce locally extinct native animals into the park.

### Cultural Values

The plan recognises that natural and cultural values are often intertwined within the landscape and should be managed in a holistic way. It also acknowledges the roles, responsibilities and aspirations of Aboriginal people with connections to the mountains. Cultural heritage initiatives contained in the plan include establishing:

- Co-operative management agreements or similar protocols where supported by Aboriginal people;
- Cultural heritage management partnerships with appropriate individuals, families and communities;
- Cultural heritage precincts and corridors;
- A heritage interpretation site in a restored Kiandra Courthouse;
- A parkwide hut management strategy;
- Programs to record intangible cultural values, including 'Memories' and 'Traditional Knowledge' projects; and
- 'Naming' projects, including an investigation of Aboriginal names for places and the park.

## Summary of the Plan of Management continued

### Recreational Values

The plan acknowledges the important role that the park serves as a venue for outdoor recreational pursuits, and recognises that human contact with nature is vital for human health and wellbeing. As such, the plan recommends the provision of a wide range of recreational infrastructure, all of which is intended to optimise the quality of the visitor experiences available. New recreational initiatives include:

- Adopting a new zoning scheme that codifies appropriate recreational activities and facilities for different parts of the park aimed at protecting park values and providing a range of recreational settings;
- Creating a ‘signature’ appearance for NPWS visitor infrastructure that provides a ‘sense of place’;
- Developing clusters of linked short-duration recreational opportunities at sites along key roads and at popular destinations;
- Developing ‘grandstand’ sites on the edges of the Main Range;
- Preparing and implementing a disabled access and facilities strategy;
- Working in partnership with lessees and licensees to provide high quality facilities and services; and
- Improving interpretation and education facilities, materials and services.

The plan also addresses **key threats** to the values of the park as follows:

### Climate Change

- Maximising the protection of all alpine areas, all glacial and periglacial features and karst catchments;
- Participating in international climate change research programs;
- Undertaking research into climate manipulation, such as cloud seeding and artificial snowmaking; and
- Establishing a park climate care program.

### Introduced Plants and Animals

- Developing a parkwide restoration plan that integrates the management of weeds, feral animals, soil conservation and rehabilitation programs;
- Prohibiting the movement of stock through the park; and
- Attempting to restore the higher order predator-prey relationship.

### Recreational Use

- Managing recreational activities or sites within predetermined impact limits;
- Changing the management of some recreational activities so as to protect significant natural and cultural values;
- Controlling environmental impacts by introducing permit systems for some recreational uses;
- Capping bed numbers in resorts at existing levels and investigating other means of measuring environmental carrying capacity; and
- Prohibiting or limiting the use of campfires in some areas to protect park values.

### Management Operations

- Establishing environmental management systems to ensure accountability for all operations undertaken by the Service and all lessees and licensees;
- Creating leases and licences for all authorised operations and facilities in the park;
- Adopting and implementing systems to protect and enhance scenic quality;
- Providing guidelines for fire management, suppression and detection operations; and
- Initiating annual monitoring and public reporting on the environmental performance of all operations in the park and on the condition of park values.

## Summary of the Plan of Management continued

### Cooperation and Community Involvement

- Establishing and strengthening links with owners and managers of land beyond the park boundary to protect natural and cultural values, manage threats such as fire, weeds and feral animals, and manage recreation and tourism;
- Liaising with other park agencies through the Australian Alps cooperative management agreement;
- Exploring the concept of an expanded Biosphere Reserve across various land tenures; and
- Fostering community involvement in park management activities and decision-making.

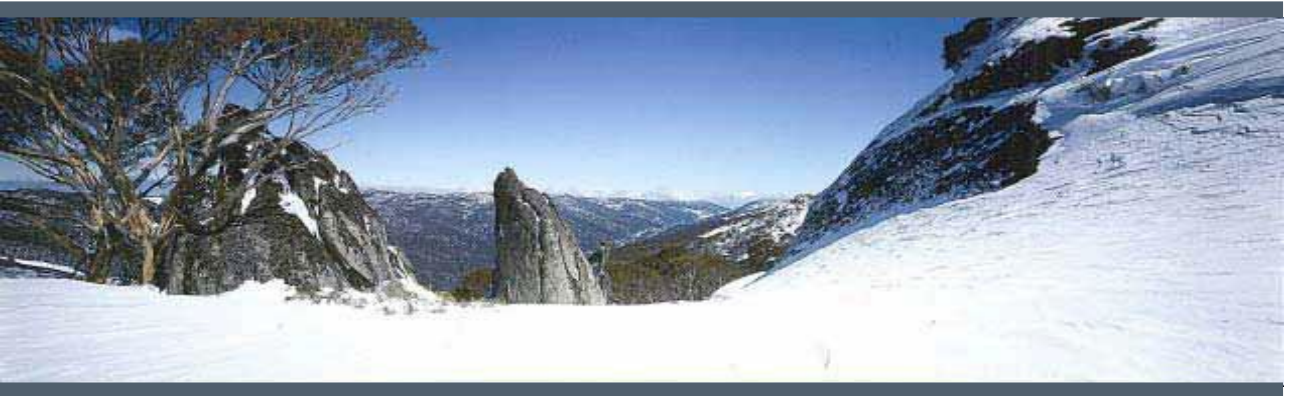
### Research

- Establishing a register of required research; and
- Investigating and pursuing options for establishing a national leadership role for the park in the conduct of alpine research.

### Monitoring, Evaluation and Reporting

- Evaluating, reviewing and reporting on the effectiveness of management policies and actions in protecting the park's values against key milestones on a regular basis.

## Part A Background





## CHAPTER 1 Introduction

*...the beautiful clearness of the weather had afforded me a view of the 'Snow Mountains', the existence of which had been doubted by many.*

*George Bennett 1834*



### 1.1 The Australian Alps

It is not surprising that many of the early European settlers in the colonial outpost of New South Wales doubted the existence of snow-covered mountains in such a land. Early expeditions into the vastness of the Australian continent revealed seemingly endless plains in which even the lowest of hills was likely to be noteworthy and bestowed with the title of 'mountain'.

By the time George Bennett sighted the 'Snow Mountains', the arc of ranges stretching around the south-eastern corner of the continent had already become known as the Australian Alps. Such a grand title conjures up images of glacial ice and rocky precipices. But as with the mountains, lakes and rivers of the interior, the Australian Alps bear very little resemblance to their European namesake.

The Australian Alps are quintessentially Australian. The rounded forms and gentle contours of the mountains are reassuringly understated, as are the muted colours of the ubiquitous eucalypts that clothe ridge and valley alike. Many of the animals found here are also familiar, from kangaroos, wallabies, echidnas and wombats, to kookaburras and rosellas, or the incessantly buzzing march flies. As elsewhere across the continent, heat, dust and smoke often combine to blur the horizon. Yet despite

all of these common traits, the Australian Alps are a distinctively unique part of the continent.

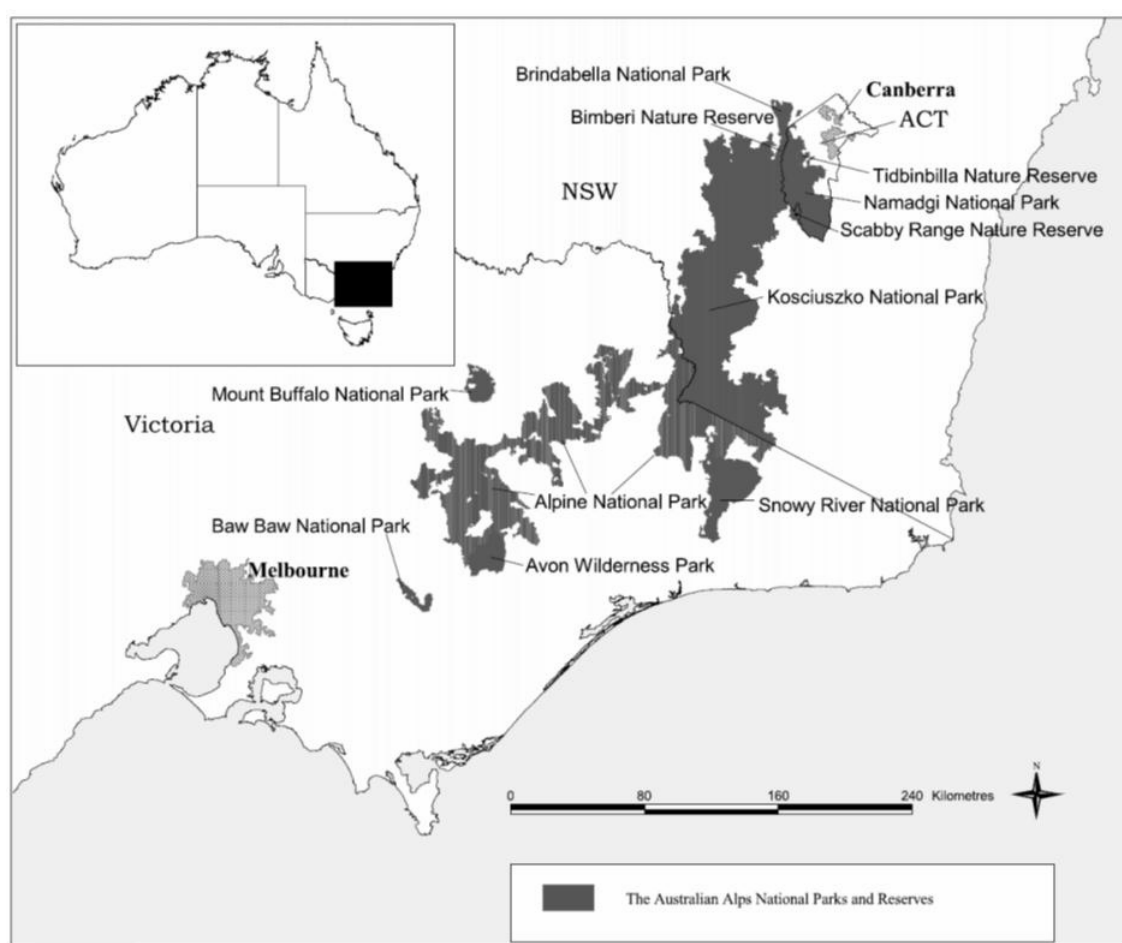
The seasonal presence of snow, more than anything else, sets the Australian Alps apart from most other places on mainland Australia. Beyond this, the Alps contain unusual assemblages of plants and animals, many of which are endemic to the mountains. The summer displays of alpine wildflowers, the glacial and periglacial landforms, the extensive subalpine grasslands and snow gum woodlands, and the swift flowing alpine streams are all rare, if not unique, features in Australia. While the human overlays across the landscapes also contain familiar themes and stories, they too display unique elements and adaptations to the climate and the terrain.

Today, large tracts of the 'Snow Mountains' are managed for conservation and recreation. A chain of protected areas stretches along the spine of the Australian Alps for a distance of some 340 km (Map 1). Together these reserves (referred to collectively as the Australian Alps national parks) protect in excess of 1.6 million ha of mountainous country within New South Wales (NSW), Victoria and the Australian Capital Territory. The largest and best-known of these reserves is Kosciuszko National Park.

### 1.2 Kosciuszko National Park

Kosciuszko National Park, which encompasses 673,542 ha, is the largest national park in NSW and one of the largest conservation reserves in Australia (Map 2). Located in the south-eastern corner of the Australian mainland between latitudes 35°30'S and 37°02'S and longitudes 148°10'E and 148°53'E, the park straddles the Great Dividing Range, here known as the Snowy Mountains.

The park contains the highest mountains in what is the flattest and lowest of continents. Although few of the mountains rise above 2000 m in elevation, they constitute the principal seasonally snow-covered region in Australia. They exhibit a suite of glacial landforms and possess an exceptional diversity of alpine plant communities and species which provide habitats for a number of rare and unusual animal species. Elsewhere, the park contains



Map 1 - The Australian Alps

significant karst systems, deep river valleys and innumerable frost hollows, and vegetation communities ranging from snow gum woodlands and subalpine grasslands, to extensive eucalypt forests, pockets of cool temperate rainforest, box woodlands and stands of native cypress pines.

All of these landscapes display signs, both temporary and indelible, of previous human occupation, use and modification. Aboriginal people, European explorers and surveyors, graziers, prospectors, miners, timber workers, scientists, construction workers, soil conservationists and recreationists have all left tangible evidence of their presence. This includes stone artefact scatters, campsites and ceremonial grounds, town and mine sites, huts and fencelines, networks of roads and tracks, power stations, dams, tunnels, aqueducts and ski resort infrastructure. Their endeavours have also created a rich legacy of stories, memories, experiences and meanings, strands of which have been recorded in literature, paintings, photographs, songs and place names. In some cases, the mountains, the people and their exploits have become part of Australian folklore and helped shape national identity.

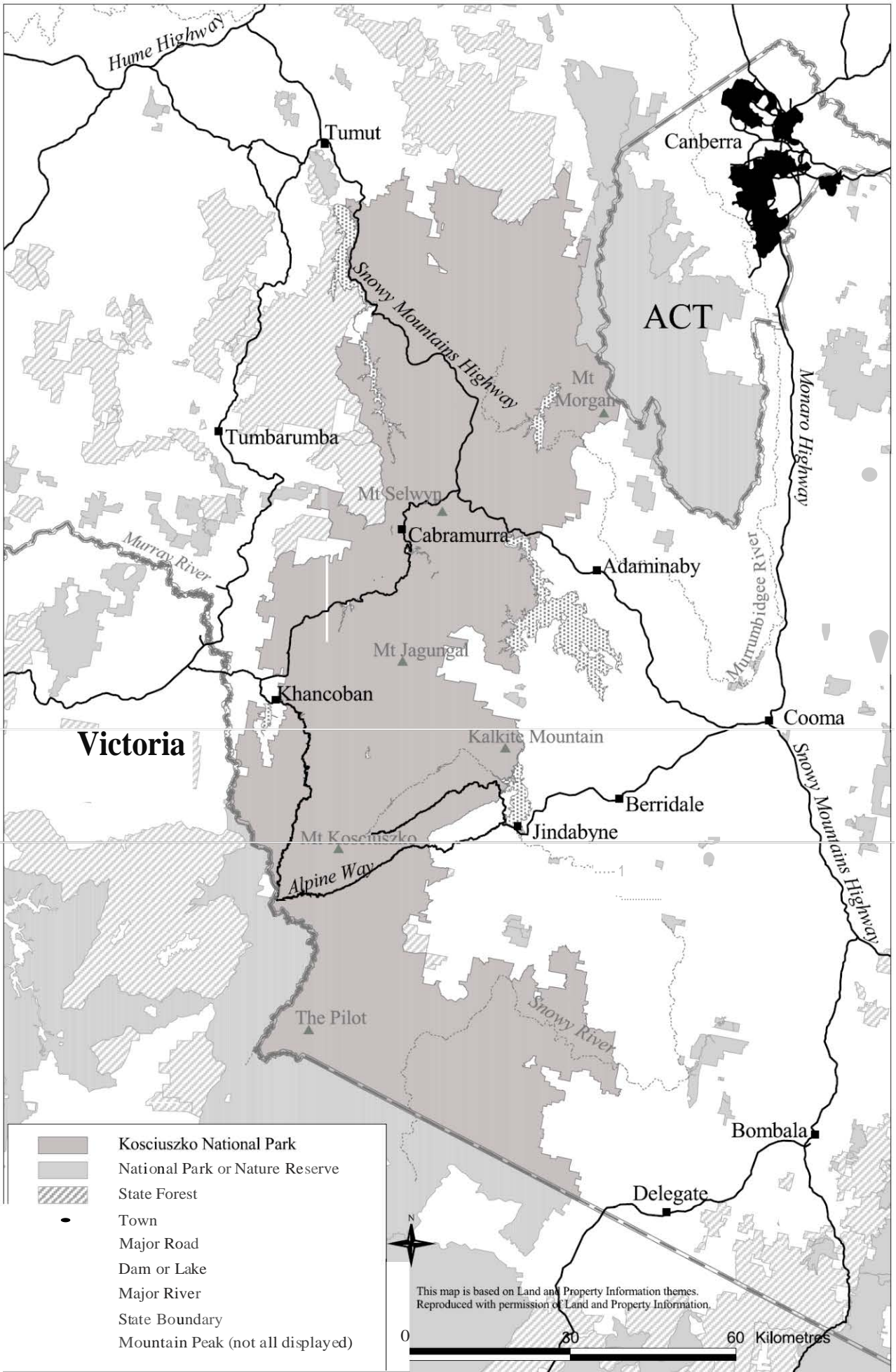
Today, the community ascribes numerous values to Kosciuszko National Park, ranging in scope from intrinsic,

ecological, scientific and aesthetic, to cultural, recreational, economic and utilitarian. Of these, the park is perhaps best known as a recreational destination.

Centrally located in the most densely populated part of Australia, Kosciuszko is one of the most popular national parks in NSW. While the recreational activities undertaken in the park include vehicle-based sightseeing, bushwalking, fishing, canoeing, horse riding, cycling and caving, the seasonal presence of snow is the principal drawcard for many visitors. In winter, the alpine resorts become the focus of visitor activities, though many people venture further afield to experience the expanses of undeveloped snow country that lie beyond the ski runs.

Although various features of the park are significant in a global or a national sense, the responses of many people to the place are deeply personal. For Aboriginal people and those with historical connections to former land uses, it may elicit emotions of loss and lament, sentimentality or pride. It may also evoke a sense of renewal and wellbeing, achievement and exhilaration, inspiration, connection or wonder. Whatever the attachment or motivation for visiting the mountains, many people cherish Kosciuszko National Park as a special place of great beauty, one that must be protected.





Map 2 - Kosciuszko National Park and surrounds

### 1.3 Park Reservation

*It was the right thing to do.*

*Premier William McKell commenting on the establishment of Kosciuszko State Park in 1944*

The history of the reservation of Kosciuszko National Park is a familiar one, in that it involves a succession of land uses that reflect changes in community values and attitudes. The disruption of Aboriginal society and its geographical displacement by Europeans represents a common story across the Australian continent. So too do the early land uses in the mountains – grazing, mining and logging. With a few exceptions, most mining and logging ventures were short-lived and sporadic, whereas grazing continued for more than a century. All would eventually be replaced by the dominant land uses of today – conservation, recreation and the harvesting of water.

For almost a century after the first Europeans ventured into the region in the 1820s, the Snowy Mountains were largely, though not exclusively, the preserve of Aboriginal people, graziers and miners, and people employed in various rural support industries.

The early 1900s saw an increase in scientific interest and tourism in the high country. It also marked the beginning of public consciousness and scrutiny of land use in the mountains. As a result, in 1906 an area of 160 km<sup>2</sup> centred on Mount Kosciuszko, and known as the Snowy Mountains National Chase, was reserved under the *Crown Lands Act 1861* for “public recreation and preservation of game”. Grazing of livestock was permitted to continue within the reserve. To the north, at the popular tourist destination of Yarrangobilly Caves, a series of small reserves were gazetted for public recreation between 1882 and 1931.

By the 1930s, the mountains were attracting a growing number of bushwalkers, many of whom recognised the recreational and nature conservation significance of the area. One such person, Myles Dunphy, who led the National Parks and Primitive Areas Council, proposed a large conservation reserve for the mountains in 1935. Known as the Snowy-Indi Primitive Area, the proposed reserve of 400 000 ha included land on both sides of the NSW/Victorian border.

At the same time as Dunphy and others were lobbying for a reserve, a decision in 1925 to construct the Hume Weir on the Murray River focused government attention on the impacts of mountain grazing on catchment stability. In

1932, some 40 years after the distinguished scientist Richard Helms had voiced his concerns, a forester with the Commonwealth Forestry Bureau named Baldur Byles reported on grazing damage in the mountains. His report was instrumental in the subsequent passage of the *Soil Conservation Act 1939* and the creation of the NSW Soil Conservation Service, which soon declared the Snowy Mountains an “area of erosion hazard”. Shortly afterwards, grazing was withdrawn from the immediate area around Mount Kosciuszko, and stricter snow lease controls were applied elsewhere.

The efforts to protect the mountains culminated in an announcement in September 1943 by the then Premier, William McKell, of the proposed establishment of Kosciuszko State Park. In April of the following year the *Kosciuszko State Park Act 1944* (KSP Act) was passed resulting in the creation of a reserve of 518 229 ha. McKell’s key motivations for creating the park were his interests in soil and water conservation and his ambitions for developing the hydro-electric potential of the mountains. Although further snow leases were withdrawn, grazing was allowed to continue in many parts of the park.

The KSP Act also established the Kosciuszko State Park Trust, charged with the “care, control and management” of the park. The trust was empowered to undertake works for “improvement, development and maintenance”, though its revenue was initially confined to that obtained from rentals received from grazing leases in the park, ensuring the continuation of this activity.

The coalition of interest groups calling for a complete end to grazing within the park was joined by a significant ally in 1949 with the creation of the Snowy Mountains Hydro-electric Authority. Concern for the stability of the alpine catchments resulted in the progressive withdrawal of additional snow leases during the 1940s and 1950s. In 1957 the Australian Academy of Science released an influential report that recommended the cessation of all high country grazing. In response, the government withdrew all snow leases above 1370 m in the following year. A government-commissioned investigation in 1969 finally resulted in the termination of grazing within the entire park in 1972, ending 135 years of recorded grazing history involving five generations of stockmen.

By this time, the Soil Conservation Service had already commenced an innovative and intensive program of rehabilitating eroded areas in the mountains which was to continue up until 1983.

The Snowy Mountains Hydro-electric Scheme included a proposal to construct dams and aqueducts on Spencers Creek, an alpine tributary of the Snowy River. This proposal galvanised opposition from scientists and conservationists. The concept of a “primitive area”, which had been incorporated into the KSP Act, was advocated by the Australian Academy of Science in 1961 for the Main Range as a means of preventing the Spencers Creek development. The Kosciusko State Park Trust accepted the proposal and the Kosciusko Primitive Area was declared in 1963. This declaration led to the abandonment of the Spencers Creek dam and aqueduct system, and prevented further ski-related development in the area.

The passage of the *National Parks and Wildlife Act* in 1967 (consolidated and amended in 1974) resulted in the transfer of management responsibilities from the

Kosciusko State Park Trust to the newly-created National Parks and Wildlife Service. This was accompanied by the renaming of Kosciusko State Park to Kosciusko National Park and later to Kosciuszko National Park. Adjustments to the park boundaries occurred in following years, the most significant of these being the excision of 34 000 ha from the northern end of the park for forestry purposes and the addition of 70 800 ha of the Byadbo lands in the south in 1970. Since then, there have been other additions to the park, the largest of these being the inclusion of a further 25 000 ha in 2001.

Kosciuszko National Park is reserved under the NSW *National Parks and Wildlife Act 1974*. Section 30E of the Act, as amended in 2001, states that the purpose of reserving land as a national park is to identify, protect and conserve areas containing outstanding or representative ecosystems, and natural or cultural features, landscapes or phenomena that provide opportunities for public appreciation, inspiration, sustainable visitor use and enjoyment.



## CHAPTER 2 Statement of Significance



**Significance** *n.* **1** (Implied or unstated) meaning... **2** Importance, consequence. **Significant** *a. & n.*  
**1** Having or conveying meaning... suggesting or implying deeper or unstated meaning...  
**2** Important, notable, consequential...

*The New Shorter Oxford English Dictionary 1993.*

### 2.1 Introduction

Kosciuszko National Park means different things to different people. It is a place for preserving plants and animals, natural phenomena and beauty, a place for cultural connection and a sense of history, for recreation, for science and for earning an income.

To most people, the significance of a place arises from a combination of many values. The values of Kosciuszko National Park are of two types: the core values of natural and cultural heritage, and the derived values (that is, social, recreational, tourism, utilitarian and economic values) that depend on these core values.

Some values are geographically-based and can be assigned to a particular place (e.g. a specific hut or Aboriginal site) or group of places (e.g. karst areas). Others are less place-specific, and may refer to a value held by the whole park (e.g. recreation opportunities).

Some values may be more intangible as in a 'sense of place' or belonging for individuals, families and communities.

There are overlapping or layered values in any part of Kosciuszko National Park and most places have natural as well as cultural values. Many values are interrelated or interdependent (e.g. soils and flora), and some are composites of other values (e.g. ecosystem services). Multiple values may build richness in some places, but they may also create conflicts as a decision to conserve one value may contribute to the degradation of another.

Management requires explicit information about each value and its significance so that important values can be conserved, and management effort can be targeted and prioritised.

### 2.2 Statement of Significance

#### International recognition

Two international environmental listings apply to Kosciuszko National Park. The entire park is listed as a biosphere reserve under the United Nations Educational, Scientific and Cultural Organization Man and the Biosphere Program. Blue Lake and environs on the Main Range is listed as a wetland of international importance under the Ramsar Convention.

The Australian Alps are recognised by the World Conservation Union as one of 167 world centres of biodiversity. At 11%, endemism in the Australian Alps is amongst the highest for any mountain area in the world.

#### Internationally significant values of the park

The park contains a number of features of international significance. These include:

- Soils that are of outstanding scientific value both individually (e.g. the alpine humus soils) and in association with each other, including fossil soils and features;
- The diversity and high degree of endemism of the alpine vegetation;

- The outstanding development of subalpine treeless flats and valleys;
- The radiation of one genus, *Eucalyptus*, to occupy such a wide variety of habitats;
- The high diversity of reptile species, especially above the snowline;
- Populations of thirteen vertebrate taxa that are listed as threatened or near-threatened by the World Conservation Union, including the endangered mountain pygmy-possum; and
- The historic and scientific values of certain research undertaken in the park.

### Significance of the park in its regional setting

Kosciuszko National Park is the central segment of the Australian Alps bioregion and contains all of the alpine endemic species found on the Australian mainland. It forms about half of the area of the Australian Alps national parks system and is less fragmented than the dissected landforms of the alpine regions of Victoria and the Australian Capital Territory. Because Kosciuszko National Park is large, and contiguous with other natural areas, full life cycles and gene flows can continue in a regional context.

At a continental scale, the park forms part of a north-south continuum of largely interconnected natural areas that persist along the Great Dividing Range of eastern Australia. Protection of this corridor presents a conservation opportunity of national significance.

The park provides ecosystem services that are nationally valuable, including the provision of clean water to south-eastern Australia.

The park is a significant economic entity in south-eastern Australia, being a key tourism drawcard especially during the snow season.

### Significance of the park as a protected area

Very few large natural areas such as Kosciuszko National Park remain in temperate Australia, where the natural dynamics of ecological processes can still occur without significant human intervention, and where there are active policies to protect those processes. Such areas are decreasing in number and extent over time, and so are becoming more precious.

Kosciuszko National Park conserves a largely intact record of past changes to soils and vegetation, and has a scientific research record extending over many years. Because of this, the park can play a major international and national role in measuring ecological responses to climate change. The large size of the park, its range of ecosystems, and its links with other natural areas give species and communities opportunities to adapt to new situations created by climate change.

In the most densely populated corner of the continent, Kosciuszko National Park provides a place where people can still find solitude and experience a sense of remoteness.

The park contains extant evidence of all phases of human occupation and use of the mountains.

### Significance of individual values of the park

The following statements represent summaries of the significance of individual values of the park as described throughout the plan of management and listed in Schedule 1.

#### *Natural Heritage*

##### *Rocks and Landforms*

The geological significance of the park encompasses features of the Lachlan Fold Belt of Ordovician to Lower Devonian rocks and basalt features from the Tertiary period. The great climatic changes of the Pleistocene are illustrated by the glacial and periglacial features of the park, while Holocene sediments and peats provide valuable information on vegetation changes associated with post-glacial warming.

Noteworthy landforms include the mile-high drop from the summits of the Main Range to the Geehi River and the suite of glacial and periglacial features on the Main Range.

### *Karst*

Collectively, the karst areas of the park are nationally significant in terms of their geomorphological and biological attributes. Individually, the Yarrangobilly and Cooleman Plain areas are especially significant for their aesthetic, geological, geomorphological, hydrological and zoological values.

### *Soils*

Kosciuszko National Park is the only part of south-eastern Australia that protects such a wide range of mountain soils still in relatively natural condition. These include outstanding examples of some of the Great Soil Groups and fossil soils and features, some of which are amongst the best examples of their kind in the world. The alpine and subalpine soils receive, store, process and supply a larger quantity of high quality water than any other group of soils on the continent.

### *Rivers and Lakes*

The alpine rivers of the park are significant in that they form only a very small percentage of all running waters in the country. The lakes of the Main Range are the highest in Australia and the only waterbodies on mainland Australia to have been formed by glaciation. They contain the freshest water on mainland Australia and are the only lakes on the mainland that have a lengthy seasonal ice cover.

### *Native Plants*

The alpine flora of the park is especially significant due to its diversity, high degree of endemism and its relationships with alpine vegetation elsewhere in the Southern Hemisphere. Other significant features of the vegetation include the upper slope and inverted treelines, the subalpine treeless flats and valleys, and the box-pine vegetation of the lower Snowy River and Byadbo areas.

### *Native Animals*

The fauna of the park is significant for its diversity, particularly in relation to reptiles at high altitude, and the number of cold-climate specialists of the alpine and subalpine areas. The park contains populations of nationally threatened species including the mountain pygmy-possum, which is the only marsupial restricted to the alpine/subalpine zone and the only one known to hibernate.

### *Wilderness*

The park contains nine separate wilderness areas which together account for approximately 50% of the total area of the park. These areas represent some of the least disturbed parts of the Australian Alps bioregion. They are places in which natural processes can continue with minimal human interference, places of refuge for rare and threatened plant and animal species, and repositories of genetic material. They also provide natural or natural-appearing settings in which people can undertake self-reliant recreational activities and find solitude, inspiration and a sense of renewal.

### *Ecosystem processes*

Ecosystem processes, including geological and geomorphological processes, that are significant at the landscape scale include: the natural fire regime, the highly variable hydrological regime; soil formation; and the extreme seasonal variations including processes of snow fall, accumulation and melt.

### *Aesthetic*

The aesthetic qualities of the park are exceptional, diverse and seasonally-changeable. The beauty of the place stems from a mix of topographic features including steep-sided river valleys, gently undulating hills and flat-floored valleys. These landscapes are clothed in a visual mosaic of different vegetation communities including the pastel cloak of eucalypt forests, straw-coloured grasslands and fields of alpine wildflowers. These same scenes take on a very different guise in winter when blanketed by snow.

The aesthetic appeal of the park extends to numerous huts and other infrastructure associated with earlier land uses, many of which display elements of vernacular architecture and design.

## *Cultural Heritage*

The cultural heritage of the park encompasses many places and themes. It contains a great number of heritage sites, structures and artefacts and innumerable intangible values, some of which are recognised and celebrated nationally, while others are significant to particular groups, communities, families or individuals.

### *Aboriginal*

The park is highly significant for descendants of Aboriginal people with traditional and historical links to the mountains. This is illustrated by their ongoing sense of belonging and identity, spiritual attachments, surviving traditional knowledge, and family stories and memories. Scientific evidence indicates a long history of Aboriginal use and occupation of the high country and demonstrates successful adaptations to extreme environmental conditions.

### *Pastoralism*

The pastoral theme associated with the park represents a high country variation characterised by transhumance, unique within Australia to the Australian Alps and the Central Plateau of Tasmania. The stories and traditions of high country pastoralism have been commemorated by famous artists and writers and hold an important place in the consciousness of many Australians, albeit often in a romanticised way.

### *Huts*

The collection of huts in the park probably comprises the largest group of different types and purposes of huts in any comparable area in Australia. Individually, and as a group in their landscape setting, they have considerable historic, social and aesthetic significance.

### *Mining*

The mining theme, as represented in the park, has national significance as part of a landmark period of Australian history. The complex of mine sites present, together with those in the Victorian Alps, illustrate adaptations to mining practices and living conditions necessitated by working in places seasonally covered by snow.

### *Water Harvesting*

The water harvesting theme in the park spans more than a century and ranges from the various dams and racelines constructed for early mining operations to the Snowy Mountains Hydro-electric Scheme, the largest engineering project ever undertaken in Australia. At the time of construction, the Scheme took on national symbolic importance as a tangible example of Australian achievement. Migration associated with the Scheme changed the ethnic composition of Australian society.

### *Scientific Research*

Scientific research work conducted in the park across a range of disciplines is regarded as highly significant. This encompasses pioneering research in anthropology, botany, ecology, geology, geomorphology, hydrology and meteorology.

### *Conservation*

The efforts that culminated in the creation of Kosciuszko National Park are of national significance in that they mark the rise of the conservation movement at a nationwide level.

### *Recreation*

Government-built infrastructure, such as Kosciuszko Road and the chalets at Charlotte Pass and Diggers Creek, reflect an early phase in mountain tourism. So too does the Yarrangobilly Caves complex. Kiandra has special significance as the first place in Australia where recreational skiing was undertaken, while elements of the existing skifields and ski resorts reflect important social and recreational movements.



### *Tourism and Recreation*

The nationally significant tourism and recreational values of Kosciuszko National Park are based upon the diverse range of natural and cultural settings present within which to undertake recreational activities. The mountainous landscapes and seasonal presence of snow in a relatively flat and dry continent are especially appealing attributes of the park. So too is the size and undeveloped nature of the park, which offers many opportunities for solitude and self-reliant and adventurous recreation.

Kosciuszko National Park contains the only snowfield tourism destinations in New South Wales, with the resorts of the Australian Alps offering unique recreational opportunities within the Australian context. The park contains the largest contiguous area of snow country in Australia. The economic benefits derived from snow-based recreation undertaken within the park are substantial.

Mt Kosciuszko, as the highest point on the Australian continent, has national significance as a unique recreational attraction for Australian and international visitors.

### *Utilitarian Functions*

Water harvested from the Snowy Mountains catchments contributes at least 7% to the annual value of irrigated production in the Murray – Darling Basin. The Basin contains some 70% of Australia's irrigated crops and pastures and accounts for about 40% of the total value of the nation's agricultural production.

The Snowy Mountains Hydro-electric Scheme can provide up to 11% of the total power requirements of the eastern part of mainland Australia at any one time. It represents an important peak load and emergency electricity supplier.

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## CHAPTER 3 Management Framework



*National Park...a natural area...designated to protect the ecological integrity of one or more ecosystems for present and future generations, exclude exploitation or occupation inimical to the purposes of designation of the area, and provide a foundation for spiritual, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.*

*The World Conservation Union (IUCN) 1994*

### 3.1 Introduction

A raft of international agreements, domestic legislation, and national, state and regional strategies underpin the management of Kosciuszko National Park. Each includes objectives, principles and policies that are often aligned, being concerned with the management of interrelated places, themes or values. Protection of many of these values requires a regional perspective, one which extends beyond the confines of the park itself to encompass a variety of different scales and land tenures. It also requires consideration of the often special relationships

that exist between individual communities and particular places. Many such connections are not formally documented or recognised within existing government strategies.

It is the role of this plan of management to give expression to all formal and informal obligations that relate to the park in a holistic way through a framework of linked policies and actions.

### 3.2 International Agreements

The following five international agreements influence the management of Kosciuszko National Park:

- The Man and Biosphere Program;
- The Convention on Wetlands (Ramsar Convention);
- The Japan-Australia migratory bird agreement (JAMBA);
- The China-Australia migratory bird agreement (CAMBA); and
- The Convention on Biological Diversity.

In 1977, the park was designated as a biosphere reserve by the Man and Biosphere Bureau of the United Nations Educational, Scientific and Cultural Organisation (UNESCO). Biosphere reserves are areas of terrestrial and coastal ecosystems managed to promote solutions that reconcile the conservation of biodiversity with its sustainable use. Each biosphere reserve is intended to fulfil three basic functions, which are complimentary and mutually reinforcing:

- A conservation function – to preserve genetic resources, species, ecosystems and landscapes;

- A development function – to foster sustainable economic and human development; and
- A logistical support function - to support demonstration projects, environmental education and training, and research and monitoring related to local, national and global issues of conservation and sustainable development.

Goals and strategies to guide the management of biosphere reserves have been prepared by UNESCO.

In 1996, an area of 320 ha centred on Blue Lake was designated as a Wetland of International Importance under the Ramsar Convention on Wetlands. The Convention is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The contracting parties to the Convention have adopted comprehensive guidelines for the management of listed wetlands.

The migratory bird agreements, JAMBA and CAMBA, are bilateral treaties concerned with the conservation of migratory bird species. Under these two agreements, the Australian government is obliged to protect listed species and take appropriate measures to preserve and enhance the environments they utilise. Latham's Snipe (*Gallinago hardwickii*) is a seasonal resident and is the only species in the park covered by these two agreements.

The Convention on Biological Diversity, to which Australia is a signatory, is a global agreement aimed at promoting the conservation of biodiversity, the sustainable use of its components, and the fair and equitable use of genetic resources. Various thematic plans and programmes developed under the Convention provide visions and guiding principles for the management of biodiversity in the park.

### 3.3 Legislation

The principal legislation governing the management of Kosciuszko National Park is the New South Wales (NSW) *National Parks and Wildlife Act 1974*. Under this Act, the Director General of the National Parks and Wildlife Service is responsible for the care, control and management of all national parks and various other categories of protected area. The primary responsibilities of the Service under this legislation are the protection and maintenance of natural and cultural values, and the fostering of public appreciation, understanding and enjoyment of those values.

Other key components of the NSW legislative framework that guide the management of the park include the:

- *Wilderness Act 1987* This Act provides the legislative basis for the identification, declaration, protection and management of wilderness areas, which together account for nearly 50% of the total area of the park. Under this Act, the management of these areas must comply with the following objectives:
  - 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 permit opportunities for solitude and appropriate self-reliant recreation;
- *Threatened Species Conservation Act 1995* This Act describes the responsibilities of the Service in protecting threatened species, communities and critical habitat in NSW. This legislation provides for the identification of threatened species, populations and communities and key threatening processes, and the preparation and implementation of priority action statements, recovery plans and threat abatement plans;
- *Environmental Planning and Assessment Act 1979* This legislation requires the assessment of the environmental impact of all proposed activities within the park. The level of assessment required is commensurate with the degree of potential impact and ranges from detailed "environmental impact statements" and "species impact statements" to more concise "reviews of environmental factors";
- *Environmental Planning and Assessment Act Amendment (Ski Resort Areas) Act 2001* This legislation creates a separate planning regime for the alpine resorts within the park. Under this regime:
  - The alpine resort areas remain part of the park and are managed according to the *National Parks and Wildlife Act 1974*;
  - Detailed planning for the alpine resort areas is governed by the Alpine Resorts Environmental Planning instrument governing development in the alpine resorts; and
  - The Department of Planning is responsible for planning and building control within the alpine resorts;
- *Snowy Hydro Corporatisation Act 1997* This Act covers all aspects of the management and operation of the Snowy Mountains Hydro-electric Scheme;
- *Protection of the Environment Operations Act 1997* Under this Act, all scheduled facilities and activities located within the park that contribute to air, water, soil or noise pollution are required to be licensed by the Department of Environment and Conservation. The Act also establishes the Department as the appropriate regulatory authority for environmental protection in

the park; and

- *Aboriginal Land Rights Act 1983* This Act creates Local Aboriginal Land Councils (LALC) and makes provision for LALCs to claim certain lands held under the *Crown Lands Act 1989*. One of the statutory roles of each LALC is to promote the protection of Aboriginal culture and the heritage of Aboriginal persons in its area.

Other important pieces of NSW legislation that direct aspects of park management include the *Rural Fires Act 1997* (fire), the *Noxious Weeds Act 1993* (introduced plants), the *Rural Lands Protection Act 1998* (introduced animals), the *Heritage Act 1977*, the *Water Management Act 2000*, *Fisheries Management Act 1994*, the *Protection of the Environment Administration Act 1991* and the *Public Health Act 1991*. The Roads and Traffic Authority is responsible for the management of some roads in the park as set out in the *Roads Act 1993* and the *Road Transport (Safety and Traffic Management) Act 1999*.

Australia's obligations concerning the international agreements described in Section 3.2 are translated within domestic legislation through the provisions of the Commonwealth *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* and Regulations 2000. In relation to Kosciuszko National Park, the Act and Regulations provide:

- Guidelines for the protection and management of biosphere reserves;
- Principles for managing wetlands of international importance; and
- Commonwealth assessment and approval requirements for actions that are likely to have significant impacts

on Ramsar wetlands, listed migratory species, nationally listed threatened species and ecological communities, and national heritage places.

The EPBC Act also provides for the identification and listing of threatened species and ecological communities, the preparation and implementation of recovery plans, the identification of key processes that threaten biodiversity, and the preparation of threat abatement plans where abatement is deemed to be feasible.

A National Heritage List has been established under the EPBC Act for natural, historic and indigenous places deemed to be of outstanding significance for the Australian nation. Listed places are protected under the Act. At the time of writing, a nomination for national listing was being prepared for the Australian Alps.

The *Native Title Act 1993* is a Commonwealth Act that recognises the rights and interest of Aboriginal and Torres Strait Islander people in land and waters according to their traditional laws and customs. Native title is recognised under law where that traditional connection to land and waters has been maintained and where government legislation has not removed it. Under Section 24JB of the Act, the Service is required to notify any registered native title claimant regarding the creation of a plan of management for a park (considered to be a future Act), and provide them with an opportunity to comment on the plan. The Service is also required to notify any registered native title claimant with regard to future Acts that have the potential to extinguish native title on the land.

(The statutory powers that may be exercised within the park by various public and private authorities are described in Chapter 12.)

### 3.4 Strategies and Policies

The legislative framework that governs the management of Kosciuszko National Park is applied through various national, cross-border and statewide strategies and policies. The most relevant national strategies, together with their state equivalents, include:

- The National Strategy for the Conservation of Australia's Biological Diversity/NSW Biodiversity Strategy;
- The National Biodiversity and Climate Change Action Plan;

- The National Heritage Trust Rivercare Program/NSW Wetlands Management Policy;
- The National Weeds Strategy and Program/NSW Weeds Strategy; and
- The National Tourism Strategy/NSW Tourism Strategy.

Important overarching principles and nationwide consistency are also provided by:

- The Burra Charter (The Australia ICOMOS Charter for Places of Cultural Significance); and

- The Australian Natural Heritage Charter (for the conservation of places of natural heritage significance).

The management of the park is also informed by the work of the World Commission on Protected Areas (part of the World Conservation Union or IUCN) and, within Australia, by guidelines formulated by the Committee on National Parks and Protected Area Management established under the Natural Resource Management Ministerial Council.

The management of the park must also be consistent with the statewide policies adopted by the Service. These are based upon legislative requirements, corporate directions, goals and strategies, and internationally accepted principles of park management.

The Australian Alps Cooperative Management Program provides a key management framework for the park. The program, which is based upon a memorandum of understanding initially signed in 1986 by the NSW,

Victorian, ACT and Commonwealth Ministers responsible for protected areas, aims to promote inter-governmental cooperative management to protect the nationally important values of the Australian Alps. This is achieved through:

- Consultation in the preparation and amendment of management plans to encourage complementary policies and management practices throughout the Australian Alps national parks;
- Consultation on resource data collection and research, and the exchange of information, ideas and expertise relevant to the protection of values;
- Cooperation in the enhancement and monitoring of public awareness programs;
- Cooperation in the provision of opportunities for public participation in park management; and
- The adoption, wherever possible, of complementary recreation management policies.

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### 3.5 Local Considerations

International agreements, domestic legislation, and national, statewide and regional strategies concerning the management of natural and cultural resources across the broader landscape are commonly expressed at a local level through the decision-making and activities of local governments and numerous community-based groups.

Parts of the local government areas of Bombala, Cooma-Monaro, Snowy River, Tumbarumba and Tumut overlie the park (Map 3). Major settlements located in these shires, and within close proximity to the park, include Adaminaby, Bombala, Cooma, Jindabyne, Khancoban, Talbingo, Tumbarumba and Tumut.

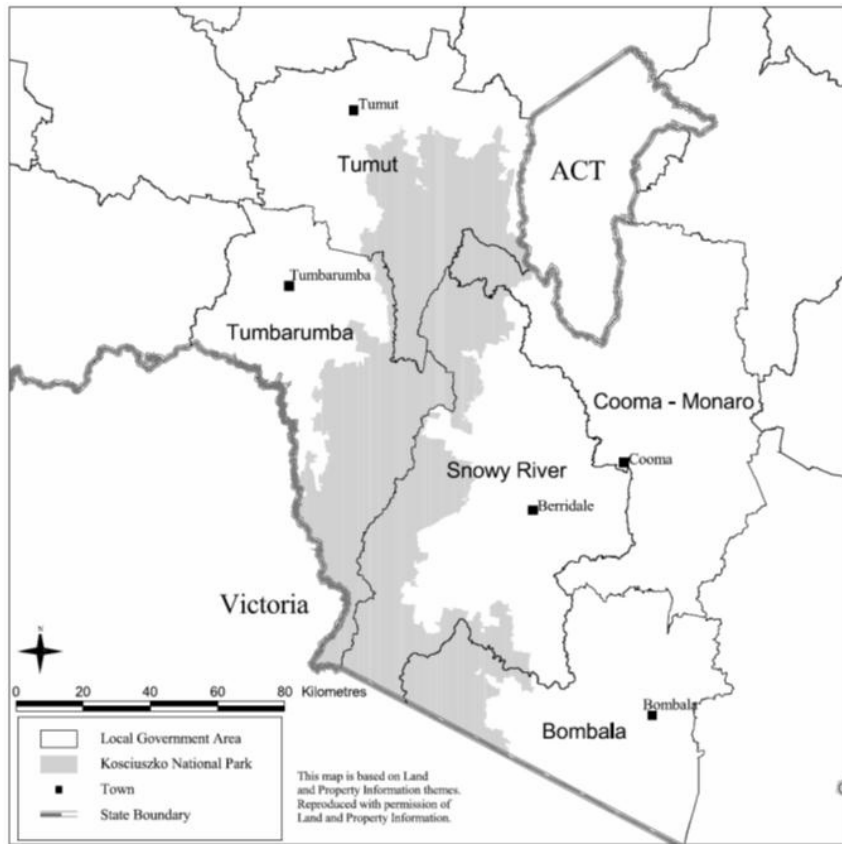
The park is also located within the jurisdiction of five local Aboriginal land councils - Bega, Brungle-Tumut, Eden, Merrimans and Wagonga (Map 4). In addition, there are other organisations representing Aboriginal people who hold cultural connections and historical associations with the country now included in the park. These groups are geographically dispersed across the Monaro, on the South and Far South Coasts of NSW, in the Murray and Murrumbidgee River basins, in Sydney, and in coastal and highland Victoria.

To varying degrees, the park is an important factor in the environmental, cultural, recreational and economic futures of all of these communities. This is reflected in the scrutiny placed upon the management of the park by many people within these communities and the involvement of numerous community members in regional land management and advisory groups, such as Rural Land Protection Boards, Catchment Management Authorities and Bushfire Committees and brigades.

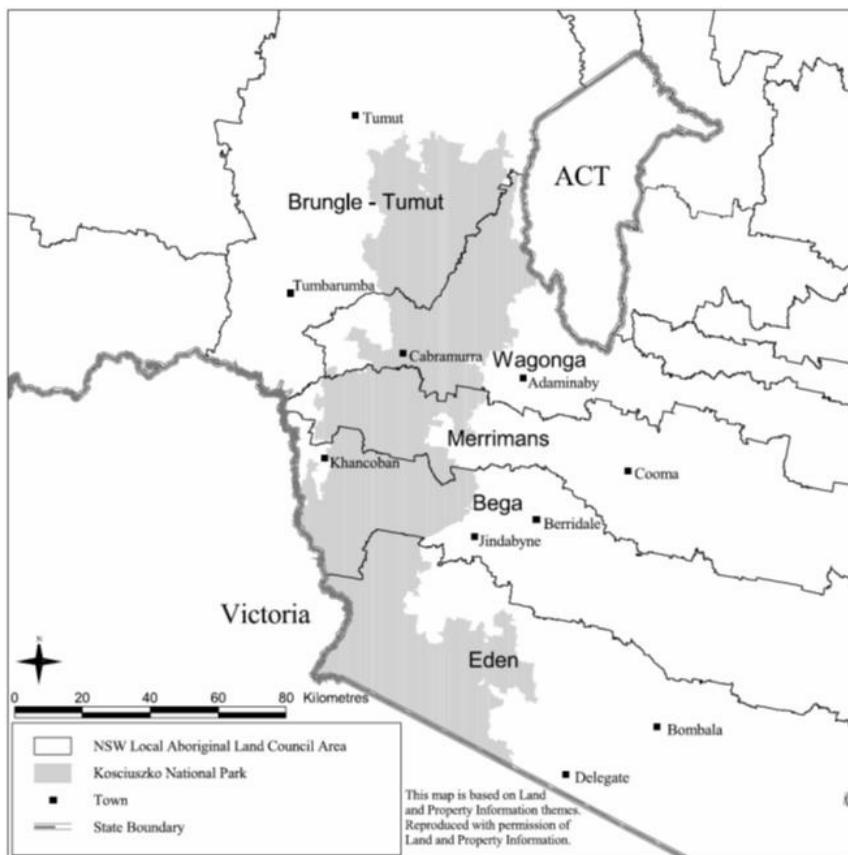
Conversely, effective management of the park is dependent on the interest, support and involvement of local communities. The mix of various land tenures surrounding the park, together with their differing management priorities and regimes, demands cooperative and community-wide approaches to many shared issues and opportunities including fire management, weed and feral animal control, the provision of recreational infrastructure and services, and tourism promotion.

An acknowledgement of the co-dependency that exists between park management and local people is fundamental to the long-term health of the park and neighbouring communities alike.

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Map 3 - Local Government Areas



Map 4 - NSW Local Aboriginal Land Council Boundaries

### 3.6 Purpose and Scope of the Plan of Management

A plan of management is a legal document that outlines how a reserve will be managed in the years ahead. This plan has been prepared in accordance with the requirements of Section 72 of the *National Parks and Wildlife Act 1974*. It is the third plan of management written for the park and replaces the 1982 plan (amended in 1988, 1994 and 1999) which in turn superseded the first plan completed in 1974.

The provisions of this plan are intended to fulfill all of the international, national, statewide, regional and local obligations that are relevant to the management of Kosciuszko National Park. The scope of the plan is dictated by Section 72AA of the Act which identifies the need for plans to address the following matters:

- The national park management principles (listed in Section 4.2);
- The conservation of biodiversity, including the maintenance of habitats, ecosystems and populations of threatened species;
- The protection and appreciation of objects, places and structures of cultural significance, and tracts of land;
- The protection of landscape values and scenic features;
- The protection of geological and geomorphological features;
- The protection of wilderness values and the management of wilderness areas;
- The maintenance of natural processes;
- The rehabilitation of landscapes and the reinstatement of natural processes;
- Fire management;
- The prohibition of any works adversely affecting the natural condition of special features of the park;
- The potential of the reserved land to be used by Aboriginal people for cultural purposes;
- The provision of opportunities for public understanding, enjoyment and appreciation of natural and cultural heritage values, including opportunities for sustainable visitor use;
- The adaptive reuse of buildings and structures;
- The appropriate and ecologically sustainable use of the reserved land, including use by lessees, licensees and occupiers of the land;
- The preservation of catchment values;
- The encouragement of appropriate research into natural and cultural features and processes, including threatening processes;
- The statutory natural resource management, land use management plans and land management practices of land surrounding or within a region of the reserved land;
- The regional, national and international context of the reserved land, the maintenance of any national and international significance of the reserved land and compliance with relevant national and international agreements;
- Benefits to local communities;
- The social and economic context of the reserve so as to ensure, for example, that the provision of visitor facilities is appropriate to the surrounding area or that pest species management programs are coordinated across different land tenures; and
- The protection and management of wild rivers.

Once a plan of management has been adopted by the NSW Minister for the Environment, no operation may be undertaken in the park except in accordance with the plan.

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### 3.7 Plan Review

A limited review of the plan of management will commence five years after it has been adopted in accordance with the provisions of Chapter 16. All subsidiary plans and strategies will also be reviewed on a five-yearly basis. These reviews will principally be confined to possible amendments associated with:

- Pertinent new research findings and information or the emergence of significant previously-unforeseen management issues; and

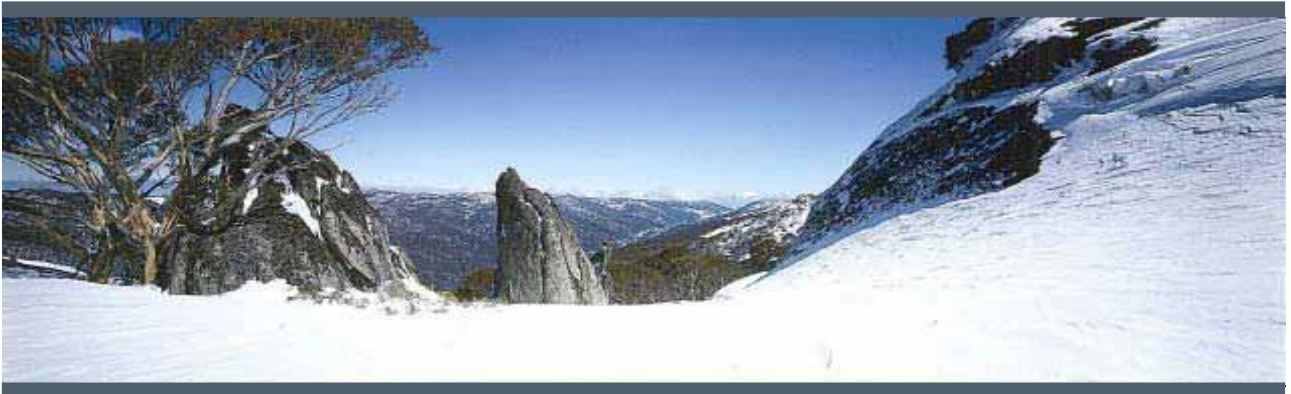
- The results of monitoring programs, where they indicate that the policies and actions contained in the plan are not achieving stated management objectives.

A full review of this plan will commence approximately ten years after adoption of the final plan by the NSW Minister for the Environment. This plan will remain in force until such time that a new plan is adopted.

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## Part B Management Strategies





## CHAPTER 4 Key Management Directions



*What we do now or fail to do now is making the future or wrecking it. We are deciding here and now whether or not Australian flora and fauna... are to possess a habitat in which they can survive.*

*Keith Hancock 1972*

### 4.1 Introduction

The various tiers of obligations and guidelines that constitute the management framework for Kosciuszko National Park can be expressed as a group of overarching management principles.

The key desired outcomes to be achieved during the life of this plan are based upon these principles and the significance of particular values and threats.

### 4.2 Overarching Principles

*Maintain or improve the condition of the natural and cultural values that together make the park a special place.*

The key principle that forms the foundation of this plan of management is the imperative of maintaining or improving the condition of the natural and cultural values that together make the park a special place. Directly or indirectly, most of the policies and actions in this plan of management are aimed at achieving this core principle. That said, the provisions of this plan are also based upon recognition that society ascribes a broad range of values and meanings to places like Kosciuszko National Park, and that human contact with nature is vital for human health and wellbeing.

This plan aims to accommodate many of the needs and aspirations that people have for the park, and facilitate their enjoyment and appreciation of its many divergent values - in sustainable ways. To this end, management is directed at maintaining most of the park in a largely unmodified state, and decisions concerning the management of human use are to be based upon objective criteria and the results of research rather than anecdotal evidence.

The management directions and programs contained in this plan are intended to build upon the various conservation initiatives established by previous plans of management for the park.

From a statutory perspective, the principles guiding the management of Kosciuszko National Park are those defined for national parks within the *National Parks and Wildlife Act 1974*. These are:

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

The management objectives, policies and actions contained in this plan are also based upon the following principles:

- **Existence Values** - recognition that living organisms, earth processes and ecosystems have value beyond the social, economic or cultural values held by humans;
  - **Inter-generational and Intra-generational Equity** - acceptance that each generation should ensure that the condition of the environment is maintained or enhanced for the benefit of future generations, and that decisions affecting current generations must be socially equitable;
  - **Limits of Knowledge and Understanding** - recognition that our incomplete knowledge and understanding of natural processes means that the full significance of a particular value or feature may not be realised;
  - **Acting with Precaution (precautionary principle)** - acceptance that where a proposal is likely to result in serious or irreversible environmental damage, the risk should be avoided or reduced. The lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
  - **Aboriginal People's Rights** - recognition that the park is within a landscape that gives identity to Aboriginal people who have traditional and historical connections to this land. Aboriginal people are recognised and respected as the original custodians of the lands, waters, animals and plants now within the park. Their living and spiritual connections with the land through traditional laws, customs and beliefs passed on from their ancestors are also recognised. The statutory role of Aboriginal land councils in the protection and management of Aboriginal heritage values is respected, as are the roles and responsibilities of other Aboriginal groups that have traditional and historical connections with country now in the park, including Monaro Ngarigo, Wiradjuri, Wolgalu, and Ngunnawal people;
  - **Levels of Significance** - recognition that a key consideration in management decision-making should be the levels of significance of particular values, attributes, places or activities;
  - **Interconnectedness of Values and Places** - acknowledgement of the interconnected nature of many of the values and attributes of the park, and that all landscapes and elements of landscapes have been influenced by human activities to some degree. This concept underlies the need to manage specific park values, and threatening processes such as weeds, fire and feral animals, across the broader landscape (beyond the park) and in integrated ways. It recognises that action to protect one value may impact upon the management of other values;
  - **Limits of Acceptable Disturbance** - acknowledgment that all human activities and uses of the park result in some degree of impact, and of the need to manage such disturbances within physical and social impact thresholds;
  - **Environmental Stewardship** - acceptance that responsibility for protecting the values of the park extends beyond the Service to include all lessees, licensees, relevant public and private authorities, visitors, neighbours and the general community;
  - **Community Involvement** - recognition that the public has a right to participate in the decision-making processes concerning the park. This principle incorporates an acknowledgement of the connections between individuals, families, communities and organisations, and particular places, activities and histories;
  - **Education** - recognition that the role of education may extend beyond enhancing people's understanding and appreciation of the values of the park to engendering a sense of personal responsibility for their protection. Park-based education may also be used to encourage the extension of personal stewardship to people's behaviour and attitudes in their everyday lives;
  - **Research** - acceptance of the key role of research in identifying and more fully understanding the complete suite of values represented in the park, their significance, and management requirements. Research and monitoring may provide the only objective means of knowing if, and to what extent, the numerous values of the park are being protected;
  - **Existing Rights** - recognition that various private rights and statutory powers may continue to be exercised in the park;
  - **Adaptive Management** - acceptance that park management policies and actions should be adjusted and refined based upon the results of research and monitoring and the outcomes of performance evaluation; and
  - **Transparency and Accountability** - recognition that the decision-making processes and the environmental performance of the Service, and that of all relevant lessees, licensees and other authorities, should be open to public scrutiny and accountability.
-

## 4.3 Key Desired Outcomes

Of the many objectives, policies and actions prescribed in this plan, priority will be given to achieving the following key desired outcomes:

### Climate change

- Research improves our understanding of the implications of climate change and manipulation on the values of the park, and guides the on-ground management of those species and communities considered to be at risk from climate change;
- Research in the park contributes to our understanding of climate change in a global context; and
- Operations and developments within the park are undertaken in ways that minimise the production of greenhouse gas emissions.

### Integrated management of values

- The interconnected nature of the park's values is recognised and reflected in on-ground management decisions and works, and in the interpretive material prepared for the park.

### Natural values

- Geodiversity and biodiversity values of the park are recognised and conserved;
- Significance and threat levels guide the management of all natural values;
- The high nature conservation values of the watercourses of the park are recognised and protected;
- Environmental quality enhancement programs restore ecological values and processes;
- Weed, feral animal, soil conservation and revegetation works are undertaken in an integrated manner;
- Wilderness values are protected and enhanced;
- Threats to the park's values are managed and reduced;
- Endangered, vulnerable and other significant plant and animal species and communities are afforded maximum protection; and
- Management achieves net gains in the extent and condition of habitats against surmised pre-European levels.

### Cultural values

- Significance and threat levels guide the management of all cultural landscapes, places and objects;
- Threatened places and objects of high significance are appropriately conserved;
- The linkages between heritage places are recognised

and these places are managed as heritage corridors and precincts;

- The individual and collective significance of huts is recognised and strategies to mitigate potential threats are adopted;
- The park is dual named and places in the park are named, where appropriate, with Aboriginal names;
- Intangible cultural values of the park are identified and documented through the 'Memories' project and 'Traditional Knowledge' project; and
- Employment strategies for Aboriginal people are developed and implemented.

### Recreational values

- Visitor experiences are enhanced through the availability of a greater variety of recreational opportunities and facilities across a broad spectrum of settings, particularly for visitors with special needs;
- Recreational activities and facilities are managed in accordance with the park zoning standards and conditions;
- All NPWS visitor facilities reflect a consistent 'signature' appearance and construction, showcasing excellence in environmental design, siting and performance;
- Visitor facilities are provided in an integrated manner along particular road corridors, within particular parts of the park, and across the entire park;
- Impacts associated with particular recreational activities and facilities are managed within disturbance thresholds; and
- Monitoring programs form an integral component of recreation management.

### Main Range

- Protection of the suite of internationally and nationally significant values of the area drives management decision-making;
- Improvements in the environmental condition of the Main Range are achieved by the application of special environmental protection provisions; and
- The key gateway sites on the edge of the Main Range are redeveloped to provide visitors with a number of high-quality, short-duration experiences that foster appreciation of the values of the area.

### Karst areas

- Karst catchments are primarily managed to protect karst features and processes; and

- Improvements in the environmental condition of the Yarrangobilly and Cooleman Plain karst catchments are achieved by the application of special environmental protection provisions.

### Alpine resorts

- The alpine resorts are recognised as being of state and regional significance and are managed according to the provisions of this plan and the Alpine Resorts Environmental Planning Instrument prepared by the Department of Planning.

### Scenic quality

- Scenic quality is protected and improved. In particular, viewfields from popular recreational destinations along the Main Range, within key public road corridors, and in wilderness areas are enhanced.

### Regional approach to management

- Formal protocols and community networks extend the protection of natural and cultural values and the management of threatening processes across the greater landscape and multiple land tenures;
- An expanded biosphere reserve serves as a model for integrating on and off-park management, and provides environmental, social, utilitarian and economic benefits across the region; and
- Cooperation between Australian Alps agencies improves park management.

### Environmental stewardship

- Environmental management systems are in place for all operations and activities conducted within the park;
- Environmental performance monitoring results

are compiled annually for all operations and demonstrate continuously improving environmental performance;

- The extent to which visitors, park neighbours, members of local communities and the general public take personal responsibility for protecting the values of the park is improved; and
- The degree to which the values of the park are being protected is objectively assessed through the use of key performance indicators.

### Education and interpretation

- Public education and interpretation facilities and services are integrated and assist people to understand, appreciate and protect the values of the park; and
- Public education and interpretation facilities and services foster environmentally aware attitudes.

### Community involvement

- A permanent management partnership with Aboriginal people is established and operating;
- Heritage management partnerships are established and operating with particular individuals, families and communities with associations with places in the park; and
- The community is actively involved with, and informed about, park management.

### Reporting

- Research and monitoring results are reviewed annually to assist with the implementation of the plan; and
- An assessment of the condition of the park occurs every five years. Management strategies are adjusted accordingly.

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## 4.4 Key Milestones

Certain actions are essential prerequisites to achieving the management principles listed in Section 4.2 including the overarching principle of *maintaining or improving the condition of the natural and cultural values that together make the park a special place*. Such actions serve as foundations for the orderly and strategic achievement of one or more of the key desired outcomes for park management (Section 4.3) and provide a framework for the implementation of a large number of related actions. Implementation of these key milestones sets in place structures and processes to govern many of

the efforts directed at protecting, rehabilitating and presenting the values of the park.

The following four key milestones are to be completed or substantially underway within two years of plan adoption:

- **Key Performance Indicators and Integrated Monitoring Program** (Chapter 16) - essential to measuring the condition and trends in condition of key attributes over time and the success or otherwise of park management actions in achieving stated objectives.

- **Integrated Evaluation System** (Chapter 16) - sets in place structures and processes to measure the effectiveness of park management in achieving key desired outcomes.
- **Park Restoration Plan** (Section 11.1) - provides an overarching framework for the integrated management of site rehabilitation and weed and feral animal control.
- **Environmental Management Systems** (Section 12.1) - provide frameworks for reducing impacts associated with all operations and infrastructure in the park.

The following eleven key milestones are to be completed or underway within five years of plan approval:

- **Visitor Data System** (Section 8.1) - provides visitor information that is essential for informed and sustainable management of recreation in the park.
- **Limits of Disturbance and Recreation Monitoring Programs** (Section 8.1) - set in place limits of acceptable impact for certain recreational activities and sites and the measurement of disturbances. Essential for informed and sustainable management of recreation in the park.
- **Geodiversity Conservation Strategy** (Section 6.3) - creates a framework for the protection of earth science features and processes that are susceptible to disturbance.
- **Karst Management Strategy** (Section 6.4) - provides an overarching framework for the protection of all karst areas and values.
- **Significant Plant and Animal Management Regimes** (Sections 6.7 and 6.8) - guide the management of those parts of the park containing significant plant and animal species and communities so as to optimise their protection.
- **Management Partnerships** (Chapter 7) - the Aboriginal Management Partnership provides the basis for Aboriginal involvement in park management.

Heritage Management Partnerships formalise local community involvement in heritage management.

- **Huts Conservation Strategy** (Chapter 7) - guide many facets of ongoing hut management in the park.
- **Visitor Facility Strategies** (Section 8.2) - the Visitor Facilities “Signature” Appearance, Site Design Principles and the Disabled Access and Facilities Strategy provide visitor facility design, construction and siting principles that are necessary prerequisites to the development of new visitor facilities and the redevelopment of existing facilities.
- **Main Range Recreation Management Strategies** (Section 9.1) - completion of the human waste management strategy, walking track management plan, site plans for Charlotte Pass and Crackenback Chairlift visitor nodes, Blue Lake climbing and abseiling impact assessment and the introduction of the visitor registration system provide a framework for sustainable visitor use of the Main Range.
- **Visual Management System** (Section 11.6) - creates a framework for reducing visual impacts associated with existing infrastructure and guiding the development of new facilities.
- **Park Communication Plan** (Section 13.1) - creates an overarching framework for the integrated provision of all communication materials, facilities and programs across the park. A prerequisite to the production of new communication products and the revamping of existing material and services.

The ordering of the key milestones is not an indication of priority. Information on plan implementation priorities is provided at Chapter 17 and Schedule 11.

Timely achievement of the key milestones does not negate the need to undertake ongoing park management tasks including agency-wide requirements.





## CHAPTER 5 Park Zoning



*Protected area managers face a strategic choice between concentrating or dispersing recreational use...zoning is the principal method used to deploy visitors...*

*Paul Eagles et. al. 2002*

### 5.1 Introduction

The zoning scheme for the park provides an overarching geographic framework of linked, but varying, management strategies. The purpose of the zoning scheme is to:

- Protect the values of the park;
- Optimise opportunities for a wide range of recreational activities and visitor experiences; and
- Minimise conflict between participants in different recreational activities, and between visitors, management operations and other authorised uses.

The zoning scheme is largely concerned with the appropriate levels and forms of recreation, and associated facilities and management requirements. This focus is based upon the ability of management to influence the types of visitor experiences that particular places are able to provide, and the potential for recreational pursuits to significantly affect other values over time.

#### Management Zones

The park is subdivided into the following five management zones (Map 6):

- **Wilderness Zone** - Wilderness areas declared under the *Wilderness Act 1987*;
- **Back Country Zone** - Those parts of the park without public road access and not within declared wilderness areas;
- **Minor Road Corridors** - Corridors along minor public roads and associated visitor developments;
- **Major Road Corridors** - Corridors along major sealed and unsealed public roads and associated visitor developments; and
- **Visitor Services Zone** - Alpine resorts, development nodes and operational centres.

The zones are intended to provide a spectrum of recreational settings within which visitors can appreciate and enjoy the park, from relatively remote and

undeveloped country to particular places where prominence is given to the provision of visitor infrastructure. Only rudimentary facilities, if any, are provided within the Wilderness Zone, which represents the least-developed end of the recreational spectrum. The types, levels of sophistication and capacity of recreational facilities, such as camping areas and walking tracks, increases progressively within the Back Country Zone, Minor and Major Road Corridors through to the Visitor Services Zone which represents those parts of the park most intensively developed for recreation. The corresponding visitor experiences available across the zones range from self-reliant, challenging and adventurous activities in which only a small number of people can be expected to be encountered, to recreational pursuits shared with relatively large numbers of other visitors.

The application of this zoning scheme is based upon the principle that, within existing knowledge levels, the best means of protecting the values of the park is to maintain most of the area free from further development. Coupled with this is recognition that most recreational activities will continue to be concentrated along or near the park's public road network and that high intensity recreational use will primarily remain confined to the alpine resorts and environs.

Many management objectives and policies are common across all zones. Furthermore, certain management functions and responsibilities will continue to be exercised across the entire park, though the conduct of such activities may be tailored to particular management zones. Such activities include those directed at the protection of park values, such as soil conservation works, pest species control, and fire protection and suppression operations.

Infrastructure associated with the operations of the Snowy Mountains Hydro-electric Scheme is included in

the zoning scheme. Despite any other provision of the Kosciuszko National Park Plan of Management, the management objectives of the Kosciuszko National Park and all management units within Kosciuszko National Park include the objective of providing for the continuation of the works, activities or things proclaimed under section 40 of the *Snowy Hydro Corporatisation Act 1997* and approved developments and activities related to the operations of the Scheme within Kosciuszko National Park.

(Table 1, at the end of this chapter, presents a summary of the purpose of each zone and associated management strategies.)

## Management Units

Superimposed over the management zones are seven management units that contain places and values of exceptional significance. Within these management units the prescriptions associated with the underlying management zone(s) apply, in addition to those described for the particular unit.

### *Areas of exceptional natural and cultural significance*

Three designated management units contain significant natural and cultural values that are highly vulnerable to

human-induced disturbance and require specific management measures to ensure their protection. These three units are described in Chapter 9 and cover:

- The alpine landscapes of the Main Range;
- The Yarrangobilly karst catchment; and
- The Cooleman Plain karst catchment.

### *Areas of exceptional recreational significance*

The remaining four management units are significant for their recreational values. These units are described in Chapter 10 and cover the resort areas of:

- Charlotte Pass;
- Thredbo;
- Selwyn; and
- Perisher Range.

Strategies concerning the management of specific recreational activities as they apply to each zone and unit are also provided in Chapter 8. Schedules 4 and 6 provide descriptions of appropriate activities and infrastructure standards as they apply to each zone.

Unless stated otherwise, the management objectives, policies and actions contained in this plan apply across the entire park.

## 5.2 Wilderness Zone

Wilderness can be defined as a large area of land which, together with its native plant and animal communities and the ecosystems of which they are a part, is in a substantially unmodified state or is capable of being restored to such a state. Wilderness areas are those lands that have been least modified by modern technological society; they represent the most intact and undisturbed expanses of our remaining natural landscapes. All such places on the Australian continent have been occupied and used by Aboriginal people for many thousands of years. Many such areas, including all of those within the park, have also been modified to some degree by past land uses and practices of non-Aboriginal people. Most of the wilderness areas in the park also contain infrastructure

that has been developed and maintained for contemporary management purposes.

Wilderness areas permit the natural processes of evolution to continue with minimal interference, ensuring that different environments are conserved as functioning natural systems. They may also protect already rare and threatened plant and animal species, provide clean air and water, act as storehouses of genetic material and provide benchmarks against which the impacts upon more modified landscapes can be measured. Wilderness can also provide places of inspiration, renewal and recreation far from the bustle and pressures of modern life.

The *Wilderness Act 1987* provides the legislative basis for the identification, protection and management of wilderness in New South Wales. The Wilderness Zone equates with the nine parts of the park declared as wilderness areas under the Act (as at April 2004).

These are:

- Bimberi (within the park) 18 200 ha
- Bogong Peaks 28 907 ha
- Bramina 10 900 ha

- Byadbo 80 986 ha
- Goobarragandra 32 686 ha
- Jagungal 67 432 ha
- Indi 11 636 ha
- Pilot 80 479 ha
- Western Fall 15 174 ha.

Together, these areas cover approximately 50% of the total area of the park.

### 5.2.1 Management Objective

*The Wilderness Zone will be managed as relatively unmodified country within which:*

- *The capacity for natural ecological processes and systems to evolve in the absence of significant human interference is preserved and enhanced; and*
- *Visitors can enjoy opportunities for solitude, isolation, inspiration and appropriate self-reliant recreation.*

## 5.3 Back Country Zone

The Back Country Zone covers those parts of the park that are without public vehicular access and not included in declared wilderness areas. Generally, these places are relatively remote and display high degrees of naturalness.

Parts of the park included in this zone contain vehicular trails that are closed to the public but retained for management purposes. Most of the infrastructure associated with the operation of the Snowy Mountains Hydro-electric Scheme is located within this zone.

The management focus for the Back Country Zone is to primarily retain these parts of the park free from further development and, where appropriate, restore their ecological integrity. Recreation management in this

zone differs from that within the Wilderness Zone in that motorised boating and various commercial recreational activities and special events are allowed in certain areas, cycling is permitted on most management trails, and the variety, standard and capacity of recreational facilities is greater. Horse riding is permitted in parts of the Back Country Zone, as well as some Wilderness areas as described in 8.7.1(2). Commercial activities related to horse riding in those areas are also permitted.

The Back Country Zone covers approximately 49% of the total area of the park.

### 5.3.1 Management Objective

*The Back Country Zone will be managed as relatively unmodified country within which:*

- *The capacity for natural ecological processes and systems to evolve in the absence of significant human interference is preserved and enhanced; and*
- *Suitably experienced and equipped visitors can enjoy challenging recreational experiences in natural or natural-appearing settings.*

## 5.4 Minor Road Corridors

This zone comprises the unsealed minor roads in the park that are open for public vehicular use, which range from two-lane roads to narrow trails in steep terrain. Many of these roads are suitable for conventional vehicles with only a few offering recreational driving opportunities in which four wheel drive is required. This zone incorporates approximately 370 km of roads and associated visitor facilities.

In order to incorporate adjacent roadside facilities, such as car parks and camping and picnic areas, the corridors in this zone generally extend 25 m either side of the centre-line of each road, except where:

- Adjacent statutory or lease boundaries impinge on these corridors (e.g. areas declared under the *Wilderness Act 1987*); or
- A variation in the corridor boundary is required for the incorporation of certain visitor nodes or facilities.

Most of the roads in this zone provide vehicular access for recreational activities (such as walking, cycling, horse riding, fishing and camping) where a natural or natural-appearing setting is an important part of the visitor experience. Some roads provide access to popular visitor destinations, such as the caves and karst landscapes at Blue Waterholes and historic homesteads and huts in the northern part of the park. All or parts of the following roads are included in the Minor Road Corridors:

- Behrs Flat Trail
- Black Jack Trail
- Blue Waterhole Trail<sup>1</sup>
- Boundary Road<sup>1</sup>
- Broken Cart Trail<sup>1</sup>
- Browns Fire Trail
- Bullock Hill Trail<sup>1</sup>
- East Bago Powerline Road
- Four Mile Hill Trail (to Eucumbene River)<sup>1</sup>
- Geehi Dam Road
- Geehi Walls Trail<sup>1</sup>
- Goobarragandra Powerline Road<sup>1</sup>
- Greg Greg Trail<sup>1</sup>
- Gungarlin Road (to Gungarlin Bridge)
- Island Bend Road
- Lobs Hole – Ravine Road
- Long Plain Road<sup>1</sup>
- Major Clews Trail<sup>1</sup>
- Manjar Road

- Maragle Powerline Road
- Merambego Trail
- Murrumbidgee Trail (off Long Plain Road)
- Pocket Saddle Road
- Port Phillip Trail<sup>1</sup>
- Quarry Trail
- Tantangara Dam Trail<sup>1</sup>
- Tom Groggin Road
- Tooma River Trail
- Tumut Ponds Trail
- Upper Murray Powerline Road
- Yarrangobilly Road (MR 324)<sup>2</sup>
- Yellow Bog Road<sup>1</sup>.

This zone also includes a number of relatively short unsealed access trails that branch off the roads listed or those included in the Major Road Corridors. These subsidiary trails typically provide access to visitor sites, such as camping or picnic areas, or destinations such as huts, rivers or lakeshores. Included in this category are all or part of the following access roads:

- Buddong Falls access
- Cooinbil Hut access<sup>1</sup>
- Cumberland Trail
- Currango Homestead access<sup>1</sup>
- Grassy Flat Trail<sup>1</sup>
- Jacks Lookout access
- Jacobs River access
- Jounama Creek access
- Long Plain Hut access<sup>1</sup>
- Murray Gates Trail<sup>1</sup>
- O'Hares access
- Old Camp access
- Olsens Lookout access
- Perkins Flat access
- Pinch River access
- Running Waters Creek access
- Talbingo Dam access
- Tantangara Dam access
- Wares Yard access.

The Service is responsible for all of the roads located within this zone with the exception of the Yarrangobilly Road (MR 324) which is managed by the Roads and Traffic Authority (RTA). The Link Road between Smiggin Holes and Guthega (also managed by the RTA) and all minor roads servicing the resort areas are included in the Visitor Services Zone.

<sup>1</sup> closed to the public during the winter season

<sup>2</sup> managed by NSW Roads and Traffic Authority

As with all other parts of the park, the protection of natural and cultural values remains an important management focus in this zone. Recreation management is directed at providing visitor experiences that sit between those afforded by the Wilderness and Back Country Zones and those available along the Major Road Corridors and in the Visitor Services Zone. Popular recreational activities that occur in this zone but not in the Wilderness or Back Country Zones include car-based camping, sightseeing and picnicking. A key aim is the provision of opportunities for “soft” adventures in which visitors can experience a sense of isolation, and appreciate the values of the park, in the presence of relatively small numbers of other people and in settings with low to moderate levels of on-site management presence.

To maintain a variety of vehicle-based opportunities in this zone, some roads or parts of roads are managed to give a more challenging vehicle touring experience in which few or no facilities are provided. Elsewhere, visitor infrastructure, including walking tracks, is generally of a more basic character and caters for smaller numbers of people than facilities provided along the Major Road Corridors. Conversely, visitor facilities are more developed and cater for larger numbers of people than those located in the Back Country Zone. A number of walking tracks and management trails commencing in this zone provide access to the Back Country and Wilderness Zones.

### 5.4.1 Management Objective

*The Minor Road Corridors will be managed so as to provide a range of day and overnight recreational opportunities in which people can enjoy and appreciate the values of the park while still experiencing a sense of isolation. To this end:*

- *Encounters with other visitors will vary in number from moderate to low depending on the road and season; and*
- *Infrastructure will be designed and sited so as to be unobtrusive.*

## 5.5 Major Road Corridors

This zone comprises the major public road network in the park and associated visitor facilities. It consists of the following ten roads, with a total length of 380 km, all of which are suitable for use by conventional vehicles (subject to snow conditions during winter):

- Alpine Way<sup>1</sup>
- Barry Way<sup>2</sup>
- Elliott Way
- Guthega Road
- Kings Cross Road
- Kosciuszko Road<sup>1</sup>
- Kiandra-Cabramurra Road
- Snowy Mountains Highway<sup>1</sup>
- Cabramurra-Khancoban Road
- Waste Point Road.

These roads are two-lane sealed thoroughfares with the exception of the Barry Way and sections of Guthega, Kings Cross and Waste Point Roads that remain unsealed.

The Major Road Corridors extend for a distance of 40 m either side of the centre-line of each road, except where:

- Adjacent statutory or lease boundaries impinge on these corridors (e.g. areas declared under the *Wilderness Act 1987* and alpine resort lease boundaries); or
- A variation in the corridor boundary is required for the incorporation of certain visitor nodes or facilities, and the foreshores of Blowering Dam and Three Mile Dam.

The corridors contain a number of relatively short unsealed branch roads. These subsidiary roads typically provide access to visitor sites, such as camping or picnic areas, or visitor destinations such as huts, rivers or lakeshores. Included in this category are all or part of the following access roads:

- Blowering Foreshore access
- Cotterills Cottage access
- Creel Bay access

<sup>1</sup> managed by the NSW Roads and Traffic Authority

<sup>2</sup> managed by Snowy River Shire Council

- Delaneys Hut site access
- Denison access
- Diggers Creek access
- Eucumbene River access
- Geehi Flats access
- Guthega Power Station access
- Halfway Trail (off Guthega Road)
- Humes Crossing Trail
- Log Bridge Creek Trail
- Log Bridge Peninsula Trail
- Ngarigo access
- Rocky Plain access
- Sawpit Creek access
- Scammels Lookout access
- Sponars Chalet access<sup>1</sup>
- Thredbo Diggings access
- Three Mile Dam access
- Yachting Point access
- Yolde access.

Most of the roads in this zone are cleared of snow during winter with the exception of the following sections of roads that are seasonally closed:

- Cabramurra-Khancoban Road;
- Kings Cross Road (between Mount Selwyn and Dry Dam); and
- Kosciuszko Road (between Perisher Valley and Spencers Creek or Charlotte Pass).

The Service is responsible for the management of the roads in this zone except for the Alpine Way, Kosciuszko Road and Snowy Mountains Highway, all of which are managed by the Roads and Traffic Authority, and subsidiary roads managed by lessees. Maintenance work on the Barry Way is undertaken by the Snowy River Shire Council.

Most visitors to the park utilise the roads within this zone. The roads traverse a cross-section of representative

landscapes and attendant vegetation types, each providing visitors with an appreciation of distinctive blends of natural and cultural features and a mix of recreational opportunities. For many people, their visit to the park is limited to travelling along one or more of these road corridors which have traditionally been the focus for activities such as vehicle-based camping, sightseeing, short walks and fishing. For such visitors, the quality of the recreational experiences available along these corridors is central to shaping their impressions of the park and its values.

The roads also provide access to key attractions in other zones such as the alpine resorts, Snowy Hydro Limited visitor centres and power stations, the Main Range, and trackheads for various destinations within the Back Country and Wilderness Zones. In addition, the Alpine Way, Barry Way, Snowy Mountains Highway, Elliott Way, Cabramurra-Khancoban Road and Kiandra-Cabramurra Road serve as general transportation routes through the park.

Protection of the numerous natural and cultural values contained within these corridors remains a focus of management. From a recreational perspective, the corridors are to be managed as showcases, in which scenic amenity is strictly protected and enhanced, and the visitor facilities provided are of a standard commensurate with the status of the park. The role of the corridors as key recreational destinations in their own right will be enhanced through the provision of additional and interconnected short-duration recreational and interpretive opportunities designed to optimise visitor enjoyment and appreciation of the values of the park. Visitor sites will be developed or upgraded as necessary to efficiently cater for relatively large numbers of people. The distinctive character of each road corridor, and the visitor experiences each affords, will be retained.

### **5.5.1 Management Objective**

*The Major Road Corridors will be managed so as to provide a range of high quality interlinked recreational facilities which:*

- *Principally cater for the needs and interests of vehicle-based visitors;*
- *Are designed and sited to cater for relatively large numbers of people;*
- *Provide opportunities for all visitors to gain first hand experience of a range of the values of the park; and*
- *Are of a consistently high standard designed to showcase the park and its values.*

<sup>1</sup> managed by lessee

## 5.6 Visitor Services Zone

The Visitor Services Zone includes discrete development and accommodation nodes and several operational centres.

The zone includes the four alpine resort management units (Charlotte Pass, Thredbo, Selwyn, Perisher Range) and associated sites which cover a total of 3046 ha of the park.

The alpine resorts are the key visitor destinations in the park during winter. For many people their visit to the park is limited to one or more of these sites and the major roads providing access to them. While most of these places contain significant natural and cultural values that require special management attention, they are also amongst the most highly modified and impacted parts of the park. Most of these sites contain concentrations of recreational facilities and services suitable for large numbers of visitors. The visitor experiences afforded by these parts of the park range from the exhilaration associated with snow activities, to socialising in restaurants and bars, to short and easy walks in largely unmodified settings. More often than not visitors to these places are likely to experience the park in the company of relatively large numbers of other people.

While minimising the impacts on natural and cultural values, most of these places will continue to cater for intensive recreational use and serve as important entry points to other parts of the park. Together with the major road corridors they will remain focal points for interpretation and education facilities and services.

The Department of Planning is responsible for planning and development control in the alpine resort areas, and preparation and implementation of the Alpine Resorts

Environmental Planning Instrument as described in Chapter 10.

In addition to the alpine resorts, another nine areas are included in this zone. Six of these sites are located in the southern end of the park along or near the major road corridors of the Alpine Way and Kosciuszko Road.

These are:

- Murray 1 visitor centre precinct (Snowy Hydro Limited lease area);
- Former Thredbo Ranger Station (visitor accommodation, campground and commercial services)<sup>1</sup>;
- Wilsons Valley (Ski Rider Motel – lease area);
- Diggers Creek (Sponars Chalet – lease area and associated facilities);
- Sawpit Creek precinct (campground, education centre and offices, landfill, car parks and former service station); and
- Waste Point precinct (staff and visitor accommodation and workshop).

The three remaining areas included in this zone are located in the northern end of the park along or adjacent to the major access corridors of the Snowy Mountains Highway, Elliott Way and Kings Cross Road. These are:

- Yarrangobilly Show Caves precinct;
- Blowering precinct; and
- Cabramurra township (Snowy Hydro Limited - lease area).

Of these, the Yarrangobilly Show Caves precinct caters for park visitors while Blowering is a Service depot and workshop facility. The role of the township of Cabramurra is principally to accommodate staff and contractors employed by Snowy Hydro Limited.

### 5.6.1 Management Objective

*The Visitor Services Zone will be managed as a set of discrete development nodes within which appropriate recreational infrastructure, visitor accommodation and park depots are concentrated. These facilities will:*

- *Provide interlinked opportunities for visitors to experience, enjoy and understand the values of the park. Within the alpine resorts these will primarily be directed at snow-based recreation; and*
- *Principally cater for the needs and interests of visitors seeking short-duration experiences in natural or natural-appearing settings in which they are likely to encounter relatively large numbers of other people.*

1

<sup>1</sup> The area of which is defined by the Thredbo River, No 2 Creek, the Alpine Way and a line parallel to the nearby cycling/pedestrian bridge over the river.

Table 1 Summary of Zoning Scheme

	Wilderness	Back Country	Minor Road Corridors	Major Road Corridors	Visitor Services
<b>Purpose</b>	Relatively unmodified country within which the capacity for natural ecological processes and systems to evolve in the absence of significant human interference is preserved and enhanced.	Relatively unmodified country within which the capacity for natural ecological processes and systems to evolve in the absence of significant human interference is preserved and enhanced.	A range of day and overnight recreational opportunities in which people can enjoy and appreciate the values of the park while still experiencing a sense of isolation.	A range of high quality interlinked recreational facilities which will principally cater for the needs and interests of vehicle-based visitors.	A set of development nodes within which appropriate recreational infrastructure and visitor accommodation is concentrated.
<b>Visitor Experience</b>	Visitors can enjoy opportunities for solitude, isolation, inspiration and appropriate self-reliant recreation.	Suitably experienced and equipped visitors can enjoy challenging recreational experiences in natural or natural-appearing settings.	Encounters with other visitors will vary in number from moderate to low depending on the road and season.	Facilities will be designed and sited to cater for relatively large numbers of people and provide opportunities for all visitors to gain first hand experience of a range of park values.	Safe short-duration experiences in natural or natural-appearing settings in which visitors are likely to encounter relatively large numbers of other people.
<b>Management Inputs and Operational Infrastructure</b>	Minimal - for protection of natural and cultural values and essential safety purposes.  No new facilities except for environmental protection purposes, monitoring and research.	Moderate - for protection of natural and cultural values and essential safety purposes as well as recreation.  Upgrading and replacement of facilities if in accordance with environmental purposes.	Moderate - for protection of natural and cultural values, recreation and tourism.  New facilities permitted to provide for appropriate recreational activities; protection of natural and cultural values; rehabilitation of disturbed sites; and essential monitoring and research.	Substantial - for protection of natural and cultural values, recreation and tourism.  New facilities permitted to provide for appropriate recreational activities; environmental protection of natural and cultural values; rehabilitation of disturbed sites; and essential monitoring and research.	Substantial - for protection of natural and cultural values, recreation and tourism.  New facilities permitted designed to cater for relatively large numbers of people; ongoing protection of natural and cultural values; rehabilitation of disturbed sites; and monitoring and research.



	Wilderness	Back Country	Minor Road Corridors	Major Road Corridors	Visitor Services
<b>Mechanised Access</b>	Limited to essential management, emergency, monitoring, research and special cultural access.	Limited to essential management, emergency, monitoring, research and special cultural access.	Permitted <sup>1</sup> subject to seasonal restrictions.  Oversnow vehicles for management purposes only.	Permitted <sup>1</sup> subject to seasonal restrictions.  Oversnow vehicles for management purposes only.	Permitted. <sup>1</sup>  Oversnow vehicles for management purposes only.
<b>Recreational Facilities</b>	<p>Campfires discouraged, fuels stoves encouraged.</p> <p>Limited trail markers or snowpoles.</p> <p>No special events.</p> <p>Commercial tour operators prohibited.</p> <p>Walking tracks will be managed as unmarked routes (see Schedule 6), with the exception of Hume &amp; Hovell Track, Australian Alps Walking Track, Clarkes Gorge &amp; Hannells Spur tracks.</p> <p>No new facilities (except toilets).</p> <p>Permitted recreational activities listed in Schedule 4.<sup>1</sup></p>	<p>Campfires discouraged, fuels stoves encouraged except Main Range Management Unit where campfires are prohibited.</p> <p>Retain existing trail markers or snowpoles where required. Restrict new poles and markers to routes where public safety is an issue.</p> <p>Additional poles and markers restricted.</p> <p>Special events permitted.</p> <p>Appropriate commercial recreational activities permitted.</p> <p>Walking tracks of various grades (see Schedule 6)</p> <p>New facilities restricted to toilets, interpretive and directional signs, walking tracks<sup>2</sup> and purpose-built cycling</p>	<p>Campfires permitted.<sup>1</sup></p> <p>Trail markers and snowpoles permitted in designated sites.</p> <p>Special events permitted.</p> <p>Appropriate commercial recreational activities permitted.</p> <p>New low key, small-scale recreational facilities permitted.<sup>1</sup></p> <p>Walking tracks of various grades (see Schedule 6).</p> <p>Permitted recreational activities listed in Schedule 4.<sup>1</sup></p>	<p>Campfires permitted in designated sites.<sup>1</sup></p> <p>Trail markers and snowpoles permitted.<sup>1</sup></p> <p>Special events permitted.<sup>1</sup></p> <p>Appropriate commercial recreational activities permitted.<sup>1</sup></p> <p>New recreational facilities permitted.<sup>1</sup></p> <p>Walking tracks of various grades including graded paths (see Schedule 6).</p> <p>Permitted recreational activities listed in Schedule 4.<sup>1</sup></p>	<p>Campfires permitted in designated sites but prohibited in alpine resorts.<sup>1</sup></p> <p>Trail markers and snowpoles permitted.<sup>1</sup></p> <p>Special events permitted.<sup>1</sup></p> <p>Appropriate commercial recreational activities permitted.<sup>1</sup></p> <p>New recreation facilities permitted.<sup>1</sup></p> <p>Walking tracks of various grades including graded paths and all access paths (see Schedule 6).</p> <p>Permitted recreational activities listed in Schedule 4.<sup>1</sup></p>

<sup>1</sup>Permitted means "Permitted in accordance with other sections of this plan".

It may be necessary to seek approval for some activities (refer Schedule 4)

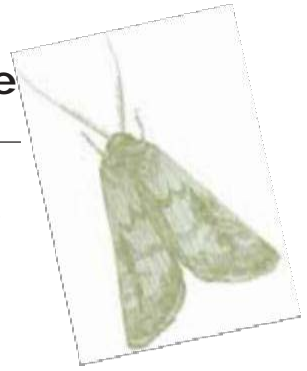
<sup>2</sup> – Consistent with Schedule 5.2 and the walking track management strategy



## CHAPTER 6 Elements of the Landscape

*When we try to pick out anything by itself, we find it hitched to everything else in the universe.*

*John Muir 1911*



### 6.1 Introduction

The landscapes of Kosciuszko National Park are the sum total of the interactions between the basic natural elements of water, air, rocks, soils, fire, plants and animals. Each of these living and non-living attributes have been altered by thousands of years of human habitation and use which have left behind layers of human artefacts, memories, stories and meanings.

The management of these attributes, and the values bestowed upon them, is a complex task and will not always be based upon a complete understanding of the implications of individual management decisions. A precautionary and adaptive approach to management is required - one that appreciates the interconnective and inseparable nature of the elements of the landscape.

### 6.2 Climate

*On October 6 the wind was howling piteously, and the scud was tearing across the sky at a furious rate. For several days the barometer had fallen steadily, and now there was no doubt that terrible weather was approaching.*

*M.I. Jensen 1898 Winter at Wragges Observatory*

#### Background

The meteorologist Clement Wragge established a weather observatory on the summit of Mount Kosciuszko in 1897. For almost five years, a handful of volunteers took weather readings around the clock, enduring the trials of winter in the coldest and one of the most exposed places on the continent. Perhaps fittingly, the primitive hut atop Kosciuszko that had housed the observers eventually succumbed to the weather, when it was struck by lightning and burnt to the ground.

The climate of the Australian Alps, in particular, the “terrible weather” of winter blizzards and the accompanying snowfalls, sets it apart from all other places on the Australian mainland. The mantle of snow that seasonally blankets up to 2500 km<sup>2</sup> of the park represents the most extensive snow-covered area in Australia. The arrival and subsequent disappearance of the snow govern the seasonal rhythms of all plant and animal life in the

high country. The movement of wildlife to and from lower forested areas, the life cycles of animals that remain above the snowline all year round, and the massed summer displays of alpine wildflowers, are all adaptations to the seasonal snow cover.

The snow has also governed the patterns of human use and visitation to the mountains. It continues to do so. The disappearance of the snow heralded the arrival of Aboriginal people in the high tops, just as it would later trigger the movement of livestock to mountain pastures from lowland properties. Today, it marks the predominant change in seasonal recreational patterns from skiing to bushwalking and other recreational activities, and attendant fluctuations in employment and economic activity in local towns. It also influences how and when management operations are undertaken.

The climate of the park is an important consideration in visitor safety management. Search and rescue operations are undertaken frequently to locate visitors, many of whom are inadequately prepared or equipped for the adverse weather conditions that can occur at any time of year.

Beyond the snow country, the range of elevation, topography and aspect is matched by a diversity of local climatic conditions that influence both the geodiversity (non-living components) and biodiversity (all living things) of the entire park.

The climate of the park is principally governed by the passage of weather systems that move from west to east across the southern part of the Australian continent. The north-south aligned Snowy Mountains cut across this moisture-laden westerly air stream, which brings rain and snow to the western escarpment and to a lesser degree the eastern slopes. In summer and autumn this westerly air stream weakens allowing the occasional intrusion of moist easterly air that brings rainfall predominantly to the eastern parts of the park. Dry electrical storms are a common occurrence during the summer months.

Precipitation in the park increases with elevation, with the exposed western crest of the Main Range receiving in excess of 2300 mm of rainfall per year. Snow, which contributes about 60% of the total precipitation received in the alpine area, typically covers the ground for 3-5 months of the year, with snowdrifts only occasionally persisting through summer. The western side of the park receives considerably higher rainfall than the east, which is a distinctive rain shadow region. This rainfall variation is reflected in the vegetation. While pockets of cool temperate rainforest persist in fire-protected gullies of the

western fall of the Main Range, the parched lower valley of the Snowy River supports woodland communities that exhibit affinities with inland and coastal vegetation.

By contrast, temperatures in the park decrease with altitude. In the alpine areas, mean monthly minimum temperatures may be below 0°C for six months of the year, while summer temperatures seldom rise above 25°C. Frost may occur at any time of the year, with some 250 frost-days per year being recorded at higher elevations. Elsewhere in the park summer temperatures may reach 30-35°C and occasionally exceed 40°C at lower elevations. The influence of temperature on the vegetation of the park is most strikingly illustrated by the treelines. These occur where summer warmth is insufficient to support the growth of trees, or where tree growth is inhibited by the ponding of cold air at night, as occurs in the frost hollows of the park.

The prevailing winds in winter are from the western quadrant, with easterly weather episodes usually confined to summer. At high and exposed locations wind speeds of 75 km/h are common, with winds occasionally exceeding 160 km/h. The influence of the wind on vegetation is especially pronounced on the most exposed ridges that support fieldmark communities characterised by scattered dwarf prostrate plants.

Although the extent of cloud cover generally increases with altitude, there are distinct seasonal variations. In winter the incidence of sunshine is lower on the western slopes and ridge tops than on the eastern slopes due to orographic cloud formation. This situation is reversed during summer when easterly air streams bring more cloud to the eastern parts of the park.

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## Issues and Opportunities

Climate change poses one of the greatest potential threats to the values of the park. Trends towards drier and hotter conditions are consistent with predicted changes associated with increased levels of greenhouse gases in the atmosphere. The three hottest decades in Australia during the last century were the 1970s, 1980s and 1990s, with 2005 being the hottest year on record.

In the Australian Alps, Bureau of Meteorology records suggest a warming of the alpine climate over the past decade. Scenarios for the alpine climate modelled by CSIRO for 2020, relative to 1990, are an increase in temperature of +0.2 to +1.0°C and a change in precipitation of +0.9 to -8.3%. Corresponding predictions for 2050 are that temperatures will have increased by comparison to 1990 by +0.6 to +2.9°C, with precipitation

levels changing by +2.3 to -24.0%. Such changes would result in a decrease in the area with at least 30 days of snow cover by 14-54% by 2020 and by 30-93% by 2050. The area with at least 60 days of snow cover would shrink by 18-60% by 2020 and by 38-96% by 2050. The worst-case scenario could see a contraction of the snow country to a small area centred on Mount Kosciuszko by 2050 and the possible loss of the alpine ecosystems.

The potential effects of climate change on the biota of the park, especially that of the alpine and subalpine areas, include:

- The possible extinction of plant and animal species whose climatic ranges are already limited to the mountain-tops. This includes the possible extinction of between 15 and 40 of the 200 alpine plant species within 70 years, with a further 49 species likely to experience reductions in their distributions. As little as a 1°C rise in temperature accompanied by the predicted changes to precipitation, would eliminate the bioclimatic range of the mountain pygmy-possum (*Burramysparvus*);
- The uphill migration of biota from lower elevations;
- Likely expansion in the distribution of several plant communities, such as tall alpine herbfield and windswept feldmark, at the expense of more climatically-sensitive communities such as short alpine herbfield and snowpatch feldmark;
- Changes in the size and composition of sod tussock grassland, fen, raised bog and valley bog communities as changes in precipitation, runoff and evaporation alter the competitive advantages of plant species belonging to these communities;
- Changes in the composition of the fauna of the alpine area due to changes in snow cover which protects some animals from winter cold while limiting opportunities for others;
- A likely increase in the diversity, abundance and distribution of weed species;
- Uphill extensions in the ranges of feral animal species;
- An increase in the incidence of wildfires; and
- Alterations to catchment hydrology and geomorphological processes.

Increased levels of UV-B radiation due to the depletion of the ozone layer of the upper atmosphere are especially severe at high altitude, middle to high latitude places in the Southern Hemisphere, such as Kosciuszko National Park. Although the impact of high levels of UV-B radiation on terrestrial and aquatic organisms and systems is poorly understood, they have been implicated in the rapid decline of several alpine and subalpine frog species in the park.

Climate change is already affecting the operations of key recreational and utility enterprises in the park. The increasing reliance of the alpine resorts on artificial snow-making is likely to continue. Despite this, reductions in the area and duration of natural snow cover due to greenhouse warming may eventually threaten the viability of skiing at lower elevations.

Proposals for broadscale manipulation of the climate of the park have periodically been made by Snowy Hydro Limited and its predecessor the Snowy Mountains Hydro-Electric Authority. A six-year trial to evaluate the effectiveness of cloud seeding over a target area of the Main Range commenced in 2004 following the passing of the *Snowy Mountains Cloud Seeding Trial Act 2004*. The trial involves the seeding of clouds with silver iodide to increase snowfalls over the mountain catchments in order to increase the electricity generating capacity of the Snowy Mountains Scheme. While cloud seeding may potentially ameliorate some of the ecological, recreational and economic impacts of climate change, it may also create adverse environmental effects. A key concern is a possible increase in silver levels in the water, soil and vegetation of the park. Silver is known to be one of the most toxic of all metals to aquatic and soil organisms and may also impact upon plant growth. Silver levels within the environment of the target area are being monitored as part of the cloud seeding trial.

The park provides an important opportunity to demonstrate to visitors the potential implications of climate change on the values of the park and mountain regions across the world, and the role of the community in helping to reduce greenhouse gas emissions.

### 6.2.1 Management Objective

*Knowledge and understanding of the implications of climate change on the values of the park are enhanced and inform management.*

#### **Policies and Actions**

1. Link climate change research and monitoring projects conducted in the park, wherever possible, with international and national programs.
2. Nominate the park for inclusion in the worldwide climate change monitoring program currently being developed by the United Nations Educational Scientific and Cultural Organization (UNESCO). This will be an extension to the Global Observation Research Initiative in Alpine Environments (GLORIA) project already established. This initiative involves the collection of standard sets of climatic measurements in a number of biosphere reserves located in mountainous regions around the world. In addition to assessing environmental impacts, the project also aims to determine how global change is affecting people and communities associated with mountain areas.
3. Develop a climate research program directed at measuring and understanding the implications of climate change on the values of the park in addition to research directly associated with the GLORIA project. The scope of this program will recognise the inter-relationships between the natural and cultural values of the park, and the importance of the area as a water catchment, tourism and recreational destination, and source of income and employment for local and regional communities. As such, it will be necessary to seek the involvement and possible financial and/or technical assistance of the:
  - Australian Greenhouse Office;
  - Australian Institute of Alpine Studies;
  - Australian Alps agencies;
  - Bureau of Meteorology;
  - Snowy Hydro Limited; and
  - Tourism operators.

This research program will become a component of the Register of Required Research (Schedule 10).

### 6.2.2 Management Objective

*The effects of all other threats on plant and animal species and communities under stress from climate change are minimised.*

#### **Policies and Actions**

1. The protection of species and communities considered to be under threat from climate change will receive high priority in the parkwide Restoration Plan (Chapter 11). These include, but are not limited to, the following alpine and subalpine animal species and plant communities:
  - Northern corroboree frog (*Pseudophryne pengilleyi*);
  - Southern corroboree frog (*Pseudophryne corroboree*);
  - Alpine tree frog (*Litoria verreauxii alpina*);
  - Broad-toothed rat (*Mastacomys fuscus*);
  - Mountain pygmy-possum (*Burramys parvus*);
  - Short alpine herbfield;

- Snowpatch fieldmark;
- Sod tussock grassland; and
- Groundwater communities (fen, raised bog and valley bog communities).

This list of species and communities will be revised, as necessary, in light of the findings of the climate change research program.

2. Ensure that altitudinal migration routes for animal species considered under threat from climate change are unobstructed by roads or other impediments.

### **6.2.3 Management Objective**

*Management decisions concerning localised or broadscale climate manipulation are based upon knowledge of the likely impacts and benefits of such action.*

#### **Policies and Actions**

1. Establish a coordinated research program directed at determining the environmental impacts and possible benefits associated with artificial snow-making and other climate manipulation strategies. The results of this research program will be an important consideration in any future management decisions concerning climate manipulation (Chapters 10 and 12).

### **6.2.4 Management Objective**

*All operations and activities associated with the park are undertaken in ways that minimise the production of greenhouse gas emissions.*

#### **Policies and Actions**

1. Establish and maintain a 'Climate Care' Program aimed at minimising the production of greenhouse gas emissions associated with Service operations and those of all lessees and licensees operating within the park. (Ideally, this program will fit within the framework of the national Greenhouse Challenge initiative administered by the Australian Greenhouse Office.)
2. Ensure that cooperative agreements established with individual organisations involved in the 'Climate Care' Program form part of the environmental management systems established for their operations (Section 12.1).
3. A demonstrated commitment from lessees/licensees and contractors to reducing the production of greenhouse gas emissions will be an important consideration for the Service in the:
  - Letting of contracts for the provision of goods and services;
  - Granting of new leases and licences; and
  - Renewal of existing leases and licences.

### 6.2.5 Management Objective

*Visitors appreciate and understand the influence of climate and the implications of climate change on the values of the park.*

#### **Policies and Actions**

1. Explore strategies in the Communication Plan (Chapter 13) for interpreting:
  - The influences of the climate on the biota of the park and on prehistoric, historic and contemporary patterns of seasonal movements of people in the mountains;
  - The effects of climate on aspects of park management (e.g. fire management, search and rescue operations, recreation management); and
  - The implications of climate change for the natural, cultural, recreational, social, utility and economic values of the park.
2. Publicise climate change research concerning the park and any management decisions made as a result of that research in accordance with the provisions of Chapter 15.
3. Liaise with organisations such as the Australian Greenhouse Office in the development of interpretive material that describes how visitors can act to reduce greenhouse gas emissions. The content of this material may link such personal decisions and behaviour with the long-term protection of the values of the park.

## 6.3 Rocks and Landforms

*Our observations have ... finally set at rest a vexed question, and have entirely confirmed the view that the “Roof of Australia”, at no distant date, certainly supported glaciers.*

*T. W. Edgeworth David 1901*

### **Background**

The present landscapes of the park have been shaped from a mosaic of different rock types, each of which has contributed a characteristic appearance to the land. Piles of bulbous tors typify the granitic country of the Ramshead Range, whereas places of volcanic origin in the north are characterised by flat-topped hills. The softer sedimentary rocks of the Byadbo country have eroded into steep-sided valleys and ridges, while the limestone landscapes of Cooleman Plain and Yarrangobilly are pocked with sinkholes and caverns.

The rocks and their geological histories are the very foundations of the park. The soils derived from them support a unique suite of animal and plant species and ecological processes. They have, and continue to

influence human habitation, movement and use of the mountains, and are central to many of the values we ascribe to the park. Beyond these values, the geodiversity of the park, like all living things, can be said to have intrinsic value in its own right.

The bedrock of the entire park consists of rocks formed during the Ordovician to Lower Devonian periods (490-355 million years ago). These include sedimentary rocks laid down in deep marine environments, such as siltstones and shale-forming greywackes, and those deposited in shallow seas such as the limestone found at Cooleman Plain and Yarrangobilly in the north, and at Indi and Cowombat Flat in the south. Some of the volcanic rocks found in the park also date from this time. These include



the Mount Jagungal basalt, one of the oldest rocks in the park. Granitic rocks, such as those that occur on the Main Range, were also formed during this period. They are the most common rock type found in the park. The emplacement of these granites, and their consequent metamorphism, occurred on three separate occasions with the resultant rock types defining the major landscape features of the Main Range.

Prolonged periods of uplifting, folding, faulting and erosion, spanning some 250-300 million years, reduced the park area to a lowland broken by ridges of more resistant rocks. Over a period of almost 50 million years, the central plateau of the park, which rises gradually from the eastern tablelands, was uplifted along a number of fault lines which, in turn, were etched out by streams to form deep linear valleys such as those of the upper Snowy, Thredbo and Swampy Plains Rivers. This combination of uplift and dissection has created some spectacular scenery, most notably the 'mile-high' drop from the crest of the Main Range to the Geehi River. About 20 million years ago, during the Miocene period, basalt was extruded over the central parts of the park covering stream valley deposits of lignite, silt and clay containing alluvial gold and fossils of rainforest plants. Subsequent erosion reduced this basalt layer to a number of isolated and scattered remnants. Resistant caps of solidified lava are to be found atop places such as Round Mountain and Mount Tabletop.

Great climatic changes occurred during the Pleistocene period (the last two million years). Cold conditions during the period from 70 000-10 000 years before the present resulted in the formation of glaciers along the crest of the Main Range. A handful of cirque basins, rock moraines, lakes, erratics, and ice-scratched surfaces are the only remaining evidence of the scouring action of ice. More widespread across the mountains are periglacial features, or those created by extreme cold. These include streams of frost-fractured stones, and earth hummocks and terraces formed by frost penetrating the soil. Periglacial processes,

such as frost heaving and the movement of rocks by snow, continue under the present climatic conditions and can be observed in a variety of situations on the Main Range.

The rock types and landforms of the park have always influenced human habitation and movement throughout the mountains. Aboriginal people used certain rocks to fashion tools and others for ceremonial purposes. Caves, overhangs and crevices provided shelter from inclement weather, were places to bury the dead, were sometimes decorated with art, and were sites from where Bogong moths could be gathered during the summer months. The topography, itself, determined routes of travel and particular landforms were imbued with spiritual meanings and associations.

Rocks also brought the first non-indigenous people to the mountains in large numbers. The lure of gold and other metals such as copper, silver, lead and tin brought tens of thousands of people to the mountains for brief, but often frenetic, periods of activity. Prospectors driven on by the promise of instant wealth investigated virtually every creek and river in what is now the park. The mining rushes resulted in a network of tracks linking mines, settlements and camps and the establishment of industries such as grazing, cropping and sawmilling. The physical evidence within the landscape of 150 years of prospecting and mining includes shafts, tunnels, sluicing works, water races, dams, quarries, huts, tramways and tracks.

Since the mid-nineteenth century, the geology of the mountains has also attracted intensive scientific investigations. The early geological studies of Edgeworth David into the extent of glaciation and the origins of particular landforms were of international significance at the time. The geology and landscape features of the park have also governed the siting of infrastructure such as roads, resorts and dams, and influenced recreational use and patterns. The rocks, and the landforms into which they have been shaped, are central to the aesthetic appeal of the place.

## Significance

The following geological and geomorphological features in the park are of national significance:

- The Ordovician to Lower Devonian rocks that form part of the Lachlan Fold Belt, which are important in understanding the evolution of much of south-eastern Australia, including the history of the Great Dividing Range. Noteworthy features of the Lachlan Fold Belt in the park include:
  - Geehi Valley: metamorphic rocks with abundant garnets, staurolite and amphibolite;
  - Ravine Basin: Devonian shallow-water sediments;
  - Thredbo Valley: the dominant and well-defined Crackenback Fault;
  - Mount Talbingo: Devonian lava flows forming cliffs;
  - Cabramurra: serpentinite along major faults with nickel and chromium;
  - Cooleman Plain: Silurian limestone and chert;
  - Tumut Ponds, Tantangara, Kiandra and Byadbo areas: graptolite fossils;
  - The Pilot and Byadbo areas: Ordovician hard, green platey quartzite;
  - Yarrangobilly: Silurian limestones, fossils, shales and tuffs;
  - Marble Creek and Pilot Creek: limestones and tuffs;
  - Pilot Ridge and Cowombat Flat: Devonian rhyolites and breccias;
  - Main Range: three types of granitoid rocks;
  - Nungar: folding of Bowning tectonic episode;
  - Cooleman Plain: slump bed folding; and
  - Black Perry Mountain: skarn rock with garnets, occurrence of babingtonite (a mineral found in few other localities worldwide).
- The following Tertiary geological features:
  - Round Mountain (near Mount Jagungal): Tertiary basalt flows;
  - Kiandra, Cabramurra and Yarrangobilly: columnar basalt pinnacles; and
- New Chum Hill and Golden Crown Diggings: Tertiary sediments.
- The spectacular scenery of the Geehi Valley, in particular the mile-high drop from the summits of the Main Range to the Geehi River;
- The glacial features of the Main Range. They are an outstanding example of a glaciation that developed under extremely marginal conditions and contribute to our understanding of the nature of climates during the Pleistocene. The Helms Moraine near Blue Lake is a particularly clear example of glacial transport of one kind of rock onto another. The 'Railway Embankment' moraine near Muellers Pass is another interesting example; it is the site of an early estimate for the date of glaciation and is consequently significant for the history of geology in Australia;
- The periglacial phenomena of the park. They are amongst the most striking in Australia and demonstrate the widespread effects of cold climate in the Quaternary and in the recent past;
- The role of the park in serving as a benchmark for earth processes in more heavily impacted regions elsewhere in south-eastern Australia. In particular, it offers comparisons with alpine areas in Victoria that until recently were still subject to stock grazing; and
- The Holocene features of the park (sediments and peats) that have revealed valuable information on vegetation changes associated with post-glacial warming.

Geological features of state or regional significance are:

- The gentle relief typical of most of the montane landscapes of the park; and
  - The rainforest plant fossils found in stream sediments under basalt at Kiandra, which contribute to our understanding of the climatic evolution of the entire continent.
-

## Issues and Opportunities

The rocks and landforms of the park are obviously robust and will generally survive unchanged in terms of human lifetimes. This does not apply to numerous surface features that are relatively fragile and susceptible to damage from current human activities, most notably accelerated rates of erosion. Measures to protect periglacial features are required, especially from human trampling in high-use areas of the Main Range and from slope modifications in the alpine resort areas.

While many of the impacts associated with past activities and infrastructure development cannot be undone, in some places potential exists to restore or enhance the integrity of local landforms. Opportunities to reinstate the natural surface contours of the land exist at many disturbed places, most notably on the Main Range where

the integrity of significant landscapes has been impaired by recreational infrastructure, such as the old Kosciuszko Road and associated quarries, and the former parking area at Rawson Pass.

Other key management issues include:

- The need to minimise the adverse effects of all new infrastructure on geodiversity values. This includes respecting lithological integrity through minimising the introduction of imported geological material;
- Our limited understanding of the cultural associations and significance attached to elements of the geodiversity of the park; and
- The need to foster greater public appreciation and understanding of the geodiversity values of the park.

### 6.3.1 Management Objective

*The rocks, landforms and geological processes of the park are protected and, where necessary, managed within the bounds of acceptable limits of disturbance.*

#### **Policies and Actions**

1. Provide maximum protection to rocks, landforms and geological processes that are of national significance and sensitive to disturbance by current human activities. This will include items listed in Schedule 1. Such places will not be publicised or promoted unless management regimes are in place to protect them from likely damage associated with increased visitation.
2. Manage relict features (those no longer forming today) to ensure that their integrity is not compromised.
3. Manage active landform features linked by ongoing geological processes as integrated assemblages rather than as isolated features.
4. Prepare a Geodiversity Conservation Strategy for all significant geological and geomorphological features. Priority will initially be given to the Main Range, alpine resorts and other popular visitor destinations containing features susceptible to disturbance. The strategy will include:
  - Mapping of significant geological, geomorphological and soil features and processes sensitive to disturbance, including the mapping of aggregations of linked features;
  - Assessments of the condition of such features and processes;
  - Assessments of the cultural significance of these features (where appropriate);
  - Development of management prescriptions based upon condition and sensitivity ratings, including measures designed to keep disturbance levels below acceptable thresholds; and
  - Development of a monitoring regime to measure if the integrity of significant features and processes is being adversely affected by disturbance or successfully maintained or restored by management actions.
5. Ensure that the relevant provisions of the Geodiversity Conservation Strategy are incorporated into alpine resort planning documents (Section 10.2).

6. Ensure that high priority is initially given to restoration works on the Main Range due to the international and national significance of many of its values (Section 9.2).
7. Ensure ongoing protection of rocks, landforms and geological processes through the adoption and implementation of environmental management systems for all operations (Section 12.1).

### **6.3.2 Management Objective**

*Rehabilitation and construction works are undertaken in ways that protect significant rocks, landforms and geological processes.*

#### **Policies and Actions**

1. Prohibit developments likely to significantly impact on the integrity of geodiversity features of national significance.
2. Assess potential impacts on geodiversity values as part of the approval process for proposed developments or activities, including restoration works.
3. Undertake the rehabilitation of disturbed sites in accordance with Section 11.2.

### **6.3.3 Management Objective**

*The cultural values of geodiversity features are identified and protected.*

#### **Policies and Actions**

1. Assess the cultural significance of rocks and landforms threatened by disturbance.
2. Manage culturally important features so as to protect their cultural significance.
3. Recognise that some sites of human-induced disturbance may have important cultural values. In such cases, the appropriate response may be to manage the disturbance within acceptable limits rather than complete rehabilitation.

### 6.3.4 Management Objective

*The management of rocks, landforms and geological processes is informed by research.*

#### **Policies and Actions**

1. Develop a strategic geodiversity research program as a component of the Register of Required Research (Schedule 10). Research priorities will be driven by the work required for the preparation, refinement and implementation of the Geodiversity Conservation Strategy. Priority work is likely to include:
  - Additional mapping of geodiversity values, including those of national significance that are located at popular visitor destinations;
  - Investigations into the cultural significance of geodiversity features;
  - Research to refine sensitivity ratings and disturbance thresholds for particular features and processes; and
  - Baseline and disturbance monitoring.
2. Restrict the collection of earth materials to research associated with the development of the Geodiversity Conservation Strategy or work that forms part of an approved research program for the park (Schedule 10).

### 6.3.5 Management Objective

*Visitors understand and appreciate the geological and geomorphological values of the park.*

#### **Policies and Actions**

1. Interpret geodiversity features and processes, including their roles in influencing human habitation, movement and use of the mountains, within the context of the Communication Plan (Chapter 13).
2. Retain or enhance road cuttings, quarries or any other excavation for research, education or interpretation if consistent with this plan and the Communication Plan.
3. Prepare and promote codes of behaviour for participants in individual recreational activities that include information designed to minimise impacts upon the geodiversity values of the park.

## 6.4 Karst

*While on duty at Coolamon ... I visited the famous limestone caves of the place, where I discovered on the smooth surface of one wall traces of many paintings representing kangaroos, dingoes, spears, boomerangs and woomerahs. These were partly covered with fantastic-shaped stalactites hanging in lustrous profusion from the high roof.*

*Martin Brennan 1907*

### Background

Karsts are landscapes formed on rocks with a greater degree of natural solubility than is commonly found. Such places are characterised by gorges, caves, dolines, irregular hydrological systems and many fascinating small-scale landscape features. All of these are produced by a complex interplay of geology, soils, biology, water, climate and time.

There are eight separate karst areas in the park, all of which are developed in Silurian, Devonian or Quaternary limestones. Six of these areas are found in three distinct clusters with shared geologies in the northern end of the park:

- Yarrangobilly and Jounama Creek/Black Perry Mountain (Silurian limestones and skarns);
- Cooleman Plain, Upper Goodradigbee and Cooinbil (Silurian limestones); and
- Ravine (Devonian and Quaternary limestones).

The remaining two areas, Indi and Cowombat Flat, are both formed in Silurian limestones in the upper catchment of the Murray River in the extreme southern end of the park.

The karst areas of the park are unusual in New South Wales in that they lie near the crest of the Great Dividing Range in subalpine or montane environments. Although our knowledge of the attributes of each of these places is far from complete, they are known to possess a suite of unique geological, geomorphological, botanical and zoological values.

The human connections with these places are also rich and varied, encompassing all phases of the occupation and use of the mountains. The caves of the park have at various times served as places for refuge, burial and ceremony, artistic expression, scientific inquiry, recreation and tourism. The human responses to these dark, confined places have been - and remain - equally diverse, ranging from curiosity and fascination, to awe and even fear.

Yarrangobilly is the best-known and largest karst area in the park. Measuring 14 km long and 1.5 km wide, this limestone belt contains an outstanding collection of surface karst features such as gorges, arches, blind valleys, springs and pinnacle fields. It contains several hundred caves including six highly-decorated show caves open for public viewing. The area also contains a number of rare and endangered plant and animal species and limestone-endemic plants such as the blackthorn species *Bursaria calcicola* and *B. spinosa* var. *lasiophylla*. Significant subfossil deposits have been found in the area including remains of the endangered smoky mouse (*Pseudomys fumeus*) and the extinct thylacine (*Thylacinus cynocephalus*).

The Jounama Creek/Black Perry Mountain karst area is a north-westerly extension of the Yarrangobilly limestone located in the valleys of nearby Jounama and Cave Creeks. Most of the carbonate rocks here are confined to a highly-metamorphosed and mineralised ridge that forms part of Black Perry Mountain. A single small and unusual cave is found high up on the mountain and 13 small caves are found nearby in the valley of Cave Creek.

The Cooleman Plain karst area is located to the north of Tantangara Reservoir. It contains a comprehensive range of karst features including 110 known caves, dolines, blind and semi-blind valleys, dry valleys, gorges, active and abandoned springs and stream sinks. The popular visitor destination of Blue Waterholes is the largest karst spring in eastern Australia.

The nearby Upper Goodradigbee karst area is remote and not well known. One cave in the area serves as a roost for the eastern bent-wing bat (*Miniopterus schreibersii*). This is one of only two known substantial roost colonies of cave bats in the park.

The small Cooinbil karst area (less than two ha) is located on Long Plain, immediately to the west of Cooleman Plain.

It contains a limited range of surface and subsurface features.

Although there is a great deal of limestone at Ravine, it is mostly thinly-bedded, flaggy or impure. Karst features are rare though a number of small caves exist. Dissolved calcium carbonate has been re-deposited at a number of places where the waters of ephemeral streams tumble over the cliffs of the Milk Shanty Walls. At these sites there are large tufa banks containing caves of construction, massive stalactites and other karst forms. These are possibly the largest tufa deposits in southern Australia.

The Indi karst area consists of three small limestone lenses north of McHardies Flat on the upper Murray River. The area is unusual in that most of the 14 small caves found here are perched on terraces above the river level. The caves appear to be hydrologically isolated by thick clayey sediments in their lower parts, resulting in the formation of small ephemeral lakes during wet periods.

The Cowombat Flat karst area, also located in the headwaters of the Murray River, possesses a few small dolines and caves demonstrating that there are soluble rocks and a subterranean drainage system present.

In addition to the karsts developed in soluble rocks, there are a number of small-scale pseudokarst features, chiefly in granite, scattered across the park. These include boulder caves along the Snowy and Ingeegoodbee Rivers. Ephemeral caves formed in ice and snow sometimes contain forms analogous to karst caves.

The cultural significance of particular karst areas and features in the park to Aboriginal people is little understood. Physical evidence, including human remains, is known to have been removed from some caves by early European visitors, while at others, material has disappeared due to natural weathering. Despite this and the lack of systematic archaeological surveys, evidence of Aboriginal occupation in a number of the karst areas of the park abounds in the form of open camps and artefact

scatters. Burial sites, a single cave with a probable stratified deposit, and an Aboriginal quarry have also been located. The Cooleman Plain and Upper Goodradigbee karst areas contain important Aboriginal places, while at Yarrangobilly over 100 archaeological sites have been recorded within a 20 km radius of the show caves.

Those karst areas that support native grasslands, such as Cooleman Plain, Cooinbil, Cowombat Flat and parts of Yarrangobilly were formerly grazed by livestock from the 1830s onwards. The remaining physical evidence of this pastoral activity includes a number of fencelines and huts, and a substantial homestead complex at Cooleman Plain.

Regular recreational use of the karst areas, in particular Yarrangobilly, commenced in the late 1850s coinciding with the arrival of large numbers of people at the Kiandra goldfields. In response to the widespread popularity of cave tourism, the NSW Government began developing the Yarrangobilly area shortly thereafter. The legacy of this early period of cave tourism is six show caves, a thermal pool and a precinct of historic buildings and trees. Beyond the show caves, caving is most commonly undertaken in the Yarrangobilly and Cooleman Plain karst areas.

Since the 1860s, the karst areas of the park, especially Yarrangobilly and Cooleman Plain, have attracted considerable scientific interest. The quality and range of the hydrological and geomorphological research undertaken by the late Professor Joe Jennings and others at Cooleman Plain is regarded as especially significant.

The Service prepared a management plan for the Cooleman Plain karst area in 1987 and a draft plan for the Yarrangobilly area in 1988.

(Separate discussions on the management of the Yarrangobilly and Cooleman Plain karst areas are provided in Sections 9.3 and 9.4 respectively. The management of recreational caving is described in Section 8.13.)

## Significance

Collectively, the karst areas in the park have outstanding or representative significance at national to statewide levels in relation to geomorphology, including surface and subterranean landforms and karst processes, and

biological values. Individually, both Cooleman Plain and Yarrangobilly are regarded as nationally significant in terms of their geological, geomorphological, hydrological and zoological values.

The massive tufa deposits and fossil sequence at Ravine are considered to have national or regional significance.

Beyond their scientific attributes, the karst areas are also significant for their historical, aesthetic and recreational values. Research sites at Cooleman Plain and Yarrangobilly form part of a suite of sites in the park across a number of scientific disciplines, which together have national cultural significance. The hydrological research undertaken at Cooleman Plain is deemed to be of international significance. The Yarrangobilly show caves precinct has historic values of state significance as one of a number of cave complexes developed for tourism in

NSW during the 19th century as part of an important social movement.

The significance of the aesthetic and recreational values of each of the karst areas varies considerably from national to local. The aesthetic appeal of the dramatic surface and subsurface landforms of the Yarrangobilly and Cooleman Plain areas is especially noteworthy and regarded as nationally significant. Yarrangobilly, which provides for a wide range of recreational pursuits, is also recognised as a recreational destination of national significance.

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## Issues and Opportunities

Karst systems are essentially finite, non-renewable and unrepairable in human timeframes. They are amongst the most vulnerable of ecosystems. Their integrity depends upon the interactive relationship between rock, water, soil, vegetation and air remaining essentially unchanged over time. Any interference with this relationship is likely to result in undesirable impacts. Sustainable management of karst systems is only achievable through the protection of entire karst catchments.

The condition of the eight karst areas in the park is generally stable or improving, but varies considerably between, and within, particular areas. Whereas the Ravine area is in poor condition due to a combination of past clearing and grazing, frequent burning and weed invasions, the Jounama Creek/Black Perry Mountain and Upper Goodradigbee areas are remote, rarely visited and in relatively good condition. The same variability in condition applies to individual features. The show caves at Yarrangobilly are highly disturbed compared with, for example, the near-pristine conditions deep within Janus Cave.

The key karst management issues in the park are associated with:

- Human use and infrastructure;
- Introduced plants;
- Introduced animals; and
- Fire management.

Whilst providing access to cave systems allows visitors to enjoy and experience these unique places, human use

of karst areas, including cave tourism, can result in surface impacts such as vegetation damage, erosion and siltation and a range of impacts on subsurface features including:

- Physical alterations to caves;
- Alterations to cave hydrology, including water chemistry;
- Alterations to air movements and micro-climates;
- The introduction of artificial light;
- The compaction or liquefaction of floors;
- The erosion or disturbance of cave sediments and their contents;
- The inadvertent or intentional destruction or damage of speleothems;
- The destruction of cave fauna; and
- The introduction of alien organisms, nutrients, pollutants or materials.

Visitor-related issues are largely confined to Yarrangobilly and Cooleman Plain, and, to a lesser extent, the Cooinbil and Indi karst areas.

Apart from impacting upon biodiversity values, introduced plants can also physically damage surface karst formations. Weed infestations occur within all eight karst areas but are especially severe in parts of Yarrangobilly, Ravine, Cooleman Plain and Indi.

Impacts associated with the activities of introduced animals include damage to vegetation and localised denudation resulting in erosion and siltation. This problem is most pronounced in the Cooleman Plain, Indi and Cowombat Flat karst areas.



Fires, and fire management activities, can impact upon karst values by:

- Smoke and ash discolouring cave formations;
- The disturbance or removal of vegetation leading to soil erosion, siltation and changes to hydrological regimes and cave atmospheres;
- Physical damage or destruction of surface karst features by heat or through the use of earth-moving machinery; and
- The use of fire retardants that may change the solution and nutrient properties of water.

### 6.4.1 Management Objective

*The quality and quantity of air and water movement through the surface and subterranean environments of karst areas are maintained within the bounds of natural variability.*

#### **Policies and Actions**

1. Protect significant karst values (as listed in Schedule 1).
2. Base the management of all karst areas upon the need to protect the integrity of entire karst catchments.
3. Manage the physical and biological components of surface and subterranean ecosystems within karst catchments primarily for their role in maintaining karst features and processes.
4. Aim to conserve the complete range of natural and cultural values represented in the karst areas of the park without compromising the protection of karst features and processes.
5. Undertake weed and feral animal control programs within karst areas within the context of the Park Restoration Plan (Sections 11.3 and 11.4).
6. Restrict the use of chemicals in karst areas to those that are known to be environmentally acceptable.
7. Aim to manage fire so as to mimic natural fire regimes for the vegetation types in karst catchments.
8. Minimise the use of earth-moving machinery in karst catchments.
9. Minimise surface and groundwater pollution within karst catchments.
10. Establish a Karst Management Committee. This committee will consist of Service staff responsible for karst management, karst specialists and members of caving organisations. The committee may include representatives from the Service's statewide Karst Management Committee. The committee will provide:
  - Advice on management regimes for individual caves;
  - Advice on priority caves requiring the preparation of cave management plans;
  - Input into the development and refinement of monitoring and research programs;
  - Advice on recreational activities and impacts in karst areas;
  - Advice on reviews of existing karst plans;
  - A forum to facilitate communication between the Service, karst specialists and cavers, and encourage the sharing of expertise and research findings; and
  - Specialist advice as required.
11. Develop an overarching Karst Management Strategy for the park in close liaison with the Karst Management Committee. This will include:
  - An inventory of all known caves and other karst features;
  - Information on all natural and cultural values associated with a feature or group of features, including significance levels, condition and threats;

- Records of visitor use of caves in the park;
- Management regimes for each karst area and cave, based upon the establishment of acceptable limits of disturbance;
- Tailored monitoring regimes to measure disturbance within karst catchments and at individual karst features, including caves;
- General and feature-specific management responses to disturbance;
- Records of management works and operations carried out in each karst area and at individual karst features;
- Cave search and rescue protocols;
- A register of karst and karst management specialists;
- Records of all past and ongoing karst research undertaken in the park; and
- Research priorities for individual karst areas and features.

This strategy will replace the Cooleman Plain Karst Area Management Plan and the draft Yarrangobilly Karst Area Management Plan.

12. Establish a system of baseline monitoring sites in the karst areas of the park against which all human-induced disturbance of karst features and processes can be gauged.

## **6.4.2 Management Objective**

*Impacts associated with visitation to karst areas and features are managed within acceptable limits of disturbance.*

### **Policies and Actions**

1. Utilise the best available and practicable technology and materials to protect the values of all caves open for visitation. In general, this will require materials to be chemically and physically inert and easily removable if more suitable materials are developed in the future.
2. Minimise adverse impacts of road drainage structures and materials used for roadworks and car parks in karst areas.
3. Manage recreational caving in the karst catchments according to the provisions of Section 8.13.
4. Repair damaged features as far as is practicable while recognising the non-renewable nature of many karst features, particularly within caves.
5. Limit the promotion of karst features that are susceptible to degradation from human impacts unless management regimes are in place to protect such sites from increased visitation.
6. Manage visitation to all known caves in the park according to their physical, biological and cultural attributes, extent of past damage, resilience to human visitation, existing use patterns and remoteness.
7. Establish monitoring programs for all caves susceptible to disturbance from visitation, in accordance with Section 8.13.
8. Manage visitation to karst features in accordance with Sections 8.13, 9.3 and 9.4.
9. Undertake quantitative and qualitative visitor research at Yarrangobilly and Cooleman Plain karst areas to inform visitor management (Sections 9.3 and 9.4).
10. Record visitor numbers (in the context of the Visitor Data System, Section 8.1) to all caves in the park so they can be correlated against disturbance levels.

11. Liaise with the Victorian park management agency with the aim of:
  - Restricting vehicular access to the Indi karst area (by gating McCarthy's Track east of its junction with the Limestone Creek Track); and
  - Ensuring consistent cross-border management of the Cowombat Flat and Indi karst areas.
12. Ensure ongoing protection of karst features through the adoption and implementation of environment management systems for all operations (Section 12.1).

### **6.4.3 Management Objective**

*The management of karst is informed by research and monitoring.*

#### **Policies and Actions**

1. Formulate a karst research program as a component of the Register of Required Research (Schedule 10) within the context of the Karst Management Strategy and in consultation with the Karst Management Committee. Priority will initially be given to addressing critical knowledge gaps for the management of the eight karst areas including:
  - The establishment of baseline data collection systems;
  - The establishment of monitoring regimes for karst catchments and individual features and values;
  - The establishment of monitoring regimes for recreational impacts within the karst catchments; and
  - Surveys and assessments of significance and condition of natural and cultural values of karst areas.
2. Other avenues of research to be considered will include:
  - Research into hydrological relationships and landscape evolution;
  - Impacts of fire on karst processes; and
  - The implications of climate change on karst systems.

### **6.4.4 Management Objective**

*Visitors to karst areas understand the values of the karst systems and appreciate their responsibilities in protecting those values.*

#### **Policies and Actions**

1. Involve members of caving clubs and other user groups in a voluntary capacity in cave maintenance, monitoring and survey programs.
2. Interpret karst features and processes within the context of the Communication Plan (Chapter 13).
3. Prepare and promote codes of behaviour for participants in individual recreational activities that include information designed to minimise impacts upon the karst values of the park.

## 6.5 Soils

*Kosciuszko National Park differs greatly from other alpine areas in that deep organic soils dominate, whereas in most other alpine areas around the world soil formation is limited. This characteristic has led to the Australian Alps being described as ‘mountains of soil’.*

*Alec Costin 1989*

### Background

All plant and animal life in the park is dependent on the underlying soils. They provide the life-sustaining pathways of air and water from the atmosphere, through the vegetation, into and through the ground below. In the reverse direction, soils also transmit some of the air and water back into the atmosphere.

The soils of the park are derived from a diverse range of parent materials including alkaline limestones and basalt, and acidic granites and sediments. On a given parent material over a wide altitudinal range, characteristic soil sequences have developed such as alpine humus soils and various podsoles on granites and metasediments, alpine humus soils and krasnozems on basalt, and alpine humus soils, rendzinas and terra rossas on limestone. As well as soils in the proper sense, the park possesses deep weathered regolith mantles of decomposed rock material.

While the soils vary on a semi-continental scale in response to the major soil-forming factors of climate, geology and physiography, they also differ at a local level with variations in aspect and topography.

The alpine areas of the park differ markedly from most other similar areas around the world in that they are covered in a mantle of deep organic soils. These soils have formed on both acidic (granitic) and basic (basalt) parent material and cover virtually all of the high tops.

Parts of the park also contain fossil soils (those no longer forming today) which have persisted due to the relatively subdued terrain of the mountains and the limited glacial and other types of natural erosion activity. In places, present-day soils have developed within and over the older (fossil) soil material.

Beyond their intrinsic, ecological and scientific values, all of the soils of the park have vital ‘service functions’ such as the supply of clean water for domestic and industrial uses, irrigation, and hydro-electric power. The alpine and subalpine soils in particular, receive, store, process and supply a larger quantity of high quality water than any other group of soils on the continent.

The recent human history of the mountains is directly linked to the soils. Concerns about widespread soil degradation due to grazing practices, and recognition of the importance of the mountain soils for catchment stability and water yield, were key considerations in the establishment of Kosciusko State Park in 1944. The subsequent rehabilitation of the alpine and subalpine soils of the park is one of the less well known but important human stories of the mountains. Although partially hidden by vegetation, numerous paved channels, small dams and drainage banks remain as physical evidence of this period.

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### Significance

Internationally significant features of the soils of the park are:

- Outstanding examples of some of the Great Soil Groups that are of scientific value, both individually and in association with each other;
- The particularly well developed alpine humus soils and the dominance of climate on the formation of these soils. A notable feature of these soils is the absence of the podsolisation process normally found in cold wet climates on acidic rocks with low nutrient vegetation;

- The relatively undisturbed condition of the soils which can be used as benchmarks against which the condition of soils in more disturbed parts of the world can be compared; and
- The fossil soils, which contribute to our understanding of climatic changes in mountainous regions around the world. Certain fossil features, most notably the non-sorted steps and contour trenches, are among the best examples of their kind in the world.

Nationally significant features of the soils are:

- The variety of soil types and attributes present in response to the major soil-forming factors of climate, geology and physiography;
- Their roles in storing and supplying water; and

- The historical significance of the soil conservation theme in the early development of the conservation movement and the creation of Kosciuszko National Park.

Kosciuszko National Park is the only part of south-eastern Australia that protects such a wide range of mountain soils still in relatively natural condition and in one and the same geographical location. This applies particularly to the snow patch soils, alpine humus soils, bog and fen peats, and silty bog soils of the alpine and subalpine areas. Where these soils are found in the Victorian Alps they have until recently, been subjected to livestock disturbance. Within the Australian Capital Territory such soils occur in very limited areas.

## Issues and Opportunities

Surveys conducted by the Soil Conservation Service of NSW during the 1940s and 1950s documented widespread soil erosion attributed to the destruction of vegetation cover by fires and grazing. At the time it was recorded that up to half a metre of topsoil had been lost in some areas. Soil loss from the Main Range (between Mounts Kosciuszko and Twynam) was estimated at 1.2 million tonnes.

The introduction of ecologically-based fire management, the cessation of grazing, and a concerted soil rehabilitation program have resulted in the stabilisation of most of the high country soils. In general, the recovery trend of the last 40-50 years has reached a plateau of relative stability, but not always in the original condition. Near-original conditions have been achieved where sufficient topsoil remained, but not where topsoil loss proceeded to the residual stoney erosion-pavement stage. This stage will persist for a long time, probably centuries, although shrub regeneration on these sites is stabilising many of them. In the alpine area these stone pavements have reached stability as 'erosion' fieldmarks.

Despite these improvements, a number of soil management issues associated with past land uses and activities remain, including:

- The persistence or re-emergence of erosion areas on the Main Range;

- The continuing incision of drainage lines by gullying, and the erosion of peats and other groundwater soils;
- The continuing erosion of streambank and stream bed profiles in subalpine valleys;
- The need to rehabilitate former work sites where localised soil damage and contamination have not yet been adequately treated. (These include a large number of sites associated with the construction of the Snowy Mountains Scheme); and
- The continual erosion in several former mining areas such as Kiandra.

The greatest potential for widespread disturbance to the soils of the park is from fire, as it removes or reduces the protective groundcover, thereby mobilising surface soil and nutrients, potentially leading to erosion. During the last 50 years there has been a reduction in the number and extent of wildfires and, more recently, in the total area subjected to prescribed burning, with a subsequent improvement in soil stability. Despite this, periodic and widespread reversals in soil stability can still occur due to wildfires, as evidenced in 2003.

Recreational and park management activities also present significant, if localised, pressures on soils. These include:

- Vegetation damage and soil disturbance from walkers, horses, vehicles and bicycles initiating erosion;
- Leaching from concrete and pavers;
- Soil compaction from the use of machinery and the use

- of vehicles on shallow snow packs;
- Landscape modification from slope grooming in the alpine resorts;
- Artificially high nutrient levels in soils at popular recreational destinations, such as huts, from human waste and rubbish; and
- Soil contamination associated with pollution events, rubbish tips, workshops and other facilities.

Localised soil disturbance and erosion associated with introduced animals includes:

- Denudation of areas by rabbits, especially in cold air drainage plains;
- Rooting by pigs causing the partial destruction of native vegetation and the mobilisation of soil nutrients; and

- Feral horses trampling meadow soils and bog peats that are easily incised and gullied.

Exposed soils in the alpine, subalpine and montane areas of the park are subjected to frost-heave, necessitating rapid stabilisation and rehabilitation of disturbed areas.

The soils of the park have been little studied compared with most other elements of the landscape. This paucity of knowledge impacts upon the ability of the Service to formulate management regimes designed to maintain or enhance the long-term integrity of the soils of the park.

(For a discussion on soil conservation and rehabilitation refer to Section 11.2.)

### **6.5.1 Management Objective**

*Soil features and processes are protected, and where necessary, managed within the bounds of acceptable limits of disturbance.*

#### **Policies and Actions**

1. Provide significant soil values (as listed in Schedule 1) that are vulnerable to disturbance with maximum protection.
2. Manage fossil soils to ensure that their integrity is not compromised.
3. The Geodiversity Conservation Strategy (Section 6.3) will address the management of soil features and processes of international and national significance considered sensitive to disturbance by current human activities. A key focus of the strategy will be the protection of present-day and fossil soils and soil processes on the Main Range, in alpine resorts and at other popular visitor destinations containing soils susceptible to disturbance.
4. Link the Geodiversity Conservation Strategy to the Park Restoration Plan. (Section 11.1).
5. As far as practicable, ensure that soils are protected from the deleterious effects of fire through the provisions of the Fire Management Plan for the park (Section 11.5).
6. Manage recreational activities and associated infrastructure within acceptable limits of disturbance with the aim of minimising impacts on soil conditions (Chapter 8).
7. Manage introduced animals to minimise soil disturbance associated with these species (Section 11.4).
8. Undertake all construction and rehabilitation works in ways that protect the soil values of the park (Section 11.2).
9. Locate new developments on previously disturbed sites wherever possible.
10. Prohibit developments likely to significantly impact upon the integrity of soil values of international and national significance.

11. Assess the potential impacts on soil values as part of the approval process for proposed developments or actions.
12. Ensure ongoing protection of soil features and processes through the adoption and implementation of environmental management systems prepared for all operations (Section 12.1).

### **6.5.2 Management Objective**

*The management of soils is informed by research.*

#### **Policies and Actions**

1. Undertake research relevant to the development of the Geodiversity Conservation Strategy. Priority work is likely to include:
  - The mapping of known high-risk soils and sites in high-use areas, including the mapping of soil conditions and attributes such as soil cover and depth, and moisture characteristics such as infiltration capacity;
  - Research into the relationships between soils, vegetation and groundcover at different altitudes and aspects in relation to erosion potential;
  - Research into the responses of particular soil types and processes to different types and levels of disturbance required to refine sensitivity ratings and disturbance thresholds; and
  - Baseline and disturbance monitoring.
2. Limit the collection of soil samples to research associated with the development of the Geodiversity Conservation Strategy or work that forms part of an approved research program for the park (Chapter 15).

### **6.5.3 Management Objective**

*Visitors understand and appreciate the soil values of the park.*

#### **Policies and Actions**

1. Interpret the soil values of the park within the context of the Communication Plan (Chapter 13). The Plan will explore strategies for interpreting:
  - Soil degradation in the alpine areas as a major reason for the conservation of the area; and
  - Soil conservation measures of national significance in the alpine region.
2. Prepare and promote codes of behaviour for participants in individual recreational activities that include information designed to minimise impacts upon the soil values of the park.

## 6.6 Rivers and Lakes

*This greatest of Australia's mountain streams flowed evenly, 200 yards wide for miles, fringed by ranks of willow-like acacia, tea bush and large sandy beaches.*

*Myles Dunphy describing the Snowy River 1934*

### Background

By the time Myles Dunphy visited the Snowy River it was already a household name. Publication of the ballad *The Man from Snowy River* in 1890 not only made A.B. "Banjo" Paterson an instant literary celebrity, it also transformed the little-known Snowy River into a national icon. The cultural attachment of the Australian public to the Snowy River was to be re-affirmed sixty years later with the commencement of the Snowy Mountains Hydro-electric Scheme. Beyond the collective pride that Australians felt in this engineering achievement and its role in reshaping national identity, the post-war influx of tens of thousands of migrants to work on the Scheme changed the ethnic composition of Australian society.

Long before the arrival of Europeans, the Snowy River played a central role in the lives of Aboriginal people. In conversations with Monaro Aboriginal people in 1844, George Augustus Robinson recorded the following story of the creation of the river:

*The Moon...took a large quantity of sea water to the mountains...on its journey among the mountains it was scented by the Water Mole [platypus] which smelt the water when the Moon rested. The Moon went a long way and the Water Mole still tracked on and finding the Moon asleep struck a yam stick into the water, where it gushed out and formed the [Snowy] river...*

Evidence of Aboriginal camps can be found in an almost continuous line along the valleys of the lower Snowy River and its major tributaries. Although Aboriginal people utilised the available resources across a range of ecological niches and altitudes, the river valleys provided an important year-round source of food. Valleys, such as those of the Snowy and Thredbo Rivers, also served as key summer access corridors to the high country.

While many of the cultural influences and values associated with the Snowy River persist, it no longer flows '200 yards wide for miles'. The Snowy Scheme, completed in 1974, captures and diverts water from the Snowy Mountains catchment area that amounts to about 60% of

the stream flows in the park. In addition to the changes wrought by the Snowy Scheme, the flow regimes of a number of streams (Clear Creek, Perisher Creek, Spencers Creek, Thredbo River and its tributaries) are altered by the seasonal drawing-off of water for artificial snow making purposes in the alpine resorts.

The few rivers in the park that have not been affected by hydro-electric development are extremely valuable for their nature conservation and aesthetic values, and for their fishing, white-water canoeing and rafting, and other recreational opportunities. The entire length of the Murray, Thredbo and Goobarragandra Rivers, and most of the Yarrangobilly River within the park, remain undiverted, as do the headwaters of many streams.

Other rivers and streams within the park that have been modified, but still have important downstream nature conservation and recreational values, include the:

- Goodradigbee River;
- Snowy River (from near Currowang Falls to the Victorian border); and
- Swampy Plains River (especially the Devils Grip Gorge section).

The alpine streams of the park contain very low nutrient levels and negligible sediment loads. The slow-flowing streams that cross the Kosciuszko plateau and are supplied by the bog, fen and peat bed areas contain the freshest river water in south-eastern Australia.

Platypus (*Ornithorhynchus anatinus*), water rats (*Hydromys chrysogaster*) and several species of freshwater crayfish inhabit the rivers and streams of the park, as do eleven species of native fish and seven species of introduced fish. Each of the native fish species has an extensive distribution in southern Australia. Although taxonomic knowledge of the aquatic invertebrate fauna of the streams of the park is incomplete, all known species have widespread distributions.



The park contains a number of natural and artificial lakes. The five small alpine lakes (1.6-14.4 ha) – Albina, Blue, Club, Cootapatamba and Hedley Tarn – are unique on the Australian mainland in that they were formed by glacial action. They are the highest lakes in the country and the only free-standing waterbodies on the Australian mainland that have a lengthy seasonal ice cover. Populations of the native fish *Galaxias olidus* are present in Blue and Club lakes where chironomids (midges) are the dominant macroinvertebrate group. Crustaceans are the dominant group in Lakes Cootapatamba and Albina where fish are absent.

There are several other small (less than 1 ha) natural lakes in the park. ‘Bung’ Harris Dam occupies a doline fed by ephemeral streams in the Cooleman Plain karst area, while the Jounama Pond is located in a doline in the Yarrangobilly karst area.

Artificial waterbodies in the park include those associated with early mining ventures. While many of the dams constructed for mining operations have been breached, a number of small reservoirs remain, the two largest being Three Mile Dam near Kiandra and Dry Dam near Cabramurra. Small permanent or semi-permanent lakes or ponds also exist at the bottom of a number of alluvial diggings and dredging holes at mining sites throughout the park including the Kiandra, Grey Mare and Tin Mine fields. Small reservoirs have also been constructed on creeks near the Guthega, Thredbo, Perisher, Sponars, Yarrangobilly and Wilsons Valley developments for potable water supply purposes and small-scale hydro-

electric power generation.

The Snowy Mountains Hydro-electric Scheme includes a number of large impoundments, the following of which are located entirely within the park:

- Geehi Reservoir (Geehi River);
- Guthega Pondage (Snowy River);
- Happy Jacks Pondage (Tumut River/Happy Jacks Creek);
- Island Bend Pondage (Snowy River);
- Murray 2 Pondage (Khancoban Back Creek);
- Talbingo Reservoir (Tumut River);
- Tantangara Reservoir (Murrumbidgee River);
- Tumut Pond Reservoir (Tumut River);
- Tumut 2 Pondage (Tumut River); and
- Tooma Reservoir (Tooma River).

In places the park boundary follows the high water mark of Lakes Eucumbene and Jindabyne and Blowering Reservoir.

The park also contains a number of subterranean waterbodies, the most obvious of which are those associated with karst systems. Hyporheic systems (underground water in gravels and sands underlying and adjoining rivers and streams) are widespread in the park but their communities and ecologies have not been investigated. Little is also known of any ecosystems that may be dependent on the deep leads underneath the basalt flows in the northern part of the park.

## Significance

All alpine rivers in Australia are regarded as nationally significant in that they form only a very small percentage of all running waters in the country. Particular attributes of national significance are:

- The cultural attachments to the Snowy River derived from popular literature and the construction of the Snowy Mountains Hydro-electric Scheme;
- The aesthetic appeal of river valleys such as those of the Snowy, upper Murray and Geehi Rivers;
- The purity of the water of the alpine streams;
- The ecosystems of the upper catchments and associated wetlands; and

- Their water catchment values. (Water released from the Snowy Mountain storages is especially important for irrigation in the Murray-Darling Basin, which comprises 70% of all irrigated land in Australia.)

As virtually all large rivers in the Snowy Mountains are dammed, either within or just outside the park, large unmodified rivers above altitudes of 900 m are considered to be scarce habitat within a regional context. Other values of the rivers and streams of the park that are of regional significance are:

- Their importance for electricity generation. The Snowy Mountains Hydro-electric Scheme can provide up to 11% of the total power requirements of the eastern part of mainland Australia at any one time. Over a twelve month period the Scheme produces approximately 3% of the total energy in the national electricity market;
- Their employment value. Snowy Hydro Limited is the largest single employer in the region;
- The recreational fishing, canoeing and rafting opportunities available; and
- The provision of water for residential and industrial purposes in several major regional towns.

Blue Lake is recognised as a wetland of international importance under the Ramsar Convention on Wetlands. The listing, which also includes Hedley Tarn and most of the catchment of Blue Lake is based upon criteria 1 and 3 of the convention, that is, the area:

- Contains a representative, rare or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region; and
- Supports populations of plant and/or animal species important for maintaining the biological diversity of the particular biogeographic region.

Parties to the convention are required to manage listed wetlands in ways that maintain or enhance the condition of their ecological character. (The ecological character of the Blue Lake site is described in Schedule 2.)

Features of the alpine lakes of the park that are of national significance include:

- Their geomorphological histories. They are the only waterbodies on mainland Australia formed by glacial action;
- The aesthetic appeal of the landscape settings of the lakes;
- The purity of the water of the lakes. They are the freshest waterbodies on mainland Australia;
- Their location as the highest lakes in Australia;
- Their uniqueness as the only lakes on mainland Australia that have a lengthy seasonal ice cover;
- The temperature stratification in Blue Lake. Blue Lake is the only dimictic lake on the Australian mainland; and
- Their role in providing habitats for several invertebrate species restricted to the alpine area of the park.

Other nationally significant wetlands in the park include the alpine fens and bogs, and the wetlands at Rennix Gap.

## Issues and Opportunities

The Snowy Mountains Hydro-electric Scheme has profoundly affected the hydrological, geomorphological and ecological condition of many streams in the park. These impacts are particularly severe in the Tumut, Snowy and Gungahlin Rivers and some reaches of the Tooma, Murrumbidgee and Geehi Rivers. Hydrological changes include:

- Reduced flood frequency and magnitude;
- Reduced flow volumes and seasonal flow variability;
- Interruption of the lengthwise connectivity of stream flows; and
- In some cases, unnaturally rapid and aseasonal changes in water levels from power station and dam releases.

The geomorphological consequences of these changes have been:

- Channel contraction due to reduced discharge;
- Lack of channel adjustment to reduced flows in most reaches, resulting in the isolation of channels from riparian vegetation;
- Loss of rapids, chutes and riffles in many reaches; and
- Lateral isolation of pools and changes in sedimentation processes.

The impacts of the hydrological changes on water quality are greatest in the pool sections of streams, and include:

- Unseasonal water temperatures;
- Lower dissolved oxygen levels;
- Nutrient concentration due to low flows;
- High algal productivity; and
- Anoxia and stratification in the Tumut River.

The ecological integrity of those rivers and streams that form part of the Snowy Scheme has also been greatly

affected. Macroinvertebrate communities have changed from lotic (those of flowing waters) to lentic (those of standing waters) where stream flow, habitat and water quality conditions have been altered from those typical of a mountain stream to those of a lake or lowland stream. The impact of these changes on the range and abundance of individual animal and plant species is little understood.

The visual appeal and recreational amenity of many of these modified rivers and streams have also been degraded.

In December 2000 the New South Wales, Victorian and Commonwealth Governments signed the *Heads of Agreement: The Agreed Outcome from the Snowy Water Inquiry*. This agreement aims to increase environmental flows in the Snowy River by up to 28% of average natural flow, with a flow of 21% to be achieved within ten years. It also provides for dedicated environmental flows for the Murray River and montane rivers of the Snowy Mountains, including the upper Murrumbidgee, Goodradigbee and Geehi Rivers.

Impacts associated with reductions in stream flow regimes due to artificial snow-making within the alpine resorts are unknown. The need to understand the environmental implications of this activity is likely to grow if the resorts become increasingly reliant on artificial snow-making due to predicted climate changes.

All water extraction in the park is licensed by the Department of Natural Resources (DNR) under the *Water*

*Management Act 2000* with the exception of the Snowy Mountains Scheme which is licensed by DNR in accordance with the *Snowy Hydro Corporatisation Act 1997*.

Where present, introduced fish species have altered the natural ecological balance of the rivers and streams of the park. Aggressive species such as brown trout (*Salmo trutta*), rainbow trout (*Onchorycus mykiss*), Atlantic salmon (*S. salar*) and brook trout (*Salvelinus fontinalis*) are known to predate on native fish and frog species. They also alter the structure and distribution of the invertebrate populations of alpine streams.

Feral animals, such as horses, may also impact upon the water quality of park streams and cause stream bank erosion, as may the activities of recreational users including anglers, horse riders, four wheel drivers and walkers. The management of human waste generated by visitors poses a key water quality issue throughout the park.

(Separate discussions on the management of introduced fish species and water quality are provided in Sections 8.16 and 11.4, and Section 11.6 respectively. The ongoing operation of the Snowy Mountains Hydro-electric Scheme is governed by the Snowy Management Plan and is discussed in Chapter 12).

### 6.6.1 Management Objective

*The environmental condition of all watercourses and waterbodies is maintained or improved.*

#### **Policies and Actions**

1. Manage the following lakes, rivers and streams (and their tributaries) of high nature conservation value primarily to maintain or restore natural ecological, hydrological and geomorphological conditions and processes:
  - All alpine lakes;
  - All wetlands and streams above 1500 m;
  - All karst catchments;

- Bogong Creek;
- Burrungubugge River;
- Creeks of the Western Fall of the Main Range;
- Eucumbene River (above Lake Eucumbene);
- Geehi River (upstream of Geehi Reservoir);
- Goobarragandra River;
- Goodradigbee River;
- Gungarlin River;
- Indi (Murray) River;
- Ingeegoodbee River;
- Jounama Creek (above Jounama Pondage);
- Moyangul (Pinch) River;
- Murrumbidgee River (above Tantangara Reservoir);
- Nungar Creek (above Tantangara Reservoir);
- Swampy Plains River (upstream of Geehi Flats);
- Thredbo River (above Thredbo village);
- Tingaringy Creek;
- Tongaroo (Jacobs) River;
- Tooma River (above Tooma Dam);
- Tumut and Doubtful Rivers (above Happy Jacks Pondage);
- Valentine River; and
- Yarrangobilly River (above Talbingo Dam).

Prioritise works designed to maintain or restore the ecological integrity of the catchments of the lakes, rivers and streams listed above within the Park Restoration Plan (Section 11.1). These works may, as necessary, include measures designed to:

- Minimise soil disturbance and pollution sources within these catchments;
  - Control populations of introduced terrestrial and aquatic plant and animal species;
  - Restore free movement of native aquatic organisms and natural stream flow regimes (e.g. removal of impeding infrastructure) except where an artificial barrier prevents upstream movement of introduced fish species; and
  - Monitor the environmental health of individual lakes and streams.
2. Develop and implement an integrated monitoring program aimed at measuring changes in the condition of key attributes of the ecological character of the Blue Lake Ramsar site. Formulate impact thresholds for the ecological character of the site and manage threatening processes to maintain disturbance levels within these limits (refer also to Section 9.2).
  3. Investigate and, as appropriate, pursue an expanded Ramsar listing that includes all of the alpine lakes on the Main Range.
  4. Evaluate rivers or sections of rivers, including those listed in provision 6.6.1.1, for declaration as Wild Rivers under the *National Parks and Wildlife Act 1974*.
  5. Develop and implement a program to improve the condition of degraded waterbodies and watercourses in the park. This program will form part of the Park Restoration Plan (Chapter 11) and be linked with planned releases of water from the Snowy Scheme to improve the environmental condition of the Snowy River and other montane streams.
  6. In addition to the rivers earmarked for increased flows in the Snowy Water Inquiry Outcomes Implementation Schedule, support the release of water into the following streams (in no particular order):
    - Bogong Creek;
    - Burrungubugge River;

- Creeks of the Western Fall of the Main Range;
  - Falls Creek;
  - Munyang River; and
  - Pipers Creek.
7. Prohibit new diversions of water between catchments with the exception of the drawing of water from Three Mile Dam for snow-making purposes at Selwyn Snowfields alpine resort.
  8. Prohibit the construction of new aqueducts. Existing aqueducts may be replaced.
  9. Prohibit the construction of new reservoirs with the exception of those required for Service operations and the proposed snowmaking reservoir at Smiggin Holes. The proposed Smiggin Holes snowmaking reservoir may only be permitted if:
    - It does not significantly impact upon natural and cultural values;
    - It only stores water obtained from existing water diversions; and
    - It inundates an area of less than 2.5ha.
 The proposed Smiggin Holes snowmaking reservoir will be subject to the requirements of the Alpine Resorts Environmental Planning Instrument.
  10. Permit the replacement of existing dams with new dams of the same capacity and dimensions at the same sites.
  11. Limit the construction of temporary holding dams, settling basins or reservoirs to those required for:
    - Fire fighting operations;
    - The control of pollution incidents; and
    - Short-term infrastructure maintenance works.
  12. Ensure all proposed developments and activities demonstrate that they can maintain or improve natural ecological, hydrological and geomorphological conditions and processes of affected lakes, rivers or streams.
  13. Prohibit infrastructure and activity proposals that will result in alterations to natural flow regimes (including groundwater and seasonal and other natural variability), or aquatic ecosystems.
  14. New infrastructure or activities may only be permitted if any required water can be sourced from existing water diversions.
  15. Ensure water conservation, recycling and reuse through appropriate measures such as:
    - Reduced water consumption;
    - Effluent recycling;
    - Stormwater capture and reuse;
    - Demand management; and
    - Efficient water management practices.
  16. When assessing applications referred from the Department of Water and Energy for licences for domestic use water extraction within the park, NPWS will consider if the applicant:
    - Demonstrate success in significantly reducing per capita water consumption;
    - Implements, where appropriate, rainwater storage and water-use reduction strategies; and
    - Has an approved environmental management system in place (section 12.1).
 Applications for such infrastructure in the resort management units will be subject to the requirements of the Alpine Resorts Environmental Planning Instrument.
  17. Implement actions and targets developed under Catchment Management Blueprints and/or other related catchment plans as they relate to the park.
  18. Liaise with Snowy Hydro Limited and all other relevant authorities to achieve cooperative management of the reservoirs and environs within and adjacent to the park.
  19. Ensure ongoing protection of watercourses and waterbodies through the adoption and implementation of environmental management systems for all operations (Section 11.6).

### **6.6.2 Management Objective**

*The management of rivers, streams and lakes is informed by research.*

#### **Policies and Actions**

1. Undertake a review of the known natural and cultural values of the rivers, streams and lakes in the park and identify knowledge gaps. Based upon this work, develop an aquatic systems research program for the park in conjunction with relevant authorities and the community. This will form part of the Register of Required Research (Schedule 10). Priority will be given to applied research aimed at:
  - Ameliorating threats to aquatic values. (This will include research into the distribution of introduced fish species and their impacts on native biota aimed at the future management of introduced fish species); and
  - Monitoring the environmental health of watercourses and waterbodies. The existing water quality monitoring program for the park will be expanded to include all watercourses and waterbodies at risk from pollution (Section 11.6).
2. Monitor the environmental benefits of restoration works including, as appropriate, the benefits of environmental flows into the Snowy River and other montane streams in conjunction with other relevant authorities.
3. Identify and conserve the Aboriginal and non-Aboriginal cultural heritage associations with watercourses and waterbodies (Chapter 7).

### **6.6.3 Management Objective**

*Visitors understand and appreciate the values of the rivers, streams and lakes of the park and their role in protecting them.*

#### **Policies and Actions**

1. Interpret the values of the rivers, streams and lakes of the park within the context of the Communication Plan (Chapter 13).
2. Prepare and promote codes of behaviour for participants in individual recreational activities that include information designed to minimise impacts upon the aquatic values of the park.

## 6.7 Native Plants

*After having traversed now the main chains of the Snowy Mountains in so many directions I am led to believe that the plants mentioned in this and the two previous letters, and those mentioned in my reports, comprehend almost completely the Alps flora of this continent...*

*Ferdinand von Mueller 1855*

### Background

The alpine flora of the Snowy Mountains has long attracted the attention of scientists. In the 150 years since the distinguished botanical explorer Baron Ferdinand von Mueller criss-crossed the high tops observing and collecting plants, a procession of eminent botanists has visited the mountains. While most scientific scrutiny has focused on the unique assemblage of alpine plants growing in the most elevated places, the plant communities found elsewhere in the park are also of considerable interest.

The diverse vegetation of the park reflects the range of climates, rocks, soils, landforms and altitudes present. This variety encompasses composition, structure, age, form, colour and texture. The spindly eucalypts and groves of native cypress pines that grow on the skeletal soils of the Byadbo country contrast sharply with the pockets of cool temperate rainforest sheltering in the fire-protected gullies of the Geehi Valley. The contorted forms of ancient snow gums are strikingly different to the even-aged stands of upright alpine ash, or the mosaic of heaths, herbs and grasses that grow in the numerous frost hollows and on the exposed mountain tops and ridgelines.

In all, some 852 species of vascular plants and 221 non-vascular species have so far been recorded in the park. The plants of the park perform a range of critical ecological functions. These include soil formation and protection, nutrient storage and release, and the provision of wildlife habitats and sources of food. Beyond these roles, they also possess important cultural and intrinsic values.

The massed displays of alpine wildflowers in the summer months are well known. Less appreciated, but equally attractive, are the contrasting hues of the different vegetation types found across the mountains including the muted pastels of the eucalypt forests and woodlands. The plants, in all their guises, are an important component of the natural beauty of the park.

Aboriginal people made extensive use of the plants of the mountains. Plants with edible tubers or rhizomes provided important dietary staples. It is likely that more than 200 such plant species were used. Other plant materials were utilised for medicinal purposes, or as bonding agents, or were fashioned into tools and utensils such as baskets, dishes, traps, weapons, nets, mats and rope. Some plants indicated the likely presence of certain animals in an area, while seasonal flowering patterns pointed to the arrival or departure of different migratory species. Plants also performed and continue to play important roles in the spiritual and ceremonial lives of Aboriginal people.

Plants also played a key role in early European use of the mountains. Most notably, the seasonal grazing of livestock, which continued for over a century, was dependent on the presence of extensive highland pastures of native grasses and forbs. During the same period, sawmills were established to harvest the merchantable forests of the region. But just as the vegetation of the mountains influenced human patterns of behaviour and movement, humans also influenced the vegetation. Human activities, most notably burning, have shaped the composition, structure and age classes of many plant communities.

One genus of tree, *Eucalyptus*, dominates the landscapes of the park. The ubiquitous eucalypts clothe range and valley alike, occupying every available ecological niche but the frost hollows and the highest mountain tops and ridgelines. Some 33 eucalypt species replace each other along a number of ecological sequences across the park. From west to east at lower altitudes, black sallee (*E. stellulata*) and broad-leaved sallee (*E. camphora*) along the Geehi and upper Murray Rivers give way to dry sclerophyll forests of brittle gum (*E. mannifera*), red stringybark (*E. macrorhyncha*) and broad-leaved peppermint (*E. dives*) on the lower, drier slopes of the Great Divide. With increasing altitude, the dry forests are

replaced by a broad band of wet sclerophyll or montane forest which occupies most of the western mountain slopes. A band of ribbon gum (*E. viminalis*), brown barrel (*E. fastigata*), eurabbie (*E. bicostata*) and narrow-leaved peppermint (*E. radiata*) grades into stands of fire-sensitive alpine ash (*E. delegatensis*), mountain gum (*E. dalrympleana*), white sallee (*E. pauciflora*) and the rarer Bogong gum (*E. chapmaniana*). These tall western forests contain understoreys of ferns and species such as blanket leaf (*Bedfordia arborescens*) and blackwood (*Acacia melanoxylon*), while fire-protected gullies harbour patches of cool temperate rainforest dominated by southern sassafras (*Atherosperma moschatum*).

Around 1500 m, sclerophyll forest gives way to a more open subalpine woodland of twisted snow gums (*E. niphophila*). These trees survive to about 1830 m in elevation where they surrender to the dwarf alpine vegetation that covers the very crest of the Great Divide. In the northern end of the park where the high-elevation alpine environment is largely absent, high treeless areas, in the form of cold air plains, are extensive and common.

In the more gradual easterly descent from the high tops, the sequence of snow gum woodland and sclerophyll forest is again encountered. Here, where it is considerably drier than the western escarpment, the upper wet sclerophyll forest belt contains less alpine ash and the lower belt is largely replaced by a dry sclerophyll forest of broad-leaved peppermint and candlebark (*E. rubida*). Associated savannah woodland on the gentler eastern slopes contains white sallee, candlebark and ribbon gum.

This west to east sequence varies in the far south where the Snowy River valley encloses a lower, drier and warmer environment that supports woodlands and scrubs not found elsewhere in the park. Of particular interest is the white box (*E. albens*) - white cypress pine (*Callitris glaucophylla*) woodland, which is the largest occurrence of this association east of the Great Divide. This association shows affinities with the vegetation of both the coastal and inland regions and may be a relict of earlier, more widespread climatic conditions, still preserved within the Snowy Valley. Other tree species here include bundy (*E. goniocalyx*), yellow box (*E. melliodora*) and apple box (*E. bridgesiana*).

The steep ascent eastwards out of the lower Snowy River valley is through woodland and dry and wet sclerophyll forest. Here in the parched Byadbo country patches of so-called 'black scrub' are found. These communities are

dominated by the coastal Bodalla wattle (*Acacia silvestris*), the inland currawang (*A. doratoxylon*) and the rock wax-flower (*Philotheca trachyphylla*). A few stands of alpine ash exist near Mount Tingaringy. The descent from here to the south-east boundary of the park is through dry forest and remnants of savannah woodland of white sallee and other species.

The ecological sequence from the north to the south of the park along the top of the Fiery Range and the Great Dividing Range is far simpler, consisting primarily of an elevated north-south plateau occupied by subalpine snow gum woodlands. Much of this community has been burnt in recent decades, and extensive areas of dead snow gum stems now dominate many of the subalpine landscapes of the park. In most areas, the snow gums have re-sprouted strongly from their woody lignotubers. A dense shrubby understorey of species such as leafy bossiaea (*Bossiaea foliosa*), common shaggy pea (*Oxylobium ellipticum*) and mountain plum pine (*Podocarpus lawrencii*) exists beneath the snow gums. These shrubs are replaced by short heathy plants such as yellow kunzea (*Kunzea muelleri*) and *Epacris* species on poorly-drained sites.

The woodlands of this undulating plateau are broken by treeless frost hollows where cold air collects on still nights, inhibiting the growth of even the hardy snow gum. Bogs, fens, heaths and sod tussock grasslands grow in these places, the largest of which occur in the northern end of the park. Sphagnum moss species are indicative of the bog communities, sedges dominate the fens, and *Poa* grasses characterise the grasslands of the hollows.

In contrast to the inverted treelines of the frost hollows, the subalpine/alpine treelines mark the altitude above which summer temperatures are insufficient to support the growth of trees. Beyond the upper treeline, alpine meadows of dwarf plant communities prevail. The largest tract of alpine vegetation occurs along the spine of the Main Range, covering an area of approximately 250 km<sup>2</sup> from the rocky peak of the South Ramshead to Dicky Cooper Bogong 28 km to the north. Although this area forms only a minute fraction of the Australian continent, it contains a remarkable diversity of plant communities. Tall alpine herbfields of the snow daisy - snow grass (*Celmisia* spp - *Poa* spp) alliance are the most widespread community, occurring wherever well-developed alpine humus soils exist. Elsewhere, the alpine vegetation consists of heathlands, sphagnum bog and fen communities, and very rare communities such as short alpine herbfield, windswept feldmark and snowpatch



feldmark. Each of these communities contains a distinctive suite of dwarf plant species, many of them unique to Kosciuszko. Of the 204 species of alpine flowering plants, 21 species are endemic and 33 species are considered rare.

A large range of mosses, lichen and fungi are found throughout the park, although little is known about the distribution, role and ecology of these non-vascular species.

Seven plant species in the park are listed as endangered under the *Threatened Species Conservation Act 1995*, with a further ten species listed as vulnerable. Under the

Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*, one species found in the park is regarded as endangered and ten species are considered to be vulnerable. Thirty-six species of plants are endemic to the park, while the park represents the only known locality in NSW for 96 species. Most of the species listed as endangered or vulnerable and those with restricted distributions are found in the alpine and subalpine areas.

(All vulnerable and endangered plant species and those species that are endemic to the park are listed at Schedule 1.)

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## Significance

The World Conservation Union (IUCN) has recognised the Australian Alps as one of six major centres of plant diversity in Australia, and one of only 167 such places throughout the world. This outstanding level of significance is based upon the extent and scale of the continuous and interrelated plant diversity present.

Particular features of the vegetation of the park that are of international significance are:

- The alpine flora. Most of the alpine plants of the park are present elsewhere in the Australian Alps, but nowhere else are they as well represented or present in so large a scale. The significance of the alpine flora lies not only in its diversity and high degree of endemism, but also in its relationships and differences with other alpine floras in the Southern Hemisphere;
- The subalpine inverted treelines. These are amongst only a few examples in the world in which the wooded side is dominated by open-crowned evergreen angiosperms;
- The subalpine treeless flats and valleys. These are amongst the best examples of their kind in the world;
- The subalpine woodlands. These are unique in being dominated exclusively by broad-leaved evergreen species; and

- The dominance of the vegetation by species of a single genus, *Eucalyptus*. The radiation of one genus to occupy such a wide variety of habitats is virtually unparalleled in the world.

Features of national significance are:

- The upper slope treelines. Those in the park are the best developed examples on the Australian mainland;
- The frost hollows. These span the complete spectrum of altitudes from near the upper slope treeline to montane environments, and are the best examples of their type in Australia;
- The white box (*E. albens*) – white cypress pine (*Callitris glaucophylla*) (box–pine) ecosystems of the lower Snowy River valley and Byadbo country which are under extreme pressure elsewhere and are listed nationally as an endangered ecological community;
- The podocarpus heaths and sphagnum bogs which provide habitats for the endangered mountain pygmy-possum (*Burramys parvus*) and corroboree frog (*Pseudophryne corroboree*) respectively; and
- The aesthetic appeal of the massed seasonal displays of alpine wildflowers.

## Issues and Opportunities

The key issues associated with vegetation management in the park are:

- Fire;
- Past and ongoing developments and human activities;
- Climate change;
- Introduced plants and pathogens; and
- Introduced animals.

Fire represents the single most significant issue in the management of the extensive eucalypt-dominated forests and woodlands of the park (Section 11.5). In particular, the high incidence of fire from the mid-nineteenth century onwards has contributed to:

- Changes in age classes, especially the proportion of old-growth vegetation present;
- Changes in vegetation structure and composition;
- Widespread loss of topsoil; and
- Invasion by weed species.

Despite this, fire plays an important role in the life cycle of numerous plant species.

Much of the natural inverted treeline has been eliminated or modified through ringbarking of trees and burning of the forest during the grazing era. There has been relatively little re-establishment of trees into these areas, although some tree planting has occurred. Other issues associated with past and ongoing human activities include:

- The degradation of areas due to past grazing and burning practices. Permanent vegetation changes have occurred where soil profiles have been eroded down to subsoil pavements. Bog and streamside vegetation remains altered along those streamlines that have been deeply eroded; and
- The development of infrastructure and recreational activities. Impacts on the vegetation include the destruction of vegetation and formation of tracks, soil compaction, soil erosion and the creation of disturbance effects that favour exotic plants.

Human-induced climate change poses a significant threat to the plants of the park, especially those of the alpine and subalpine areas (Section 6.2) as does the ongoing spread and introduction of exotic plant species (Section 11.3) and the activities of feral animals (Section 11.4).

### 6.7.1 Management Objective

*Native plant species and communities are maintained and/or rehabilitated and include a representative range of successional stages and age classes.*

#### **Policies and Actions**

1. Provide threatened or otherwise significant species (as listed at Schedule 1) with maximum protection.
2. Prepare and implement the provisions of recovery plans for plant species listed in Schedule 1 as threatened under the *Threatened Species Conservation Act 1995* and *Environment Protection and Biodiversity Conservation Act 1999*.
3. Prepare and implement management regimes for all other significant plant species and communities as listed in Schedule 1.
4. In respect to native vegetation management, fire management in the park will be based upon:
  - An understanding that wildfire has been a feature of the region and its vegetation for millennia;
  - An understanding that large tracts of vegetation in the park are skewed towards a primary state of succession as a consequence of past fire history, and that the dominant vegetation management objective will be to achieve a representative range of successional stages including old-growth vegetation;
  - Desirable fire regimes for the maintenance of plant diversity;
  - The need to ensure that fire is not implicated in the extinction of any plant species; and

- Fire management guidelines for individual plant species listed under the *Threatened Species Conservation Act 1995*, the *Environment Protection and Biodiversity Conservation Act 1999* and other species of significance.
5. Protect and enhance the conservation status of plant species and communities in the park by:
    - Undertaking fire management practices as outlined in Section 11.5;
    - Undertaking further soil conservation and rehabilitation works in disturbed areas (Sections 6.5 and 11.2);
    - Controlling introduced plants and pathogens (Section 11.3);
    - Controlling introduced animals (Section 11.4);
    - Removing various redundant structures and rehabilitating such sites (Section 11.6);
    - Formulating and implementing walking track management plans with a key aim being to minimise impacts on vegetation (Section 8.6);
    - Limiting the development of any new infrastructure to already disturbed sites within alpine areas with the exception of walking track re-routes designed to reduce environmental impacts, associated interpretive facilities and developments in the alpine resort management units that are consistent with the Alpine Resorts Environmental Planning Instrument (Chapter 10);
    - Implementing recreation management provisions designed to minimise impacts on the vegetation of the park (Chapter 8);
    - Minimising the effects of other threatening processes on those plant communities considered likely to come under stress due to climate change (as listed in Section 6.2);
    - Confining the use of oversnow vehicles to essential management and emergency operations and minimising use during periods of marginal snow conditions; and
    - Confining the use of vehicles to formed roads and trails.
  6. Ensure ongoing protection of native plants through the adoption and implementation of environmental management systems for all operations (Section 12.1).
  7. Establish monitoring regimes for key plant species and vegetation communities regarded as threatened or otherwise significant to measure the success of management practices in maintaining or improving the conservation status of these species and communities. Monitoring results will be used to refine management practices as necessary.

### **6.7.2 Management Objective**

*The cultural values of native plant species and communities are identified, assessed and managed appropriately.*

### **Policies and Actions**

1. Identify, document and interpret as appropriate the traditional, historical and contemporary cultural values of the plants of the park to Aboriginal and non-Aboriginal people. The management of these values will primarily be based upon assessments of their cultural significance (Chapter 7).

### **6.7.3 Management Objective**

*Research informs the management of the native vegetation of the park.*

#### **Policies and Actions**

1. Investigate and map the composition and distribution of plant communities within the park.
2. Develop a strategic native vegetation research program as a component of the Register of Required Research (Chapter 15). Priorities will include directed fire research projects aimed at improving knowledge and understanding of:
  - The ecological changes resulting from the 2003 fires and post-fire recovery of different vegetation communities (this will include periodic surveys of the permanent fire plots and transects established across the park);
  - Surveys for rare and threatened plant species not recently located that may regenerate after fire; and
  - The most appropriate fire regimes for particular vegetation communities and individual plant species. Emphasis will initially be given to the management of restricted, rare or endangered communities and species, as listed at Schedule 1, and those known to be fire-sensitive (Section 11.5).
3. Formulate and implement a research program to measure and understand the implications of climate change on the plant species and communities of the park (Section 6.2).
4. Facilitate research that improves the knowledge base of the non-vascular plant species (lichens, mosses, fungi, liverworts) of the park.

### **6.7.4 Management Objective**

*Visitors and other stakeholders appreciate the values of the native plants of the park and their responsibilities in protecting those values.*

#### **Policies and Actions**

1. Promote public understanding and appreciation of the native plants of the park within the context of the Communication Plan (Chapter 13). The plan will explore strategies for interpreting:
  - The values and significance of the native plants of the park (including their global and national contexts, ecological functions and cultural values);
  - The role of the park across the greater landscape as a source of population recruitment for other places;
  - The linked stories of the roles of plants in influencing Aboriginal and non-Aboriginal use and movement throughout the mountains, and the influences and impacts of human activities on the plants of the park;
  - The strategies adopted by the Service to reduce threatening processes on the native vegetation of the park;
  - The role of fire in managing native vegetation; and
  - The role of visitors in protecting native plants through the adoption of minimal impact recreational practices.

## 6.8 Native Animals

*As soon as I was observed by some of them, a caw of alarm was raised and from every crack and cranny their black plumage burst forth. Some thousands of crows rose in the air almost like a cloud...*

*Richard Helms 1901*

### Background

The flocks of ravens that loiter about the granite tors of the high country in summer are a distinctive feature of the mountains. Their arrival coincides with the annual migration of Bogong moths that congregate in their millions in ‘every crack and cranny’ amongst the boulders. The ravens are not the only animals to exploit this rich, and seemingly inexhaustible, seasonal source of food that is relied upon by numerous other species, including the diminutive mountain pygmy-possum.

The summer moth migration also attracted Aboriginal people to the high country from near and distant places. Early European accounts suggest that, in addition to feasting on the plentiful moths, Aboriginal people also ate large numbers of the competing ravens or ‘Arabuls’. A variety of other animals were utilised for food, clothing or in decoration, including birds, possums, kangaroos, wallabies, wombats, reptiles and fish. Certain animals were, and remain, central to the spiritual and ceremonial lives of Aboriginal people and their lore concerning the origins of the various mountain landforms, life forms and themselves.

Many of the animal species inhabiting the park have extensive ranges and are familiar to many people. Together animals such as kangaroos, wombats and wallabies, form part of our collective ‘sense of place’. The diverse habitats of the park support populations of about 300 native terrestrial vertebrate species and an unknown number of invertebrate species. The former includes 31 mammal and 202 bird species. Given the relatively cold climate, the park supports a surprising diversity of cold-blooded reptiles (31 species) and frogs (11 species). Eleven species of native fish have been recorded in the park.

Although the distributions of many species cover a variety of ecological niches, most have altitudinal limits, with more mobile animals undertaking seasonal migrations between higher and lower country. In some cases, populations of low mobility alpine specialists (some

invertebrates, small terrestrial mammals, reptiles and frogs) have ‘retreated’ up the mountainsides as the global climate has warmed. Over time, these species have become genetically isolated at higher altitudes and now persist as a series of discrete, and sometimes endemic, populations.

While the animals of the park depend on the availability of suitable habitats, in turn they perform ecological functions that are critical to the health of these habitats. Each animal species has one or more ecological roles, be it predation, nutrient capture and recycling, pollination, soil disturbance and aeration, seed dispersal or grazing. These functions occur at all scales of the landscape, both above and below the ground, and involve vertebrate and invertebrate species alike.

Of the mammals, species diversity decreases with increasing altitude. The eastern grey kangaroo (*Macropus giganteus*), red-necked wallaby (*M. rufogriseus*) and swamp wallaby (*Wallabia bicolor*) are most common in the dry and montane forests and woodlands. Of these, only the swamp wallaby is to be found in the subalpine area all year round. The distributions of the common brushtail possum (*Trichosurus vulpecula*), ringtail possum (*Pseudocheirus peregrinus*) and eastern pygmy-possum (*Cercatetus nanus*) extend into the subalpine area, as does that of the common wombat (*Vombatis ursinus*), platypus (*Ornithorhynchus anatinus*) and echidna (*Tachyglossus aculeatus*). By contrast, the two small carnivorous marsupials, the dusky Antechinus (*Antechinus swainsonii*) and agile Antechinus (*Antechinus agilis*), occur high up into the alpine country, as do native rodents such as the widespread bush rat (*Rattus fuscipes*) and the threatened broad-toothed rat (*Mastacomys fuscus*), which is largely restricted to country above the level of the winter snowline. At least five of the 17 bat species recorded in the park forage across the alpine area during summer to feed on the seasonal abundance of insects.

The endangered mountain pygmy-possum (*Burramys parvus*) is one of the rarest and best known animals of the park, and the only mammal that is endemic to the Australian Alps. It is restricted to the alpine and subalpine areas. Thought extinct, this possum was rediscovered in the Victorian Alps in 1966 and first recorded in Kosciuszko National Park three years later. A cold-climate specialist, *Burramys* is the only marsupial that hibernates. It inhabits periglacial boulderfields frequently overlain by closed heathlands of mountain plum pine (*Podocarpus lawrencii*) in a number of small disjunct populations.

The distributions of some formerly widespread mammal species have been severely reduced. These include the brush-tailed phascogale (*Phascogale tapoatafa*), the yellow-bellied glider (*Petaurus australis*), and the endangered spotted-tailed quoll (*Dasyurus maculatus*), all of which are dependent on tree hollows or fallen logs as breeding sites. The ongoing decline in these and other mammal species, such as the koala (*Phascolarctos cinereus*), reflects a continent-wide story, as do local extinctions. Mammals that are considered to be extinct within the park include the eastern bettong (*Bettongia gaimardi*), the eastern quoll (*Dasyurus vivverinus*) and the brush-tailed rock wallaby (*Petrogale pencillata*).

Although introduced to Australia as recently as 5000 years ago, the dingo (*Canis lupus dingo*) is recognised as a native animal within NSW. Genetic tests of dingo populations in the park have detected the presence of domestic dog genes in the majority of tested animals in many areas.

Nearly 40% of all bird species known to occur in NSW have been recorded in the park, reflecting the remarkable diversity of habitats present. Most of these species have widespread distributions across the greater landscape, with the highest diversity of birds occurring in the dry forests and woodlands. Over 60 bird species feed on the summer insect hordes of the alpine and subalpine areas, amongst them the pipit (*Anthus novaeseelandiae*), little raven (*Corvus mellori*), Australian kestrel (*Falco cenchroides*) and the Australian magpie (*Gymnorhina fibicen*). Although most birds retreat to lower elevations during autumn, the winter cold does not deter all species, with the rasping call of gang gang cockatoos (*Callocephalon fimbriatum*) commonly heard emanating from amongst the snow gums all year round.

In the lower valleys of the park, small groups of emus (*Dromaius novaehollandiae*) may be encountered, and

soaring pairs of wedge-tailed eagles (*Aquila audax*) are frequently seen. Less common is the peregrine falcon (*Falco peregrinus*) which has experienced historical declines across large parts of its global range. The park may represent one of the few regional strongholds for this species. Hollow-dependent birds such as the threatened glossy black cockatoo (*Calyptorhynchus lathami*) and barking owl (*Ninox conniven*) have also suffered severe range reductions. The wetlands of the park support low numbers of migratory birds that are regular or occasional visitors, such as Latham's snipe (*Gallinago hardwickii*).

Two bird species, the orange-bellied parrot (*Neophema chrysogaster*) and the Australian bustard (*Ardeotis australis*) are locally extinct while a number of others have not been sighted in the area for many years.

The highly diverse reptile fauna of the park is unusual in that almost half of the species present occur above the snowline. Three skink species, the alpine oak skink (*Cyclodomorphus praealtus*), Snowy Mountains rock skink (*Egernia guthega*) and tan-backed rock skink (*E. montanum*), are confined to the alpine and subalpine areas. Another, the alpine water skink (*Sphenomorphus kosciuskoi*) is restricted to wetland habitats above 1000 m, and the mountain log skink (*Pseudemoia entrecasteauxii*) survives at sites above 2000 m in altitude. Apart from the ten species of skinks, other reptiles present include the widespread mountain heath dragon (*Tympanocryptis diemensis*) and seven snake species.

Eleven species of frogs inhabit the park, five of which are known from the subalpine area. Four of these cold-climate specialists are undergoing rapid population declines and range contractions. The vividly-coloured northern corroboree frog (*Pseudophryne pengilleyi*) and southern corroboree frog (*Pseudophryne corroboree*) occupy wetlands of the alpine and subalpine areas and are both endangered. The once widespread alpine tree frog (*Litoria verreauxii alpina*) has suffered a similar decline as has the threatened booroolong frog (*Litoria booroolongensis*) and the endangered spotted tree frog (*Litoria spenceri*).

The eleven species of native fish recorded in the park include the short-finned eel (*Anguilla australis*), long-finned eel (*A. reinhardtii*), climbing galaxias (*Galaxias brevipinnis*), mountain galaxias (*G. olidus*), Australian smelt (*Retropinna semoni*), congolli (*Pseudaphritis urvillii*) and two-spined blackfish (*Gadopsis bispinosus*). Of these, only the small minnow-like mountain galaxias

occurs in waters located above the winter snowline. Most native fish species are reduced in abundance and, perhaps, distribution.

The invertebrate fauna of the park is poorly known and understood, though it appears to be very diverse. Most knowledge is confined to the Class Insecta.

Insect diversity decreases with increasing altitude, with a significant reduction in diversity at the upper slope treeline. Despite this, the insect fauna of any one place varies significantly over time, containing an ever-changing mix of year-round and seasonal residents, and accidental wind-blown species.

The alpine area is characterised by a low number of insect species but high numbers of individuals. During summer, the high country is alive with swarms of ants and grasshoppers, including the alpine thermocolour grasshopper (*Kosciuscola tristis*) which is one of very few insects known to change colour in response to temperature fluctuations. During the same period, many

millions of Bogong moths (*Agrotis infusa*) are resident in the alpine region. All of these insects represent a bountiful seasonal food source for numerous species of mammals, birds and reptiles.

The invertebrate fauna of the caves of the park is of particular interest, as most species are confined to one or only a few caves because movement in the open for them is often difficult or impossible. Many of these species have evolved in geographic isolation so that they are now only distantly related to surface forms. They provide valuable insights into the geographical distributions and evolutionary histories of our fauna.

Thirty two species found in the park (including mammals, birds and frogs) are listed as threatened under the *Threatened Species Conservation Act 1995* and two resident fish species are listed as threatened under the *NSW Fisheries Management Act 1994* (Schedule 1). A high number of these threatened species inhabit the alpine and subalpine areas of the park.

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## Significance

Internationally significant features of the fauna of the park are:

- The diversity of vertebrate species present, including the presence of mammals from the Eutheria, Marsupialia and Monotremata groups. This is unique amongst the temperate regions of the world;
- The diversity of marsupial species present;
- The high diversity of reptile species, especially above the snowline. Population densities of some reptile species are amongst the highest recorded anywhere in the world;
- The presence of the mountain pygmy-possum, the only alpine/subalpine-restricted marsupial species, and the only one known to hibernate;
- The seasonal presence of Bogong moths, representing the climax of one of the longest insect migrations in the world;

- The seasonal presence of Latham's snipe (*Gallinago hardwickii*) protected by two international migratory bird agreements; and
- The occurrence in the park of thirteen vertebrate species listed as threatened, or near threatened, by the World Conservation Union (IUCN).

Nationally significant attributes of the fauna are:

- The endemic or cold-climate specialists of the alpine and subalpine areas, including one mammal, five frogs, four reptiles and a range of invertebrates species (e.g. ten species of grasshoppers and crickets and ten species of megascolecid earthworms);
  - Populations of nationally threatened species of mammals, birds, frogs and fish; and
  - The cultural significance of the Bogong moth to Aboriginal people in south-eastern Australia.
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## Issues and Opportunities

While most of the medium to large native animal species are still common in the park, the same cannot be said for habitat specialists. Various animal species and populations are in a disrupted state, with a significant number of species in decline or remaining precariously threatened. Local extinctions continue to occur. The mammals and amphibians that inhabit the alpine and subalpine areas are especially vulnerable, as are hollow-dependent species. The natural predator-prey balance is markedly disturbed, with all large owls threatened, and large to medium-sized mammalian predators locally extinct (eastern quoll), declining in abundance (spotted-tailed quoll) or being 'controlled' (dingo).

The cascading effects of these changes upon the health and survival of all interdependent animal species along the food chain, their ecological functions, and the habitats they occupy are poorly understood. For most species, monitoring has not been undertaken to determine trends. This is especially true for the wildlife of the forests and woodlands. Similarly, there are no benchmarks or long-term measures of the condition of the habitats of the park.

The decline and demise of various native animal species is due to the influences of one or more of the following key threats:

- Introduced animal and plant species;
- Exotic diseases and pathogens;
- Inappropriate fire regimes;
- Habitat destruction, modification and fragmentation;
- Climate change; and
- Catastrophic climate events.

About 20 exotic vertebrate species are present in the park including mammalian predators such as the red fox (*Vulpes vulpes*), dog (*Canis lupus*) and cat (*Felis catus*), rabbits (*Orytolagus cuniculus*), hoofed grazers such as horses (*Equus caballus*) and Sambar deer (*Cervus unicolor*), and a variety of birds (Section 11.4). Various introduced fish and insect species are also present.

Impacts on native animal populations associated with these introduced species include:

- Predation;
- Competition;
- Altered grazing regimes;
- Habitat degradation; and
- Interbreeding.

Introduced predators such as foxes and cats have been implicated in the extinction or decline of a number of native mammals including the brush-tailed rock wallaby, eastern quoll, mountain pygmy-possum and broad-toothed rat. Introduced trout are known to prey on the eggs and tadpoles of native frogs. All of these introduced animals compete with native wildlife for resources, as do rabbits, rats and house mice, and birds and insects. Grazing and trampling by introduced herbivores affects the physical condition and structure of various habitats including the destruction of sensitive areas such as bogs. The dingoes in the park, as elsewhere, are subject to genetic dilution from interbreeding with domestic dogs.

Some 330 weed species have been recorded in the park (Section 11.3). The ecological effects associated with these exotic plants on the vertebrate and invertebrate fauna remain largely unknown. Obvious impacts include:

- Physical alterations to habitats;
- The creation of access barriers for some native animals; and
- Infestations harbouring feral animal species.

Some animal species are vulnerable to exotic diseases and pathogens. Diseases such as canid mange in wombats and chytridiomycosis in frogs have been recorded in the park. The latter disease, caused by a fungus, has been detected in a number of threatened frog species though it remains unclear whether it constitutes the primary cause of recent frog population declines.

Fire is a significant determinant in the distribution, abundance and survival of numerous native animals. While individual animals and populations are directly killed by fire, fire can also result in the loss of critical habitat attributes such as:

- The loss of hollow-bearing mature trees. (Tree hollows are critical for a wide range of possums, gliders and birds. All but three of the threatened bird species in the park are hollow-dependent);
- The depletion of fallen wood debris; and
- Changes in the abundance of food resources.

Habitats in the park have also been destroyed or modified at a variety of scales through past land uses and practices and infrastructure development. Beyond the physical damage to terrestrial habitats caused by these developments and the activities of visitors, impacts on



aquatic habitats include alterations to natural flow regimes and water quality.

The potential consequences of climate change on the fauna of the park are profound (Section 6.2). These may include the ongoing decline and extinction of various cold-climate specialists of the alpine area as their required habitats are further reduced or disappear, and the uphill migration of other species (including feral animals) from lower elevations. The invertebrates of the alpine area are especially vulnerable, with species changes likely to be reflected in the alpine flora, where insects are major native grazers and pollinators. Although the biological effects of elevated levels of solar UV-B radiation due to ozone depletion are poorly understood, amphibians of the alpine area are considered to be particularly susceptible to such changes. The most notable of these are the southern corroboree frog (*Pseudophryne corroboree*) and alpine tree frog (*Litoria verreauxii alpina*).

For animal species and populations that are under stress from other factors, climatic conditions such as extreme drought, and associated catastrophic events such as fires, can hasten localised declines and extinctions. With the landscape-wide loss and modification of natural habitats, the park is likely to become an increasingly important refuge and source of population recruits for other places. This is especially true for segments of the forest and woodland fauna that are in decline elsewhere across south-eastern Australia. Conversely, some resident animal species, particularly those restricted to treed environments and with large home ranges, are reliant upon the retention or re-instatement of suitable habitat outside the park for their long-term survival. The interconnectedness of places and environmental condition across the broader landscape is graphically demonstrated by the many millions of migratory Bogong moths that every year transport ingested arsenic to the alpine area from the agricultural lands of the western plains of NSW.

### 6.8.1 Management Objective

*Viable populations of all native animal species that currently occur in the park are maintained or restored.*

#### **Policies and Actions**

1. Provide threatened or otherwise significant species (as listed at Schedule 1) with maximum protection.
2. Prepare and implement recovery plans for animal species listed as endangered or vulnerable under the *Threatened Species Conservation Act 1995* and *Environment Protection and Biodiversity Conservation Act 1999* (Schedule 1).
3. Prepare and implement management regimes for all other significant animal species as listed in Schedule 1.
4. In respect to native animals, fire management in the park will be based upon:
  - The need to maintain or create a representative range of successional vegetation stages and age classes including the retention of mature vegetation and critical habitat components such as tree hollows and fallen wood debris; and
  - The requirements of species that are known to be reliant on particular fire regimes for the maintenance of habitat attributes (e.g. smoky mouse).
5. Undertake control programs for introduced plants and animals within the context of the Park Restoration Plan (Sections 11.3 and 11.4).
6. Consider a long-term strategy for the reinstatement of the natural (pre-European) high order predator hierarchy. Replacement of the current wild dog-fox-cat regime in the park with populations of dingoes and quolls may be attempted through an integrated approach requiring:
  - The adoption of new techniques to achieve landscape-wide control of foxes, dogs and cats;
  - Adaptive experimental programs designed to protect purebred dingo populations while reducing wild dog

and fox numbers. (This will require research into new control methods and practices that target these species and not dingoes);

- Strict waste management and feral animal control regimes within high-use areas such as the alpine resorts to reduce fox and cat numbers; and
  - Active management of the spotted-tailed quoll population in order that it can be restored to numbers where its ecological role is re-established.
7. Systematically evaluate the condition of native animal habitats of the park based upon a scientifically valid methodology. This will require the determination of likely pre-European conditions for use as benchmarks against which changes in habitat condition can be measured. Management will aim to achieve net gains in the extent and condition of habitats against surmised pre-European levels.
  8. Minimise the effects of other threatening processes on those alpine and subalpine animal species considered likely to come under increasing stress due to climate change, as listed in Section 6.2. Strategies will focus on habitat enhancement including the control of feral animals and weed species.
  9. Develop and implement programs to enhance the habitats of significant species where past or ongoing developments or uses have resulted in habitat degradation or fragmentation.
  10. Ensure lakes and sections of rivers and streams that are currently free of introduced fish species remain free of such species (Section 11.4).
  11. Utilise the existing Atlas of NSW Wildlife framework for the systematic recording of wildlife in the park.
  12. Investigate any unusual changes in wildlife populations that may be associated with exotic diseases and pathogens and keep abreast of research.
  13. Protect native animals through the adoption and implementation of environmental management systems for all operations (Section 12.1).
  14. Establish monitoring regimes for key animal species regarded as endangered, vulnerable or otherwise significant to measure the success of management practices in maintaining or improving the conservation status of these species. Monitoring results will be used to refine, as necessary, species management practices.

## **6.8.2 Management Objective**

*Locally extinct species are reintroduced and stable populations are established.*

### **Policies and Actions**

1. Undertake research to determine the desirability and feasibility of reintroducing locally extinct native animal species based upon:
  - The successful implementation of targeted programs aimed at reducing key threats;
  - The availability of suitable habitats and genetic provenances; and
  - The experiences of other research institutions and park management agencies within Australia and overseas.

### **6.8.3 Management Objective**

*The cultural values of native animal species are identified, assessed and managed appropriately.*

#### **Policies and Actions**

1. Identify, document and interpret the traditional, historical and contemporary cultural values of the animals of the park to Aboriginal and non-Aboriginal people. The management of these values will primarily be based upon assessments of their cultural significance (Chapter 7).

### **6.8.4 Management Objective**

*Research informs the management of the native animals of the park.*

#### **Policies and Actions**

1. Develop a strategic native animals research program as a component of the Register of Required Research (Chapter 15). Priorities will include:
  - Examination of the current predator dynamics so as to improve understanding of how it can be altered to benefit nature conservation and the interests of adjoining land owners;
  - Research into introduced grazers including relations between these species and predator management, the ecological changes initiated by these species, and control strategies to reduce the ranges of these animals;
  - Systematic evaluation of the condition of the vegetation (and particular habitats) of the park including links to adjoining areas and the formulation of habitat-specific management regimes;
  - Continuation of the monitoring of key species and communities in the alpine and subalpine areas and expansion of this program to include key species of the forests and woodlands;
  - Assessing the implications of climate change on vulnerable species (as listed in Section 6.2) and the formulation of species-specific management practices;
  - Understanding the role of the park as a refuge and recruitment area for places outside the park;
  - Continuation and expansion of genetic studies into threatened species and candidate species for reintroduction; and
  - Research into the types, distribution and ecological functions of invertebrates, especially in the alpine area.

### **6.8.5 Management Objective**

*The diversity of native species found in the park is maximised at a regional scale.*

#### **Policies and Actions**

1. Collaborate with neighbours, community groups, local councils and government agencies concerning the planning and management of lands adjoining the park in order to:

- Ensure the long-term viability of all native animal species found in the park, especially those with large home ranges that are dependent on the existence of suitable habitat(s) outside the park; and
- Fully realise the potential of the park as a regional biodiversity reservoir.

In particular, promote an integrated approach across all land tenures aimed at the retention or creation of:

- Suitable habitats, notably for those species with large home ranges; and
- Regional-scale wildlife corridors.

### **6.8.6 Management Objective**

*Visitors and other stakeholders appreciate the values of the native animals of the park and their responsibilities in protecting them.*

#### **Policies and Actions**

1. Promote public understanding and appreciation of the native animals of the park within the context of the Communication Plan (Chapter 13). The plan will explore strategies for interpreting:

- The values and significance of the native animals of the park (including their ecological roles, intrinsic value and cultural values);
- The role of the park across the greater landscape as a refuge and source of population recruitment for other places;
- The reasons for historical and ongoing declines and extinctions in native animal populations within the park and the strategies adopted by the Service to reduce threatening processes; and
- The role of visitors in protecting wildlife (both on and off-park) through the adoption of minimal impact recreational practices.

### **6.8.7 Management Objective**

*Community support and involvement in wildlife conservation measures are strengthened.*

#### **Policies and Actions**

1. Promote species recovery programs within the park to further community understanding and support for wildlife conservation.
2. Collaborate with existing wildlife protection groups, such as Looking After Our Kosciusko Orphans (LAOKO) and the NSW Wildlife Information and Rescue Service (WIRES).
3. Investigate and develop additional ways for local communities and businesses to be involved in wildlife conservation both on and off the park.



## CHAPTER 7 People and the Landscape



*Whatever place we have been in, whether on top of the highest mountain or in any of the deepest ravines, we always find evident marks that the natives occasionally resort to them, although there does not appear to be any inducement for them to visit these secluded places.*

*William Hovell 1824*

### Background

Every mountain, ravine, plain and stream of the park holds a human story. Often many. Aboriginal people, European explorers and surveyors, graziers, prospectors, miners, timber workers, scientists, construction workers, conservationists and sightseers have all visited, lived or worked in the mountains. For Aboriginal people, these connections extend back for hundreds of generations, those of certain pastoral families can be traced back well over a century, while for other people their association with the mountains may be measured in decades, years or even days. In many places, the travel routes and patterns of movement of these various groups of people have coincided, being governed by climate, topography and the available natural resources. At times, knowledge, adaptations and traditions have been borrowed or shared, as have histories themselves. While recorded histories document fragments of the lives of a small number of these communities and individuals, innumerable voices and stories will forever remain unheard. Each and every one of these stories, collective and personal, heralded and unspoken, are what gives meaning to place.

The archaeological record suggests that Aboriginal people have lived in the Southern Highlands for at least the past 21 000 years. Aboriginal people consider that their ancestral link with this country is unbroken, and that they have always been there. Oral tradition and physical evidence indicate that prior to European settlement, the Aboriginal people of the Australian Alps maintained a thriving society that incorporated sophisticated exchange patterns and rich social and ceremonial lives. A wide range of natural resources were utilised as food, medicine, tools, clothing, in decoration, or for ceremonial purposes. Although the climate dictated that permanent occupation was restricted to lower elevations, the resources of all available ecological niches were used.

The major river corridors and ridgelines provided access routes across the mountains and to the highest places

that were visited during summer to coincide with the seasonal abundance of Bogong moths. At this time of year, local Aboriginal groups were joined by clans that had travelled from as far away as present-day Melbourne in the south, Yass in the north, parts of central western New South Wales (NSW) and from the adjacent coastal lands. Feasting on the moths was accompanied by ceremonies and intertribal gatherings, which mediated and maintained political, trade and social links between different language groups.

European exploration of the area commenced in the 1820s. Although the Polish zoologist, John Lhotsky, ventured into the Snowy Mountains in 1834, it would be another six years before Europeans trekked up into the highest country. Stewart Rylie climbed above the treeline early in 1840, to be followed shortly afterwards by a second Polish explorer, Count Paul Strzelecki. Initially led by two Aboriginal guides, Strzelecki ascended and named the highest point in the mountains after the Polish general and patriot Tadeusz Kosciuszko in March of that year.

By the early 19th century, the arrival of diseases and European settlers had catastrophically disrupted Aboriginal society. Some Aboriginal people remained in the area and worked as guides, trackers or pastoral workers, though within a matter of decades most had moved away or had been removed from their traditional lands. Many, though not all, ended up living on government reserves where they were largely forgotten by the wider world. This upheaval included the separation of family members, the forced abandonment of traditional practices and a great loss of cultural knowledge. Despite this, Aboriginal people of the region have retained important strands of their culture, including their sense of identity and belonging.

Exploration was followed by waves of new settlers and transient workers. From that time onwards, Aboriginal and

non-Aboriginal histories overlap, as do various phases of land use and human activity. By the 1830s, permanent settlements had been established in the foothills of the high country and livestock were moved to mountain pastures each summer. Within twenty years most of the Australian Alps had been occupied by pastoralists, often only on a seasonal basis. In its heyday, some 250 000 sheep and 20 000 cattle grazed in what is now the park. This increased to 500 000 sheep during drought conditions.

Prospectors followed in the tracks of the pastoralists and by the 1850s they were combing the foothills and creeks of the high country. The discovery of gold at Kiandra in 1859 precipitated a dramatic rush to the mountains and by the following year some 10 000 miners were sluicing, scraping, digging and tunnelling across the stark Kiandra uplands. Although Kiandra would prove to be the most economically significant mining field in what is now the park, within a few years the diggings were depleted and all but abandoned. Elsewhere, prospectors scoured the landscape searching for gold, copper, silver, lead and tin. During the second half of the 19th century, the mountains were peppered with some 40 separate mining fields stretching from the Goobarragandra River gold workings in the north to the Upper Murray diggings in the south. While copper mining at Lobs Hole persisted for 50 years, such longevity was rare. Most mining ventures worked small-scale alluvial deposits of low yield and were usually short-lived. As deposits dwindled and prices languished so too did mining activity in the mountains. By the 1940s only a handful of mines remained in operation.

From the mid-nineteenth century onwards, the mountains also attracted a flurry of scientific investigations. Fascination with the new and unusual plants and animals of the antipodean mountains focused on collecting, classifying and describing hundreds of new species by a succession of distinguished scientists, the most notable of whom was Baron Ferdinand von Mueller. By the end of the century, scientific studies had turned to trying to understand the origins of the landforms and ecologies of the life forms of the highest part of the continent.

Within forty years of white settlement, pastoralism and mining had resulted in the establishment of various towns and villages, and a network of tracks linking settlements and camps with grazing runs and mines. They also led to the creation of various support industries and businesses including sawmilling. Small family sawmills operated in what is now the park from the 1860s through until the 1940s, with logging concentrated at places such as Alpine

Creek, the Thredbo and Mowamba districts, and the forests of the north and northwest. The newly-created Forest Commission of NSW established softwood plantations at Jounama, near Yarrangobilly Village, between 1924 and 1937.

Local people have long used places now within the park as recreational destinations. Pastoral workers undertook horse riding trips throughout the mountains for pleasure, while miners at Kiandra frequented the nearby Yarrangobilly Caves and adopted skiing as a recreational pursuit from the 1860s onwards.

By the early 1900s the mountains were also drawing visitors from further afield. The recently formed NSW Rod Fishers' Society began importing trout ova from New Zealand and liberating them into the Snowy River. The Society promoted fly fishing in the mountain streams and was instrumental in the establishment of a succession of trout hatcheries and fostering kindred organisations in towns such as Cooma, Jindabyne and Tumut.

The growing popularity of the mountains as a recreational destination coincided with the development of major tourist infrastructure such as the Kosciuszko Road, the Kosciuszko Hotel, Yarrangobilly Caves House and the Creel Hotel, all of which were completed within the first decade of the twentieth century. At the same time there was growing public consciousness and scrutiny of land use in the high country.

By the 1930s, the mountains were attracting increasing numbers of bushwalkers and sightseers, many of whom recognised the recreational and natural values of the area. During this time, concern was growing within government and the community at the impacts of high country grazing. The creation of Kosciuszko State Park in 1944 and the eventual removal of mountain grazing in 1972 were largely driven by the need to protect water catchment values, especially in light of the hydro-electric potential of the mountains. The commencement of the Snowy Mountains Hydro-electric Scheme in 1949 was soon followed by an intensive program of rehabilitating eroded places throughout the mountains.

The Snowy Scheme, which took 25 years to complete, dramatically and permanently altered the landscapes of the park. It also changed the recreational use of the mountains. The construction of new roads associated with the Scheme contributed to the opening up of previously remote areas to visitors and the large migrant workforce was instrumental in the establishment of the earliest ski lifts in the park.



Conservation and recreation are intertwined and dominant themes in the recent history of the mountains. Since the creation of Kosciuszko National Park in 1967, the number of people visiting the park and the activities they choose to undertake have grown substantially. The popularity of the park has been accompanied by tensions between the often conflicting aims of protecting park values and providing for visitor use and enjoyment. The number and diversity of visitors and recreational activities is matched by a plethora of individual motivations for visiting the park which include simple curiosity, the seeking of physical challenges and exhilaration, solitude or camaraderie, understanding of self, appreciation of beauty or countless other reasons. The range of social backgrounds that visitors bring with them to the park and the experiences they have while there, contribute to the ever-changing suite of cultural meanings and values that the park now embodies.

The cultural heritage of the park, the value people give to places or objects within it, is most obviously manifest in surviving physical features. Tangible evidence exists of all phases of human use of the mountains. Some features are written boldly and indelibly across the landscape, while others are ephemeral and have all but succumbed to the elements. All represent particular human stories, be they of success or failure, toil or leisure, joy or despair.

Surviving traces of Aboriginal occupation include the remains of campsites, ceremonial grounds, stone arrangements, burial sites, rock art, scarred trees and grinding grooves. The park also contains a great number of historic sites, structures and artefacts. Roads and tracks, many overgrown and forgotten, criss-cross the landscape linking places of former activity. Several hundred extant or ruined homesteads, huts and sheds, many displaying a vernacular mountain architecture, are scattered across the park along with ornamental plantings, fencelines and stockyards. Mining fields are marked by adits and trenches, sluicing holes and mullock heaps, water races, tramways and rusting machinery. Rock cairns mark mountain summits and delineate state borders. A clearing may denote the site of a sawmill, or one of the many former camps of the workers who constructed the reservoirs, aqueducts, transmission lines and tunnels of the Snowy Scheme. Changing social and recreational preferences and pastimes are graphically illustrated through places such as Yarrangobilly Caves and the alpine resorts.

Beyond individual places and structures, entire landscapes also hold significant cultural values. From an

Aboriginal perspective, land and people are inseparable. The mountains provided Aboriginal people with food, shelter, clothing, tools, utensils and medicine. Beyond this, the messages underlying the stories of ancestral beings, who shaped the plant and animal communities and the landscapes themselves, governed all aspects of traditional Aboriginal society. These story lines link people and features of the mountains with those of other distant places even to this day. As with the entire continent, the present-day plants and animals of the park have also been influenced by thousands of years of Aboriginal land management practices.

The influences and cultural values associated with non-Aboriginal people may also extend across broad areas. The pocked and gullied Kiandra mining area is one of the most conspicuous cultural landscapes in the park. Yet such altered or hybrid landscapes are far more widespread if not always as obvious. Human-caused changes associated with past land use practices, such as grazing and burning, have changed vegetation types across the park, altering habitat availability and the abundance and decline of different animal species. So too has the introduction of weeds and feral animals and the creation of human-induced erosion. Such disturbances can be viewed as elements of cultural heritage in their own right, blurring the distinction between natural and cultural values.

Cultural heritage resides as much in intangible values, as it does in physical form. Just as people shape landscapes, landscapes also shape people. Places within the park have been the scenes of innumerable human experiences. Some of these have survived as legends or anecdotes, others are remembered within place names, songs, literature, art, traditional knowledge, customs, symbolism or spiritual observance. More still reside in the memories of communities, families and individuals. For many people, these human experiences, be they first hand or retold, real or imagined, are what give meaning to a place. All of them help shape community and personal perceptions, attitudes, values and identities.

At a national level, the legend of the Man from Snowy River has contributed to a particular Australian sense of identity, as has the construction of the Snowy Mountains Hydro-electric Scheme. For specific groups or communities, experiences associated with the park can explain deeply held collective positions and feelings, some of which may be passed on from one generation to the next. The experiences of displaced people, be they Aboriginal or non-Aboriginal, may be reflected in feelings

of loss and lament, nostalgia and pride, resentment and anger, or a need for recognition or legitimacy. The experiences of other groups, be they Snowy Scheme construction workers, pioneering ski enthusiasts or ardent

conservationists, can explain heartfelt connections with particular times and places. The emotional responses of people to the park, and the cultural values they ascribe to it, are as varied as the experiences themselves.

## Significance

Cultural significance can be defined as the aesthetic, historic, scientific and social value of a place or object for past, present or future generations. These values encompass:

**Aesthetic** All aspects of sensory perception, visual and non-visual, and may include consideration of the form, scale, colour, texture and material of the fabric; the smells and sounds associated with an object or place and its use; the emotional response; and any other factors having a strong impact on human feelings and attitudes;

**Historic** Whether it has influenced, or been influenced by, an historical figure, event, phase, period or activity, or been the site of an important event;

**Scientific** The degree to which a place or object may contribute substantial information about environmental, cultural, technological and historical processes; and

**Social** The qualities for which a place has become the focus of spiritual, political, national or other cultural sentiment to a majority or minority group.

Cultural significance is embodied in the fabric, setting and contents of a place, the documents associated with it, its use, and intangible values such as cultural practices, knowledge, songs, stories, memories, feelings and associations. While the significance of certain places, objects or events are formally recognised through their inclusion on national, state and local heritage registers and may be undisputed, the importance of many more will vary from person to person and change over time.

According to the *National Parks and Wildlife Regulation 2002*, any heritage deposit, object or material more than 25 years old is deemed to have potential cultural significance.

## Aboriginal

The Snowy Mountains are of high cultural significance to the descendants of the Aboriginal tribal groups that occupied and visited them. In particular:

- The spiritual attachments, surviving traditional knowledge, and family stories and memories illustrate the ongoing cultural connection that Aboriginal people have with the mountains;
- The country - its resources, cultural places and pathways - are of special social and historic significance to Aboriginal people, with some remembered in oral tradition, some documented in nineteenth century records, and others revealed by archaeological investigation;
- Aboriginal words and place names provide markers of the presence of Aboriginal people across many of the landscapes of the park;
- Aboriginal places within the park have social and historical significance to Aboriginal people. They provide a link to a past way of life, a cultural tradition, a spiritual connection and a sense of social identity that is highly valued by many members of the Aboriginal community;
- The significance of these places to Aboriginal people encompasses both material and non-material aspects; and
- The potential educational use of such places is a recognised component of their significance.

The annual Bogong moth gathering was one of the most important Aboriginal cultural and social events in south-eastern Australia. The ethnographic evidence, continuing Aboriginal knowledge about this event and the places, routes and physical remains of the activities associated with it, are of historic, social and scientific value at a state and possibly a national level.

The surviving archaeological resource of the Australian Alps is historically and scientifically significant as it:

- Provides evidence of a long history of Aboriginal occupation in the high country;
- Demonstrates successful adaptations to environments unique on the Australian mainland; and
- Offers opportunities to reveal important new information about the length and nature of Aboriginal occupation and use of the mountains.

Places associated with the European contact period and post-contact Aboriginal life and history, including those from the pastoral and mining eras, are of historic and social significance to local Aboriginal people.

Beyond their significance to Aboriginal people, the broader community values the collection of Aboriginal places found within the park.

### Pastoralism

The pastoral theme, as expressed in the park, has national significance in relation to:

- Historic values, including a high country variation of a way of life and a key period of economic and social development within Australia;
- Aesthetic values, of the remaining physical evidence and its use by famous Australian artists and writers to create works that are celebrated nationally; and
- Social values, of the numerous high country traditions and stories that are known and commemorated and hold an important place in the consciousness of Australians, albeit in an often romanticised way.

The suite of huts associated with pastoralism collectively have national significance in terms of historic and social values. The Currango Homestead complex, in particular, has national historic significance as the largest and most intact example of a pastoral settlement above the snowline in Australia. The huts associated with the high country are amongst the most celebrated in Australian pastoral tradition.

### Mining

Within the park, the mining theme has national historic and social significance in that:

- The mining rushes of the 1850s and 1860s formed a period of Australian history that had crucial social and economic consequences; and

- The complex of mining sites in the park has a capacity to vividly illustrate the drama of mining rushes, with the Kiandra field representing the best example of a mining operation in an unusual context and environment.

Kiandra is also of state historic significance as the discovery of gold in NSW was welcomed as a solution to the State's economic woes and as competition to the Victorian goldfields. Particular sites within the park represent outstanding examples of different types of mining of various minerals and have state historic and scientific significance. These include, but are not limited to, the Grey Mare, Tin Mine, New Chum Hill, South Bloomfield and Empress Mines.

### Surveying

The establishment of the NSW/Victorian border in 1870 (and surviving markers), and later that of the Australian Capital Territory, have national historic and social significance in terms of administrative management of the continent. Trigonometric stations were established atop many high points often in rugged terrain during the early surveying and mapping of NSW, and a century later for the construction of the Snowy Mountains Scheme. Collectively, these places have national historic significance, as do the pioneering efforts of surveyors such as Major Clews.

### Logging and Milling

Logging and timber processing are cultural themes of national importance in the development of regional economies within Australia. The Alpine Creek sawmill sites are especially noteworthy and are of state significance, in that they represent a range of techniques used to process timber.

### Hydro-electric Development

The Snowy Mountains Hydro-electric Scheme, most of which is located within the park, is the largest engineering scheme ever undertaken in Australia and has national symbolic importance. The various elements of the Scheme which together give it national historic, social and scientific significance include:

- The Scheme represents an outstanding engineering achievement and is the largest and most complex example of its type in Australia;
- The scale and nature of many of the Scheme's engineering components are rare, and exhibit technical and design achievements of the highest order;

- Many of the components have the potential to provide more information about the experiences and achievements of the Scheme's workers, designers and contractors;
- It adds to the complex layers of human occupation, juxtaposing major engineering objects on a distinctive mountain landscape and exerting profound aesthetic and environmental effects upon the landscape;
- It is closely associated with a number of prominent Australians;
- It is significant in the history of post-World War II migration and the development of Australia as a multicultural society;
- The Scheme revolutionised post-war working conditions and industrial relations and introduced modern concepts of management and large-scale project development in Australia;
- It continued an already established tradition of work predominantly by men in remote and harsh conditions, which resulted in distinctive work attitudes and management systems;
- The Scheme is held in high regard by the Australian community;
- The Scheme was instrumental in the phasing out of alpine grazing and led to a program of soil erosion control and rehabilitation; and
- The development of the Scheme led to an increase in recreational opportunities and developments.

## Scientific Research

The scientific research across a range of disciplines that has been undertaken in the park is of international and national significance in relation to historic and scientific values. Of particular importance are the:

- Anthropological work of Howitt and Robinson;
- Botanical investigations of von Mueller, Maiden, Costin and Wimbush;
- Geological studies of Edgeworth David;
- Geomorphological and hydrological research of Jennings;
- Meteorological records of Wragge; and
- Ecological studies of the Australian Alps.

## Conservation

The effort that culminated in the creation of Kosciuszko National Park is of national historic significance in that it marked the rise of the conservation movement in NSW and Victoria. The debate about development proposals in the Kosciuszko Primitive Area in the 1960s marked the

coming of age of community conservation concerns. The subsequent management of the area is also of national significance, having influenced protected area policy and management elsewhere in Australia.

The pioneering soil conservation works in the alpine and subalpine areas, in particular, are of national historic and scientific significance. Physical evidence connected with this work remains across the high country.

## Recreation

Mount Kosciuszko itself, as the highest point on the continent, has national significance as a unique recreational attraction for Australian and international visitors. Some of the walking tracks and viewpoints within the park have national significance because of their historic, aesthetic and social qualities. These include walks on the Main Range such as the walks from Charlotte Pass and Thredbo to Mt Kosciuszko. Numerous places in the park also have nationally significant inspirational qualities due to the combination of significant vertical relief, seasonal snow cover and expansive views across natural and natural-appearing landscapes.

Kiandra, apart from its mining legacy, also has national historic significance as the place where skiing was first recorded as a recreational pursuit in Australia. The Yarrangobilly Caves precinct has state and regional historic and aesthetic significance as part of a complex of cave sites developed for tourism in the context of an important national social movement. The architecture of Caves House is also a significant intact example of early twentieth-century resort-style development. Other government-built infrastructure, including the Kosciuszko Road and the chalets at Diggers Creek (former staff quarters of the old Kosciuszko Hotel, now Sponars Chalet) and Charlotte Pass, is of state significance, reflecting an important early phase of tourism development.

The ski resorts have elements of state and regional significance for historic, aesthetic and social reasons because of:

- The important social movement they represent;
- Elements of architecture and layout, which reflect important developments in the history of post-war design, and their adaptation to the high country; and
- Their influence on visitor numbers, patterns and behaviour and the consequent management and infrastructure of the park.

## Huts

The Kosciuszko huts probably comprise the largest complex of different types of huts, constructed for the widest range of purposes, in any comparative area in Australia. Individual huts have considerable archaeological, social, historic or aesthetic significance, but the huts, ruins and hut sites have national historic, social and scientific significance as a complex.

In particular:

- The complex has historic value, representing the major extant evidence for most of the land use phases in what is now the park. Many of the huts provide evidence for types of work that are no longer practised or that were part of a unique project, such as the Snowy Scheme;
  - The complex has social value as representing a way of life that has an iconic, if somewhat romanticised, status in Australia and one that is associated with important social movements and persons. Most huts represent the labour and lives of pastoral workers, small-time prospectors and migrant workers, and were used by Aboriginal and non-Aboriginal people.
- Because many huts continue to be used today for recreation, they constitute an important link between today's park users and those of the past. For contemporary users they provide a tangible and important trigger to the historical imagination;
  - The history of voluntary organisations that work to conserve, repair and maintain the huts provides a strong indication of their current social value to many people;
  - The huts illustrate a wide range of materials, design, construction, maintenance and adaptation techniques, and, as such, they constitute an important architectural, archaeological and historical research resource;
  - Many of the huts, especially the slab huts because of their vernacular construction, have an element of simple beauty, which often blends harmoniously with the landscapes of the park; and
  - The conservation and present curation of the huts represent an important milestone in the history of heritage management in NSW, especially in relation to recognising social values and community interests.

## Issues and Opportunities

The key issues and opportunities associated with contemporary cultural heritage management relate to:

- Conflicts between the protection of natural and cultural values and between different cultural values;
- Recognition and management of the interconnected nature of many natural and cultural values, places and themes;
- Community involvement in heritage management;
- The living nature of the cultural connections that many people have with places in the park;
- Gaps in knowledge concerning heritage places and objects, values and significance;
- Threats to the physical condition of heritage places and structures; and
- Promoting public understanding and appreciation of the cultural values of the park through interpretation and education.

There are numerous examples of actual or potential conflicts between the protection of natural and cultural

values, and between different cultural values. These include the management of human-induced disturbance, such as that associated with mining or pastoral activities, which may have important cultural values. While the restoration of ecological processes may require the remediation of such disturbances, it may also result in the loss of cultural values. Similarly, the curtailing of certain traditional or long-standing uses or access within the park for environmental protection purposes can result in the loss or diminution of important cultural values. In some places, restrictions on such activities may be necessary for the protection of other cultural values, be they Aboriginal or non-Aboriginal, tangible or intangible. Where conflict with protecting other values occurs, cultural heritage management may be directed at recording, interpreting, acknowledgment or commemoration rather than facilitating the continuation of an activity or practice.

The NSW Government is committed to recognising Aboriginal cultural heritage. One way that this may be

achieved is by registering original place names given by Aboriginal people so that they sit side by side with existing non-Aboriginal names. This approach is also recognised by the Australian Government as a way of increasing public awareness of indigenous heritage and indigenous languages. Dual naming of protected areas occurs around the world with the United States, Canada, Europe, New Zealand and Australia having policies that support this practice. Examples in Australia include Ayers Rock which is also known as Uluru, the Olgas which are also known as Kata Kjuta and Jervis Bay National Park which is now known as Booderee National Park.

It is recognised that Tadeusz Kosciuszko is held in high regard in the Polish and wider communities and therefore the name Kosciuszko will be retained. Dual naming of the park recognises the importance of the area to Polish, Aboriginal and other communities alike.

Cultural heritage management in the park has primarily focused on the surviving physical fabric with the emphasis on individual places and structures. This approach has tended to ignore or obscure:

- The inseparability of natural and cultural values, that is, the influences of the natural environment on the human histories of places and the human impacts on landscapes and elements of landscapes;
- The plethora of non-material or intangible values embodied by the park for Aboriginal and non-Aboriginal people, including aesthetic and inspirational values;
- Recognition that cultural places within and beyond the boundaries of the park are linked and form part of an integrated system and need to be managed as such; and
- Shared histories of particular places across different phases of human land use and between different communities, including the interconnectedness of many Aboriginal and non-Aboriginal cultural values.

In managing cultural heritage in the park, the Service has only recently fully appreciated the importance of heritage places and objects to the people that generated them and the living nature of many cultural connections. This applies equally to Aboriginal and non-Aboriginal people alike. Partnerships with local communities, families and individuals with strong connections to places not only acknowledge the legitimacy and authenticity of their histories, they also provide the best means of ensuring that the diversity of cultural values associated with the park survive.

Beyond the alpine resorts, there are a small number of heritage buildings that are publicly owned, but privately occupied. Illawong, located alongside the upper Snowy River, is exclusively occupied by Illawong Ski Tourers Incorporated under a five year licence. Two buildings at Kiandra (Wolgal, Pattinsons) are occupied by individuals with historical connections to these places under informal arrangements. These buildings are currently not accessible to the general public.

Sound management of cultural heritage is dependent on a thorough knowledge and understanding of the myriad of heritage places and objects, their values and their significance. Knowledge of the existence or locations of many of these values is incomplete, raising the possibility that they may be inadvertently destroyed, damaged, ignored or forgotten. The most noteworthy knowledge gaps relate to the lack of:

- Systematic archaeological surveys of pre- and post-contact Aboriginal places;
- Thematic surveys and assessments for particular historic phases and activities;
- Systematic assessments of the threats to, and physical condition of, extant features; and
- Assessments of the social significance of places and objects to particular communities, families and individuals, including:
  - The role of the park, its innumerable histories, and the associated human experiences and memories in shaping collective and personal perceptions, attitudes, values, and identities;
  - Surviving oral traditions, knowledge, customs, beliefs and practices;
  - The emotional responses of people to places and events; and
  - Inspirational and aesthetic qualities of places.

Within the park climatic factors can place considerable stress on some heritage places and create access and maintenance difficulties. Other threats to the integrity of physical features include damage or destruction due to:

- Fire (bushfires and structural fires);
- The activities of native and feral animals;
- Natural regeneration and weed infestations;
- The activities of visitors;
- Management practices; and
- Alterations to physical fabric associated with refurbishment or redevelopment.

Of these, the capacity for fire to significantly impact upon cultural material was dramatically illustrated by the 2003 bushfires that destroyed or seriously damaged 19 historic huts and an unknown number of other cultural features. This loss resulted in calls by many within the community to reconstruct or repair all of the affected buildings. Although some of these people had direct family or community links to particular huts, most such people had, and still have, a nostalgic attachment to them through their own recreational use of the park or as tangible evidence of real or romanticised histories.

While reconstruction of components of a building, for example missing joinery elements, is a common technique used in heritage conservation to enhance significance, complete reconstructions are relatively rare. This is due to issues such as authenticity and parody, the costs involved in reconstruction weighed up against the costs of maintaining or improving extant fabric, and acknowledgment that commemoration of the past does not

necessarily require the existence of physical fabric. That said, there has been a history of hut reconstruction in the park, with some huts having been built and rebuilt two or three times over several generations.

An important component of managing the park's cultural values involves informing and educating visitors.

Providing appropriate information on the park's cultural values for visitors can:

- Enrich the experiences of visitors by increasing their understanding and appreciation of the cultural values of the park;
- Promote public understanding and appreciation of the inter-relationships between cultural and natural values and the ongoing connections of many Aboriginal and non-Aboriginal people with the park;
- Encourage minimal impact visitor behaviour; and
- Elicit a sense of pride and custodianship amongst visitors towards the cultural values of the place.

### **7.1.1 Management Objective**

*The cultural heritage values of the park are protected and managed in a strategic, comprehensive and integrated way.*

#### **Policies and Actions**

##### General

1. Conserve the cultural values of the park in accordance with the Australia ICOMOS (International Council on Monuments and Sites) Charter for the Conservation of Places of Cultural Significance (Burra Charter) and its guidelines.
2. Ensure the relative levels of significance are the overriding consideration in the management of particular cultural landscapes, places or objects and in resolving conflicts between the protection of cultural, natural, recreational and other values.
3. Acknowledge the inseparability of natural and cultural values and recognise that landscapes have been influenced by human activities to varying degrees.
4. Ensure cultural heritage management in the park considers, and where relevant, is consistent with:
  - The provisions of relevant Commonwealth and State legislation;
  - The provisions of Service policies, guidelines and cultural heritage management strategies;
  - Conservation policies in approved conservation management plans, heritage action statements and related reports prepared for places and objects within the park; and
  - The protection of all significant cultural heritage features listed in Schedule 1.

5. Manage heritage places with shared histories across different phases of human land use and between different communities to ensure that:
  - All aspects of the history of a place are identified, recorded and assessed;
  - Both Aboriginal and non-Aboriginal cultural values are acknowledged at places where they co-exist;
  - Management of the remaining physical evidence of one historical theme or story is not at the expense of that of another; and
  - Visitor interpretation covers all aspects of the layered histories of such places.
6. Lessees will be responsible for the assessment, management and maintenance of the cultural values located within their lease areas in accordance with the management strategies prescribed in this plan, the Snowy Management Plan (for Snowy Hydro Limited) and the Alpine Resorts Environmental Planning Instrument (for alpine resort areas)

## Surveys and Assessments

7. Update the existing information held by the Service on known Aboriginal and non-Aboriginal cultural landscapes, places and objects, including those that are extant and destroyed, within the Service's Aboriginal Heritage Information Management System (AHIMS) and/or Historic Heritage Information Management System (HHIMS). AHIMS and HHIMS entries for the park will include information on:
  - Location;
  - Historical background (including chronological changes to the fabric, use and integrity of a site);
  - Linked or related themes and places;
  - Physical description (including, as appropriate, exterior and interior, design, construction type, materials, landscape setting);
  - Present use(s);
  - Contemporary values (including specific community, family and individual attachments);
  - Community involvement in management;
  - Statement of cultural significance;
  - Physical condition assessment;
  - Threat assessment and management response;
  - Schedule of protective and maintenance works undertaken and required;
  - Monitoring schedule and records;
  - Photographic records and references;
  - Copies of historical and contemporary drawings; and
  - Reference source documentation.
8. Develop and implement a targeted heritage survey program for the park to identify new Aboriginal and non-Aboriginal heritage landscapes, places and objects. The program will:
  - Identify priority areas and themes based upon available documentary evidence, current research needs, knowledge gaps from Aboriginal and non-Aboriginal perspectives, existing and future visitor pressures and other identified criteria;
  - Include cultural landscape mapping that involves the identification and assessment of entire landscapes and particular landscape components across the park; and
  - Be conducted in partnership with relevant Aboriginal and non-Aboriginal people.
9. Assess the individual and collective significance of landscapes, places and objects in the park that are considered to have cultural value and are under threat. The level of assessment required and assessment priorities will be based upon:
  - Preliminary assessments of levels of significance;
  - Existing and potential threats to their integrity; and
  - Proposed changes to the landscape, place or object.



10. Utilise as appropriate the procedures, criteria and gradings provided by the Burra Charter and the NSW Heritage Office for cultural significance assessments.
11. Prior to undertaking any ground disturbance, investigate any potential historic features, archaeological deposits or other cultural values and ensure appropriate measures are taken to ensure that any such places are recorded or protected. This does not apply to ground disturbance required for emergency purposes authorised by the Service.
12. Assess and consider the park, and individual places within it, for nomination to the National Heritage List as defined by the *Environment Protection and Biodiversity Conservation Act 1999*.

## Managing Places

13. Ensure places assessed as being of high cultural significance and under immediate threat are accorded the highest priority for conservation works.
14. Develop and implement an Historic Places Maintenance Program. This program will be:
  - Consistent with the programs and priorities identified in the Service's Regional Heritage Strategies;
  - In keeping with endorsed conservation management plans or related documents; and
  - In accordance with the maintenance guidelines formulated by the Heritage Office of NSW.
15. Develop and implement an Aboriginal Cultural Places Maintenance Program. Key components of the program will include:
  - The development of monitoring procedures; and
  - Field assessments of known and recorded places. Assessments will include:
    - Requirements for supplementary recording;
    - Physical condition and conservation works required;
    - Places requiring more detailed management planning;
    - A prioritised works program; and
    - A regular monitoring regime including evaluation and review of results on a regular basis and the implementation of necessary conservation actions.
16. Ensure the management of heritage places is governed by the provisions of conservation management plans or related planning documents which will be prepared for all:
  - Places of high conservation value including those of regional, state or national significance;
  - Those places being actively managed or visited by the public;
  - Places that are identified through the cultural places maintenance programs as requiring a strategic management approach; or
  - Places at which the impact of a proposed development or activity may adversely affect its significance.

These plans will be prepared in accordance with the relevant policies and guidelines of the Service and the Heritage Office of NSW.
17. Identify and manage exotic plant species of cultural significance in accordance with site-specific conservation measures. Decisions concerning the replacement of senescent plants or the re-establishment of historic gardens or plantings will be made on a case-by-case basis within the context of the natural and cultural attributes of each place, and where available, in accordance with the provisions of conservation management plans or related documents.
18. Confine, remove or replace any culturally significant plantings that are invasive with non-invasive similar species.

## Managing Buildings

19. Undertake significance assessments of all individual buildings and groups of related buildings that are more than 25 years old.
20. Ensure individual and collective significance assessments are used to determine the most appropriate management for particular structures.
21. Retain and maintain all buildings or groups of buildings assessed as having significant cultural value.
22. Manage buildings retained for their cultural values, wherever possible, as living structures. Investigate appropriate adaptive reuse options for all such buildings that do not currently serve a recreational or operational use.
23. Ensure adaptive reuse and refurbishment of buildings retained for their cultural values is undertaken in accordance with an approved conservation management plan or related document.
24. Include a dedicated building maintenance component in the Historic Places Maintenance Program.
25. Ensure priorities for building maintenance and conservation works are based upon:
  - The cultural significance of a building or group of buildings;
  - The degree of threat to the building(s); and
  - The importance of the building(s) for stakeholders.
26. Illawong, Wolgal and Pattinsons will be retained primarily for their cultural values and managed for public access. Public access management models for these three buildings will be developed by the Service in consultation with all relevant stakeholders. (The public access management model for Illawong will take effect upon expiry of the current five year licence with Illawong Ski Tourers Incorporated.)
27. Camp Hudson will continue to be leased to the Tumut Shire Council as trustee for the Tumut Boys Citizens Club.

## Hut Management

28. All extant huts will be retained and managed primarily for their cultural values and to minimise adverse environmental impacts.
29. Hut management will be directed at conserving the cultural significance of the entire collection of huts, hut ruins, sites of former huts and associated works, structures, paths, tracks and other features.
30. No huts will be constructed specifically or primarily for public use.
31. All huts will be open to the general public and will be managed as temporary shelters or for interpretive purposes except where:
  - A building is required for Service or other operational purposes;
  - Opening of a hut would result in an unacceptable risk of vandalism or unacceptable environmental impact; or
  - Public safety and liability considerations prohibit the opening of a building to the public.
32. Manage all huts in accordance with the provisions of the Kosciuszko National Park Huts Conservation Strategy and all completed conservation management plans, heritage action statements and related documents.
33. Prepare and implement conservation management plans, heritage action statements or related documents for all huts and their associated elements. Priority will be given to huts under immediate threat and/or in an unstable condition for which there have been no previous conservation planning documents prepared.
34. Together with the Kosciuszko Huts Association and other interested parties, create and implement cyclic maintenance programs for individual huts that include fabric condition audits and fabric replacement and repair schedules.

35. Manage fire risks around huts in accordance with the provisions of completed conservation management plans, heritage action statements or related documents. If no such documents exist manage fire risks in accordance with the Fire Management Plan (Section 11.5).
36. Assess internal fire risks and environmental impacts associated with the use of hut fireplaces at all huts. Management responses will be determined on a case-by-case basis and will be directed at reducing fire risks and environmental degradation. Options will include:
- Modifying the internal size of fireplaces to permit only smaller, safer fires to be lit;
  - Installing combustion heaters or other heating sources;
  - Installing fire extinguishers; and
  - Educating hut users concerning the safe use of fireplaces.
- In determining the most appropriate management response consideration will be given to:
- The importance of open fires to the character and ambience of a hut;
  - The relative significance of the fireplace and its components;
  - The desirability of changing as little as possible (e.g. introduce a new element such as a fuel stove so the fireplace remains visible);
  - The local availability of firewood and impacts associated with firewood collection; and
  - The reversibility of any action.
37. Manage huts, destroyed or damaged prior to this plan of management taking effect, in accordance with the provisions of the Kosciuszko National Park Huts Conservation Strategy.
38. Decisions on the reconstruction, replacement or commemoration of huts destroyed in the future will be made on a case-by-case basis through the application of the Hut Rebuilding Guidelines provided at Schedule 3 and the provisions of the Kosciuszko National Park Huts Conservation Strategy. Reconstruction of destroyed huts will usually only be considered if it is the best means of conserving the individual and collective significance of the building(s). Other considerations will include:
- The recreational use of the hut;
  - The location of the hut and the park zone in which it was situated;
  - The interpretive or educational role of the hut, as recognised in the Park Communication Plan (Chapter 13);
  - Environmental issues associated with the structure and its use;
  - Visitor safety and liability risks; and
  - The financial costs of reconstruction and ongoing maintenance.
39. Reconstructed or replacement huts may be built on the footprints of former huts and the sites of standing ruins only after the completion of archaeological assessments and recording.
40. Prohibit the use of huts by large and/or commercial groups for cooking and overnight shelter, except in emergency situations.
41. Promote, and regularly review, the hut use code of conduct in conjunction with the Australian Alps Liaison Committee, the Kosciuszko Huts Association and other interested parties.
42. Prepare and implement site plans for vehicle-accessible huts that protect the huts and hut settings. At these sites, vehicle parking areas, camping and picnic areas and all other infrastructure including signs will be located so as not to visually intrude upon the huts and environs or detract from visitor appreciation of the huts.
43. Continue to supply hut log books and store completed log books in relevant regional files for reference, research and planning purposes.
44. Assess the environmental impact, if any, associated with the presence and visitor use of all huts. Prepare and implement environmental management strategies for particular huts and their settings, as required, that are designed to minimise degradation and manage impacts within threshold limits.

45. Investigate the need for toilets at all huts and provide toilets as necessary in accordance with Section 11.6 and Schedule 6. Site toilets so as to minimise environmental and visual impacts.
46. As part of the Park Communication Plan, prepare and implement an integrated hut interpretation strategy.
47. Prepare a formal agreement between the Service and the Kosciuszko Huts Association (KHA) that:
  - Recognises the KHA as a key organisation responsible for coordinating voluntary hut conservation efforts in the park;
  - Establishes the particular roles and responsibilities of the Service and the KHA with respect to hut management;
  - Establishes formal communication, information sharing and consultation protocols and pathways between the two organisations; and
  - Determines training and safety procedures for work party members and associated insurance requirements.
48. Seek the ongoing involvement of communities, groups, families and individuals with connections to particular huts in hut management.

### Moveable Heritage

49. Assess the cultural significance and conservation requirements of moveable heritage objects, as part of conservation plans where appropriate. Portable heritage objects will usually be left *in situ*, but may be removed for conservation and curation in accordance with an approved research project or conservation plan.
50. Establish central repositories and public display facilities to store all non-Aboriginal moveable heritage objects associated with the park no longer located *in situ*. All such objects will be professionally catalogued and recorded.
51. Support Aboriginal people in acquiring a secure keeping place in which to store cultural objects and records.

### Intangible Heritage

52. Identify and document the intangible cultural values of the park, for Aboriginal and non-Aboriginal people alike, within AHIMS and HHIMS. This will involve the recording of places and themes known to possess important intangible values for the community. The recording and examination of this material recognises:
  - The importance of individual experiences, memories, histories and associations in determining emotional responses and the meaning of a place for many people;
  - Their roles in shaping collective and personal identities, perceptions, values and attitudes to the park;
  - The need to consider such values equally alongside historic and scientific significance in heritage assessments; and
  - The legitimacy of the many and ever-changing intangible values ascribed to the same place.
53. Undertake a Memories Project to seek out and document the memories, associations and attachments of Aboriginal and non-Aboriginal communities, families and individuals with particular places and events. The project will build upon work already undertaken in the park and across the Australian Alps and will:
  - Be based upon an ongoing oral history and community recording program; and
  - Result in the production of an interactive database which stores audio recordings, historical and contemporary written records, photographs and maps in collections relating to particular communities, families, individuals, places and themes. Community access to this database will be available via public portals (where culturally appropriate) and communities will be encouraged and trained to enter their own material into the database.
54. Undertake a Traditional Knowledge Project that utilises audio and video recordings and documentary evidence to capture surviving traditions, knowledge, skills, customs, practices and beliefs of Aboriginal and non-Aboriginal people associated with the mountains.

55. Investigate the views of relevant Aboriginal and non-Aboriginal communities concerning the creation of a program of teaching traditional skills to community members so that these skills will not be lost. Support such a program if it is desired by communities.
56. Seek community input concerning which landscapes, places and built structures in the park possess inspirational qualities. Based upon this work, create a register of inspirational landscapes and places in the park and formulate management prescriptions for each of these places which protect or enhance their inspirational qualities.
57. Recognise and publicise the intangible values of the park through on-site and off-site interpretation as described in the Communication Plan. Relevant communities, families and individuals will guide the interpretation of their own stories and values.

### **7.1.2 Management Objective**

*Cultural information is obtained, stored, accessed and used in culturally appropriate ways.*

#### **Policies and Actions**

1. Collect, store, disseminate and use all cultural information, including traditional ecological knowledge, in accordance with the Service's Cultural Heritage Information Policy. Such collection and use will recognise intellectual property rights and copyright of those providing such information. This may require the use of Information Agreements.
2. Explore innovative and culturally appropriate ways of sharing heritage information with particular communities and the broader public. This will include the sharing of historical material (such as diaries, artefacts, records, photographs).

### **7.1.3 Management Objective**

*The connections between heritage places and values within and beyond the boundaries of the park are identified, recognised and appropriately managed.*

#### **Policies and Actions**

##### General

1. Wherever possible, manage heritage landscapes, places and objects within the park as collections of linked features. This will entail:
  - Protecting the integrity of the landscape settings, including visual catchments of places;
  - Managing the cultural significance of corridors linking places;
  - Managing and interpreting particular places within the context of broadscale land-use histories and associated infrastructure; and
  - Developing and promoting integrated visitor use and interpretive material which links landscapes and places with shared histories and themes.

2. Identify the linkages between heritage landscapes and places through examination of the available documentary evidence and information collected through strategies contained in this plan. Mapped representations of linked landscapes and places will be stored in AHIMS and HHIMS.

### Heritage Corridors

3. Identify Heritage Corridors in which the protection of cultural values and the development and promotion of heritage-based recreation and interpretation opportunities will receive high priority.
4. Manage and interpret the following as Heritage Corridors:
  - Barry Way;
  - Khancoban – Cabramurra Road; and
  - Long Plain Road.
5. Liaise with the Roads and Traffic Authority to manage the following roads as Heritage Corridors:
  - Snowy Mountains Highway;
  - Alpine Way; and
  - Kosciuszko Road (to Charlotte Pass).
6. Consult with relevant stakeholders and undertake research that identifies additional historical travel routes in the park that should also be recognised and managed as Heritage Corridors.
7. Plan and manage heritage-based recreation and interpretation in Heritage Corridors within the context of the Communication Plan (Chapter 13).

### Heritage Precincts

8. Identify, delineate and manage those parts of the park containing concentrations of cultural heritage items as discrete Heritage Precincts in which the protection of historic features and landscapes will receive high priority. Such places will include:
  - The greater Kiandra goldfields area;
  - Geehi Flats;
  - Currango Homestead;
  - Coolamine Homestead;
  - Tin Mines area;
  - Bullocks Flat – Thredbo Diggings area;
  - Yarrangobilly Show Caves precinct;
  - Yarrangobilly Village precinct; and
  - The Ravine/Lobs Hole mining area.
9. Consult with relevant stakeholders and undertake research that identifies additional areas of the park associated with one or more of the various identified historical themes that should also be recognised and managed as Heritage Precincts.
10. Prepare Heritage Precinct Plans where none currently exist for all identified heritage precincts in consultation with relevant stakeholders. Interpretation at these places will be in accordance with the provisions of the Communication Plan (Chapter 13).

### Kiandra Heritage Precinct

11. Investigate options in the Heritage Precinct Plan for the greater Kiandra goldfields area for developing and promoting:
  - Short-duration, linked walking tracks based upon the cultural values of the Kiandra, New Chum Hill Mine

and Three Mile Dam areas; and

- Part-day, day and overnight walks within the area utilising historic roads and tracks to link places of former mining activity.

12. In accordance with the provisions of the Kiandra Precinct Heritage Plan and related documents:

- Restore the Kiandra Courthouse. The building will ideally be developed as a heritage interpretation site and focal point for the Kiandra Heritage Precinct and Snowy Mountains Highway Heritage Corridor; and
- Restore the curtilage of the Courthouse through the removal of the RTA depot, the re-siting of the existing toilet block and telephone booth, and appropriate landscaping.

13. The Heritage Precinct Plan for the greater Kiandra goldfields area will guide the provision of interpretive and educational facilities and services for the area in accordance with the Communication Plan (Chapter 13).

Interpretive material will include information on:

- The nature and extent of mining activities, the different phases of exploitation, and life on the goldfields;
- Chinese history;
- The early development of skiing at Kiandra; and
- History of the Kiandra - Kosciuszko ski trip crossing.

14. The Kiandra township site, Three Mile Dam, Yarrangobilly Village precinct and the Yarrangobilly Caves precinct will form interrelated major and minor cultural interpretation nodes sited along or near the Snowy Mountains Highway.

### Linking Cultural Values Beyond Park Boundaries

15. Where appropriate, manage places within the park as components of linked histories and themes that extend beyond the park and within regional, statewide and national contexts. As part of this approach encourage:

- The undertaking of cultural heritage studies on lands adjoining the park to identify and assess linked heritage places; and
- The adoption of planning and management provisions which protect these places, their settings and the connections between places.

This approach will be reflected in the interpretation and cultural tourism programs associated with these places as guided by the Communication Plan (Chapter 13).

16. Work with the owners and managers of land adjoining the park and elsewhere with the aim of identifying linked places and encouraging appropriate management.

17. Contribute to projects and initiatives concerning the management of cultural heritage values across the Australian Alps including those directed at:

- The development and adoption of consistent approaches to heritage management across jurisdictions; and
- Recognition and documentation of shared histories across the Australian Alps.

18. Develop and maintain regular communication links with heritage practitioners and managers in agencies with land management responsibilities within the Australian Alps region with the aim of sharing relevant information, training, research and management opportunities.

19. Include AHIMS and HHIMS entries for landscapes and places outside the park that are linked with particular places, stories, events, people and themes inside the park.

### **7.1.4 Management Objective**

*Community connections with heritage places are acknowledged and respected and the management of such places involves the community that generated that heritage.*

#### **Policies and Actions**

##### General

1. Create heritage management partnerships with communities located within and adjacent to the park and those with traditional links to its history with the aims of:
  - Facilitating the active participation of relevant communities, families and individuals in the identification, assessment and interpretation of their heritage;
  - Promoting and celebrating the roles of specific people and communities in the histories of particular places;
  - Acknowledging all such histories and the living nature and continuity of people's connections and knowledge; and
  - Providing forums in which communities can develop working relationships and protocols with local government, other land management agencies and private landholders concerning the management of their cultural values and aspirations across the region.
2. Aim to ensure that people are able to effectively participate in heritage management partnerships. This may include assistance with capacity-building in cultural heritage management.
3. Undertake a Naming Project in cooperation with relevant organisations to:
  - Retrieve and record Aboriginal names for landscape features and the flora and fauna of the park;
  - Retrieve and record non-Aboriginal names which are no longer in use; and
  - Record unofficial names for features currently in use by local people.
4. Invite Aboriginal and non-Aboriginal community members to participate in public education and interpretation of the cultural values of the park. The involvement of such people in telling their own stories will form a key means by which the cultural values of the park are interpreted to visitors. In the delivery of such services by Aboriginal people, consideration will be given to the need for male and female presenters, and the authority of individuals to speak on behalf of particular communities.
5. Where past land use or recreational practices are no longer permitted in the park in order to protect other values, cultural heritage management will consist of recording, interpretation, acknowledgment and commemoration or community celebration.
6. Develop a program of community commemorative events to acknowledge and celebrate the rich diversity of cultural values ascribed to the various parts of the park, and as a means of providing economic and social benefits to local communities.
7. Where possible, provide opportunities for appropriate Aboriginal people to gain access to remote places to fulfil cultural responsibilities as part of general park management operations.
8. Facilitate the maintenance of family connections with particular heritage places, where vehicular tracks to those places are closed to the general public but retained for park management purposes. Access will be by application to the Service and approval will be restricted to people with direct cultural connections to heritage places and planned so as to minimise any adverse impacts on park values and the experiences of other visitors. This program does not constitute ongoing exclusive access privileges. The Service will formulate guidelines to minimise impacts associated with such visits.
9. Foster and support the ongoing participation of community groups in the management of the cultural heritage of the park. The work of voluntary groups will form part of the Service's heritage maintenance program.



## Aboriginal Involvement

10. While recognising the legislative role and interests of Aboriginal land councils within Kosciuszko National Park, also recognise and acknowledge that other Aboriginal groups, including Monaro Ngarigo, Wiradjuri, Wolgalu and Ngunnawal, have traditional and historical connections with country that is now within the park.
11. Actively engage with all relevant Aboriginal organisations, families and individuals, including Monaro Ngarigo, Wiradjuri, Wolgalu and Ngunnawal people, in protecting, managing and interpreting Aboriginal heritage in the park.
12. Explore and develop cooperative management agreements or similar protocols where supported by appropriate Aboriginal groups.
13. Establish a permanent heritage partnership with Aboriginal people for the entire park. Once established, this will provide a link between the Service and Aboriginal people with cultural connections, historical associations or statutory responsibilities concerning the park, and guide the management of traditional, historical and contemporary Aboriginal cultural values.
14. Ensure the Aboriginal heritage partnership:
  - Involves Aboriginal communities connected with the park;
  - Facilitates Aboriginal involvement in key heritage management activities and decisions; and
  - Provides a mechanism for communicating with the broader Aboriginal community about park management activities and issues.
15. Develop and implement a park employment and training program for Aboriginal people associated with the mountains, consistent with the Service's Aboriginal Employment and Development Strategy and other relevant policies. The program will:
  - Identify Aboriginal employment opportunities within the park;
  - Identify training and capacity-building opportunities to:
    - Support Aboriginal people to gain the necessary skills and experience to fully manage their own heritage; and
    - Facilitate Aboriginal participation in general park management activities; and
  - Consider a range of training opportunities including:
    - Formal studies in Aboriginal heritage management;
    - In-service and external training and work experience programs; and
    - Partnerships with other government agencies, tertiary and training institutions, and other organisations.
16. Actively encourage Aboriginal participation in contract work within the park in accordance with Service policies.
17. Develop and implement mechanisms to facilitate the ongoing participation of Aboriginal people in park management activities and their early involvement in the planning process for proposed activities and works.
18. As a symbolic means of recognising Aboriginal people's traditional connections to the area, support the dual naming of the park with an appropriate Aboriginal name.
19. Ensure new Aboriginal place names are submitted for approval to the Geographical Names Board of New South Wales for inclusion on the Geographical Names Register. Where such landscape features are already named, dual naming will be sought.
20. Ensure that the names collected and their origins, sources and meanings (if appropriate) are stored in AHIMS and HHIMS.
21. Develop protocols and procedures for the involvement of Aboriginal people in welcoming ceremonies and other roles for events and activities held in or near the park in association with relevant organisations.

22. Prepare and implement a “Welcome to Country” program in association with relevant organisations. This will aim to raise public awareness about Aboriginal people’s connections with their country. The program will consider:
  - Key messages to be delivered;
  - The placement of messages and methods of delivery; and
  - Extension of the program beyond the park boundaries through the involvement of local government and businesses.
23. Permit Aboriginal culture camps. Determine the site(s) for such camp(s) and operational protocols with appropriate Aboriginal communities.
24. Pursue the establishment of an Aboriginal cultural and teaching centre within or near the park. If the location is to be within the park it may be subject to an amendment to this plan. Such a centre may be established in partnership with other bodies and shared and managed by all Aboriginal communities associated with the park. The centre may serve as:
  - A meeting and teaching place for Aboriginal people, with the provision of separate areas for men and women;
  - A keeping place for cultural material;
  - An education and interpretive focus for visitors; and
  - Possible short-stay accommodation for Aboriginal people and other groups.
25. Permit hunting and gathering for cultural or ceremonial purposes by Aboriginal people with a cultural association with the park according to the Service’s policy. Determine the provisions and protocols relating to these activities through discussions between the Service and appropriate Aboriginal people.
26. Ensure that ancestral (skeletal) remains held by the Service continue to be repatriated to appropriate Aboriginal people in culturally appropriate ways in accordance with the Service’s statewide Repatriation Program.
27. Undertake a review of existing information about the gender status of Aboriginal places within the park in association with appropriate Aboriginal people and develop access protocols.

### ***7.1.5 Management Objective***

***Cultural landscapes and places provide opportunities for sustainable cultural tourism and recreation.***

#### ***Policies and Actions***

1. Develop a framework for cultural tourism management within which individual heritage corridors, precincts and places will be developed and promoted. The framework will be linked with the Communication Plan (Chapter 13) and relevant regional and local tourism strategies.
2. Develop and implement protocols and guidelines for cultural heritage-based tourism operators in the park (Section 8.18). These will:
  - Be based upon national and state best practice standards and guidelines;
  - Be reflected in licence conditions for commercial tour operators, where appropriate;
  - Be developed in collaboration with relevant Aboriginal and non-Aboriginal communities and organisations; and
  - Consider the introduction of an accreditation scheme for tour operators.

3. Within the context of the cultural tourism management framework, encourage and support the establishment of appropriate tourism ventures by local Aboriginal and non-Aboriginal communities based upon their own cultural heritage located within the park.
4. The promotion of Aboriginal places will only be permitted with the consent of appropriate Aboriginal people.
5. Restrict or prohibit public access to heritage places and environs:
  - If access is likely to jeopardise public safety;
  - If access is likely to result in unacceptable damage to the place or to other park values;
  - If a place is required for park or lessee operational purposes; or
  - If it is considered inappropriate due to cultural sensitivities.
6. Monitor and manage impacts associated with tourism and recreation on heritage places within the bounds of acceptable change (Chapters 8 and 16).

### **7.1.6 Management Objective**

*Staff, visitors and other stakeholders understand and appreciate the cultural heritage values of the park and their responsibilities in helping to protect those values.*

### **Policies and Actions**

1. Support Service staff to undertake professional development opportunities that improve their knowledge and skills in cultural heritage management.
2. Undertake regular cross-cultural awareness training programs for staff and encourage tourism and resort operators to conduct similar programs for their employees. This training should include specific components delivered by local Aboriginal people.
3. Manage interpretation of the cultural heritage values of the park within the context of the Communication Plan (Chapter 13). The Communication Plan will be directed at:
  - Integrating the numerous cultural meanings, heritage themes, and places across landscapes in a connective way;
  - Facilitating the visibility of all of the histories of the park, including those that are unfashionable or previously unheralded (e.g. the historical roles of Aboriginal and non-Aboriginal women);
  - Highlighting the inter-relationships between cultural and natural values;
  - The use of individual narratives, attachments and emotional responses to place to engender a sense that cultural heritage is a living and personal thing rather than something that is abstract and solely associated with the past; and
  - Interpreting cultural heritage beyond the confines of the park boundaries and, as appropriate, within the context of regional, statewide and national themes.

Key strategies will include:

- The use of Heritage Corridors and Precincts as interpretive focal points;
- The adoption of unifying themes across the park, such as travel routes used by successive waves of people, the seasonal movements of people, and the impact of people on land and land on people;
- A program of regular activities that promote public awareness of Aboriginal heritage and Aboriginal people's connections with the park;
- The use of people associated with particular heritage places to tell their own stories; and
- The role of community events in celebrating the various histories and cultural values of the park.

4. Continue to provide interpretive material in the interiors of huts that provides information on the cultural values of each hut and on minimal impact hut use.
5. Develop a cultural heritage education program within the context of the Communication Plan. The program will encompass the primary, secondary and tertiary education sectors and the general public, and explore partnership opportunities with local government, communities and businesses. It will examine the development of education modules regarding Aboriginal and non-Aboriginal heritage values and connections with the park.

### ***7.1.7 Management Objective***

***Research informs the management of the cultural heritage values of the park and is undertaken with the approval of the appropriate communities or individuals.***

### ***Policies and Actions***

1. Undertake research aimed at improving conservation management practices in the park. This may include:
  - Long-term monitoring of changes in the condition of a sample of different types of heritage features; and
  - Surveys of the attitudes of communities to cultural heritage within the park, and of their involvement in management and sense of ownership.
2. Encourage and support research initiatives and collaborative projects with research institutions, universities and other organisations that:
  - Contribute to an understanding of the cultural values of the park and adjoining areas;
  - Provide opportunities for relevant Aboriginal and non-Aboriginal community members to develop research skills; and
  - Are conducted in partnerships with relevant Aboriginal and non-Aboriginal people.
3. Develop a strategic cultural heritage research program as a component of the Register of Required Research (Chapter 15). Priorities for research will include the following themes:
  - Traditional Aboriginal lifestyle and its continuity;
  - Post-contact Aboriginal history;
  - The history of scientific investigations;
  - The eucalyptus distilling industry;
  - The contribution of women to the history of the park;
  - The traditional pastoral lifestyle and its contribution to the Australian ethos and its manifestation today;
  - The role that efforts to protect the values of the area played in the development of a conservation ethic in Australia;
  - The history of recreation in the park; and
  - The history of park management.
4. Ensure the recording of the oral histories and knowledge (where appropriate) of members of Aboriginal and non-Aboriginal communities receives high priority, especially where important cultural knowledge is likely to be held by only a small number of individuals.
5. Ensure all proposed research on Aboriginal heritage has prior approval of the appropriate Aboriginal communities, families or individuals.
6. Seek the consent and involvement of the communities, families or individuals responsible for the generation of particular heritage places or objects prior to research being undertaken on such matters.

## CHAPTER 8 Recreation



*The hills were flooded with colour and light, and I had acquired a new memory and new strength.*

*Elyne Mitchell atop Mount Townsend 1942*

### 8.1 Recreation Opportunities

#### Background

The mountain landscapes of Kosciuszko National Park attract almost one million visitors each year. While many of these people seek opportunities for physical challenges, exhilaration or camaraderie, others visit out of curiosity or in pursuit of relaxation or space for reflection and rejuvenation. All are attracted by the diverse array of places and values contained within the park – its mountains, clear air, swift-flowing streams, glacial lakes, limestone caves, thermal springs and natural beauty. Or by the extensive forests, fields of alpine wildflowers, endemic plants and animals, or the rustic huts and evocative ruins with their real and imagined histories. But above all else, people are attracted to the park because of snow.

The seasonal cover of snow that blankets large tracts of the park sets it apart from most other places on the Australian continent. Almost two-thirds of all visitors travel to the park during winter. The downhill skiing and snow boarding opportunities available at the alpine resorts of Perisher Range, Thredbo, Charlotte Pass and Mount Selwyn attract most of these visitors. Elsewhere, people undertake cross-country skiing, snow play, snow camping and ice climbing. The objective for many visitors is simply to see and experience snow for the first time.

Beyond the snow season, the episodic nature of visitation to the park is also reflected in the existence of two secondary peak periods – the summer school holidays and Easter. The most popular non-snow based recreational pursuits are walking, sightseeing, driving, picnicking, fishing and camping. Other activities include

caving, horse riding, cycling, canoeing, rafting, boating, rock climbing, photography, painting and educational tours.

Although recreational activities are undertaken throughout the park, there are a number of discrete areas of concentrated use. Apart from the alpine resorts, the major road corridors with their associated picnic and camping areas, short walks and lookouts, are especially popular. So too is the Main Range, and in particular Mount Kosciuszko, which is a key visitor attraction in summer and winter. In the northern end of the park, the show caves at Yarrangobilly are popular visitor destinations, as are Blue Waterholes, Coolamine and Currango Homesteads, Cabramurra Township and Eucumbene, Tantangara, Talbingo and Blowering Dams. By contrast, the wilderness areas of the park provide visitors with opportunities to undertake self-reliant recreational activities in remote settings where they can experience a sense of solitude. Even in wilderness areas, recreational use is concentrated along certain management trails and walking tracks, and at particular huts and landscape features.

The popularity of the park is partially due to its location, as it is readily accessible by road from Canberra (three hours drive), Sydney (six hours) and Melbourne (eight hours), which together account for approximately half of the Australian population. Although family groups are common, visitors to the park include a cross-section of society.

## Significance

The park is a nationally significant place for outdoor recreation because:

- It is one of only a few places in Australia where people can participate in snow-based recreation;
- The mountain scenery of the park is rare in a predominantly flat and arid continent;
- It contains the highest mountains on continental Australia;
- It contains diverse and extensive natural and cultural features and landscapes, many of which exhibit high degrees of integrity; and
- It is located within the most populated corner of the continent.

The recreational significance of the park is enhanced by its cultural heritage, which includes tangible evidence and intangible associations with Aboriginal people and

various phases of historic land use. Many present-day recreational destinations, routes and activities are steeped in cultural connections, being originally established by Aboriginal people, early miners and graziers or, more recently, for the Snowy Mountains Hydro-electric Scheme. For some people, particular recreational activities and destinations represent direct personal links with family and community histories.

Recreation within the park, especially the snow-based activities, provides significant financial and employment benefits to state, regional and local economies. Visitors rely upon the communities surrounding the park to provide necessary support services. Conversely, many of the businesses within these communities are reliant upon the demands generated by park visitors, who provide a catalyst for regional development.

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## Issues and Opportunities

The fundamental issue underlying the management of recreation in the park is the need to ensure that all activities are undertaken in places and in ways that are environmentally sustainable. Maintaining or enhancing the condition of the recreational resource (the suite of places and natural and cultural values that attract people) is essential if the park is to continue to serve as a key recreational and economic hub in the region. The systematic monitoring of recreation-related impacts and the collection of qualitative and quantitative visitor information are essential if recreation in the park is to be managed in a sustainable way.

Other key issues associated with recreation management include the need to:

- Provide for a wide range of recreational activities within a regional context and across various land

tenures, recognising that the park should only provide opportunities for those recreational activities that are based upon appreciation of the natural and cultural attributes of the place;

- Manage particular recreational activities so as to retain a spectrum of recreational opportunities and settings in the long-term;
- Minimise conflicts between participants in different recreational activities; and
- Consider the potential ramifications of climate change for snow-based recreation.

Opportunities exist to increase the variety of recreational settings (physical, biological, social and managerial) available for participants in individual recreational activities and improve the quality of the recreational infrastructure provided.

### **8.1.1 Management Objective**

*Opportunities are provided for visitors to undertake a wide range of recreational activities at places and in ways that optimise the quality of the experiences available, while minimising adverse impacts upon the values of the park and conflicts with other users.*

## ***Policies and Actions***

1. Permit, manage and promote recreational activities in accordance with the natural and cultural attributes of the park, the purpose and scope of this plan, and the zoning/recreational activity scheme provided in Schedule 4.
2. Provide a broad spectrum of opportunities for participants in particular recreational activities in a mix of different physical, biological, social and managerial settings.
3. Manage recreational activities so as to minimise impacts on the values of the park and minimise conflicts between participants in different recreational pursuits.
4. Determine impact limits for particular recreational activities and settings and manage activities to ensure that these thresholds are not exceeded.
5. Determine the types of recreational experiences that should be provided by particular areas, sites, tracks and roads and manage all environmental and social variables to ensure that individual places continue to serve these particular recreational roles in the long-term.
6. Spatially and/or temporally separate participants in incompatible recreational activities.
7. Do not encourage recreational use of areas of ecological or cultural sensitivity, or those regarded as unsafe, including but not limited to:
  - Areas of threatened species critical habitat;
  - Vegetation communities that are restricted in distribution, especially vulnerable to disturbance, or likely to come under increasing stress due to climate change;
  - Sites that are vulnerable to disturbance (e.g. streambanks, exposed soils);
  - Places that contain culturally-sensitive Aboriginal sites or values;
  - Cultural heritage features that are vulnerable to disturbance; and
  - Hazardous places (e.g. areas containing unfenced mines).
8. Establish monitoring programs for particular activities, set impact thresholds and determine appropriate responses to manage:
  - Impacts associated with particular recreational activities and developments;
  - Conflicts between participants in different recreational activities; and
  - The types and quality of visitor experiences being provided.
9. Undertake research to establish and/or refine acceptable limits of disturbance for different environments and activities.
10. Include visitor monitoring requirements in all environmental management systems and environmental management plans prepared for developments and operations within the park (Section 12.1).
11. Introduce booking systems for particular recreational activities and places based upon known impact levels and the results of directed monitoring programs.
12. In consultation with user groups and regional advisory committees, review, promote, distribute and, where necessary prepare minimal impact codes of behaviour for all recreational activities undertaken in the park.
13. Establish an integrated parkwide Visitor Data System for the ongoing collection, storage and analysis of visitor use data. Visitor information to be collected will include:
  - Number of visitors to specific places in the park, and the park as a whole;
  - Numbers of visitors undertaking various recreational activities;
  - Visitation patterns (temporal and spatial);
  - Visitor profiles;
  - Visitor expectation and satisfaction ratings; and
  - Qualitative data concerning current visitor management issues.

## 8.1.2 Management Objective

*Recreation planning is integrated across the region and all relevant land tenures.*

### **Policies and Actions**

1. Collaborate with tourism authorities in the implementation and periodic review of tourism plans for the state and region.
2. Maintain formal participation on local tourism association boards and/or relevant committees.
3. Participate in forums that encourage the integrated provision of recreational opportunities across all relevant land tenures with other government agencies and local governments.
4. Encourage the development of a regional recreation management plan that includes the park.
5. Continue to work within the recreational and promotional strategies of the Australian Alps program.
6. Liaise with local tourism associations, other government agencies and tourism operators to ensure that all relevant promotional material provides accurate information concerning the recreational opportunities available in the park.
7. Build data collection and monitoring partnerships and reciprocal data sharing agreements for appropriate visitor information for inclusion in the Visitor Data System with:
  - Lessees (including resort operators and Snowy Hydro Limited);
  - Licensees;
  - User groups;
  - Tourism Snowy Mountains;
  - Other State government agencies;
  - Local governments;
  - Non-government organisations;
  - Relevant businesses;
  - Chambers of commerce; and
  - The Australian Alps Liaison Committee.

## 8.2 Visitor Facilities

### **Background**

The types of visitor facilities provided in the park include roads and car parks, picnic tables, seats, shelters, toilets, fireplaces, walking and cycling tracks, ski trails, viewing platforms, signs and huts. Within the alpine resorts, additional visitor infrastructure is available in the form of accommodation, ski lifts, and various retail and sporting outlets and services. Across the park, these facilities are provided in a heterogeneous mixture of different designs, qualities, scales, appearances and combinations.

Most visitor facilities are concentrated within the Major and Minor Road Corridors and in the Visitor Services Zone (Schedule 5 and Map 7). The progression from these zones and the recreational roles they are intended to serve, through to the Back Country and Wilderness Zones, is accompanied by reductions in the variety, number and capacity of the recreational facilities provided.



## Issues and Opportunities

The standard, appearance, functionality and siting of recreational facilities can enhance or detract from the experiences of visitors. For some people, it is the quality of the visitor facilities encountered, rather than any natural or cultural values, that shapes their perceptions of the park and influences their behaviour.

Instead of continuing to provide a large variety of facility designs and standards, an opportunity exists to develop a uniform or “signature” appearance for the park. The adoption of shared design or construction elements across all forms of visitor infrastructure can be used to create a “sense of place” that reflects the intrinsic values of the park and optimises the quality of the visitor experiences available.

The environmental impacts associated with visitor facilities and their use are numerous and vary markedly between places and types of infrastructure. Such impacts, which are not necessarily confined to the actual sites where facilities are located, may include:

- Vegetation damage and destruction;
- Denudation and soil erosion;

- Impacts associated with construction methods and materials (e.g. energy used, sources and types of materials);
- The introduction and spread of weeds;
- Soil and water pollution;
- The impairment of aesthetic values, including distant viewfields; and
- Damage and destruction of heritage places and material.

Visitor safety issues associated with recreational facilities include:

- The structural condition of facilities;
- The proximity of facilities to hazardous sites (e.g. disused mines or cliffs);
- The need for adequate separation of vehicles and pedestrians at visitor nodes; and
- The provision of appropriate visitor safety information.

At a parkwide level, there is a lack of recreational facilities designed to meet the needs of visitors with disabilities.

### 8.2.1 Management Objective

*Visitor facilities are designed, constructed and sited so as to minimise adverse impacts upon the values of the park and enhance the experiences available to visitors.*

#### **Policies and Actions**

1. The design, construction and appearance of all visitor facilities are to be of a high standard that is commensurate with the international and national significance of the park.
2. Ensure that the types, standards and capacities of the visitor facilities provided at any particular place comply with the zoning standards (for camping areas, day use areas, walking tracks, roads) described in Schedule 6.
3. Create a “signature” appearance for the park that is reflected in shared design or construction elements across all forms of Service-provided visitor infrastructure and encouraged across other infrastructure provided by lessees including:
  - Picnic tables;
  - Seats;
  - Shelters;
  - Toilets;
  - Barbecues;
  - Walking tracks;
  - Viewing platforms;

- Signs; and
- Other buildings.

Such an appearance should create a “sense of place” and reflect and enhance the intrinsic values of the settings in which visitor facilities are located. The design and construction element(s) chosen should be based upon:

- One or more of the natural or cultural features that typify the park and may include vernacular architectural designs;
- The use of construction materials, finishes and colours that complement the settings that facilities are located within;
- The preferential use of curves rather than straight lines in the design of certain park facilities (e.g. in walking track, lookouts and some park furniture);
- The use of environmentally acceptable materials and construction methods; and
- Other Service standards.

4. Site design principles will include, but not be limited to, the following:

- The reduction of crowding pressures and promotion of efficient visitor flows (e.g. through the use of loop walks rather than in/out tracks);
- The placement of facilities so that they do not intrude upon the integrity of the feature(s) that visitors come to appreciate or important viewfields;
- The design and layout of camping areas and day use areas that include provisions for the separation of vehicles and pedestrians, adequate parking and turning spaces, the retention or planting of screening vegetation, and the protection of aesthetic values;
- The separation of conflicting recreational uses;
- Ameliorating the environmental impacts associated with past or current infrastructure and minimising the impacts of new infrastructure (including minimising the size of the disturbance ‘footprints’ associated with new facilities);
- Ensuring that infrastructure is not sited in, or adjacent to, places of ecological or cultural sensitivity, or safety hazards; and
- The provision of appropriate visitor safety information.

5. Prepare a Disabled Access and Facilities Strategy for the park to guide the provision of a range of recreational opportunities and facilities for visitors with disabilities in the Major Road Corridors and Visitor Services Zone. Such facilities will include, but not be limited to, viewing areas, walking tracks, toilets, and camping and day use areas, provided by the Service.

6. Review the design, appearance, construction and siting of all existing Service-provided visitor facilities in the park and progressively upgrade or modify infrastructure in accordance with:

- “Signature” design and construction elements;
- Site design principles; and
- The Disabled Access and Facilities Strategy.

7. Construct and site all new Service-provided visitor facilities (Map 7) in accordance with:

- “Signature” design and construction elements;
- Site design principles; and
- The Disabled Access and Facilities Strategy.

8. As far as possible, locate new developments on previously disturbed sites.

9. Wherever appropriate, provide opportunities for multiple visitor activities at individual visitor nodes.

10. Upgrade and maintain the Assets Register for all Service-provided visitor infrastructure in the park (Section 12.2).
11. Establish and implement maintenance schedules for all Service-provided visitor facilities, as part of operational planning (Section 12.2).
12. Establish monitoring programs to measure the environmental and social impacts related to visitor facilities and their use, and determine impact thresholds and associated management responses.
13. Liaise with lessees concerning the management of visitor infrastructure provided by them and the possible provision of additional facilities.

(Note: The management of particular types of visitor facilities is discussed in those sections dealing with the relevant recreational activity.)

## 8.3 Driving

### Background

Kosciuszko National Park contains an extensive network of roads (totalling some 800 km in length) that are available for public vehicular use. These range from high-standard sealed roads such as the Alpine Way, Kosciuszko Road and Snowy Mountains Highway, to the narrow gravel Barry Way and numerous minor gravel roads of varying standards. Most of these roads are suitable for conventional vehicles with only a few requiring four-wheel drive. Trails have not been made available specifically for four-wheel drive or trail bike use, and off-road driving is strictly prohibited.

Vehicle-based sightseeing is a key recreational activity in the park, one that is primarily confined to the major tourist roads. It is often combined with roadside stops where people undertake activities such as picnicking, short walks or photography. The road network in the park also enables visitors to reach a multitude of destinations where they undertake their chosen recreational activity, such as cycling, fishing, walking, boating, camping, skiing or

horse riding. Many visitors also access the park aboard coaches, especially during the winter season, bound for one of the four alpine resorts. Motor cycling has become increasingly popular along the winding Alpine Way since it was sealed, creating a circular touring route through the park that also includes the Cabramurra-Khancoban Road, Elliott Way and Snowy Mountains Highway.

The Service is responsible for the management of most of the public roads in the park. The Roads and Traffic Authority manages the Alpine Way, Kosciuszko Road, Snowy Mountains Highway and Main Road 324 through the Yarrangobilly Caves precinct (all of which have been excised from the park) and the Link Road (between Smiggin Holes and Guthega Road).

A large number of the minor roads in the park are seasonally closed to public vehicles because of winter snowfalls or wet weather.

## Issues and Opportunities

Management issues associated with driving in the park include:

- The need to identify and retain the future desired character of each road open to public vehicles. (The incremental upgrading of roads and provision of roadside facilities can result in the loss of character and scenic amenity);
  - The need to formalise road management and maintenance arrangements with all relevant utility providers;
  - The need to adjust the road reserve along sections of the Snowy Mountains Highway so that it corresponds with the actual alignment of the road;
  - Engineering and safety concerns. Many roads in the park are legacies of the Snowy Mountains Hydro-electric Scheme. Some are not well sited or engineered for current usage;
  - Vehicle collisions with native animals;
  - Road damage and high maintenance costs due to the use of unsealed roads in wet conditions; and
  - Public safety issues associated with winter driving conditions.
- (Issues concerning those roads managed by the Roads and Traffic Authority are addressed in Section 12.3.)

### 8.3.1 Management Objective

*Recreational driving opportunities are provided that encourage visitors to safely enjoy the park while protecting its values.*

#### **Policies and Actions**

1. Permit public vehicular access on the roads and trails included in the Major and Minor Road Corridors and certain roads in the Visitor Services Zone.
2. Manage the roads and trails open to public vehicular access according to the following zoning requirements utilising the Road and Trail Classification System provided at Schedule 6:
  - Minor Road Corridors – Dry Weather Trail (4WD), All Weather Trail (4WD), Dry Weather Road (2WD);
  - Major Road Corridors – All Weather Road (2WD); and
  - Visitor Services Zone – All Weather Road (2WD).
3. Permit the use of vehicles on all public roads constructed as part of new visitor developments or redevelopments prescribed in this plan.
4. Identify the desired future character of each road, or section of road, included in the Minor and Major Road Corridors and manage accordingly.
5. Retain the Barry Way as a narrow unsealed road. Short sections of the road may be sealed or widened for safety or environmental reasons.
6. Subject to cultural heritage assessments, reduce the extent of past ‘ribbon development’ along the Major Road Corridors and improve the visual amenity by the removal and rehabilitation of:
  - The former Sawpit Creek service station and environs (Sawpit Creek, Kosciuszko Road);
  - The former winter transport interchange building (not including the RTA depot) (Wilsons Valley, Kosciuszko Road).

(Note: The ongoing use of part of the Sawpit Creek site for car parking will be considered within the context of the Integrated Access Strategy (Section 10.2). The future management of the Ski Rider Motel site at Wilsons Valley (Kosciuszko Road) is described in Section 8.19).

7. Regularly liaise with Snowy Hydro Limited concerning the management of those roads listed in the Roads Maintenance Agreement between the Service and Snowy Hydro Limited.
8. Formalise road management and maintenance arrangements with Transgrid and other relevant organisations.
9. Identify a number of existing strategically located quarries, borrow pits and road maintenance bays across the network of roads and trails included in the Minor and Major Road Corridors. Wherever possible, all such designated sites will be screened from the roads.
10. Close and rehabilitate all non-designated quarries, borrow pits and road maintenance bays.
11. Prohibit the creation of new quarries, borrow pits and maintenance bays.
12. Undertake periodic risk assessments of all roads open to public vehicular access. Continued public access along individual roads will be subject to the outcomes of these assessments (Section 8.22).
13. Manage snow clearing operations on roads managed by the Service so as to minimise disturbance to public vehicular access.
14. Manage car parking to permit safe snow clearing operations.
15. Support public safety programs in relation to driving vehicles in snow conditions.
16. Continue to close the following selected roads and trails, or sections of them, on a seasonal basis:
  - Behrs Flat Trail;
  - Blue Waterholes Trail;
  - Broken Cart Trail;
  - Bullocks Hill Trail;
  - Cabramurra-Khancoban Road (between Cabramurra communications tower turn-off and the Yellow Bog Road intersection);
  - Cumberland Trail;
  - Four Mile Hill Trail (to Eucumbene River);
  - Geehi Dam Road (above Olsens Lookout);
  - Geehi Walls Trail;
  - Greg Greg Trail;
  - Goobarragandra Powerline Road;
  - Kings Cross Road (between Mount Selwyn and Dry Dam);
  - Long Plain Road;
  - Major Clews Trail;
  - Manjar Road;
  - Pocket Saddle Road;
  - Port Phillip Trail;
  - Tantangara Dam Trail;
  - Yellow Bog Road and
  - All associated subsidiary roads and access trails.
17. Roads and trails may be temporarily closed to all public access, including cyclists, due to extreme weather conditions, fire events and other natural hazards.
18. Allow winter vehicle access along the Cabramurra-Khancoban Road as far as Ogilvies Creek (road conditions permitting) through the permitting of commercial carriers to provide transport services. Such transport services are primarily to be provided for cross-country skiers undertaking overnight trips. Permits for day-use access will be considered on a case-by-case basis.
19. All roadside signs in the Minor and Major Road Corridors, with the exception of interpretive displays and road safety and speed limit signs, will be of consistent design, constructed of the same materials and conform with the provisions of Section 8.2 and the Service's sign manual.
20. Liaise with lessees concerning the replacement of their roadside signs within the Visitor Services Zone with signs that are consistent with the design and construction elements outlined in Section 8.2.

21. In undertaking road maintenance works, limit roadside vegetation clearance to that required for essential safety and management purposes and revegetate road batters.

(Note: Provisions aimed at reducing the number of vehicle collisions with native animals are provided in Section 12.3)

## 8.4 Picnicking

### Background

Irrespective of the recreational activities they undertake, most people confine their visit to the park to the public road network and a selection of associated visitor attractions. Punctuating these road corridors are many picnic or day use areas that are located in a variety of settings. They contain facilities such as picnic tables, barbecues, toilets, information and interpretation shelters, and car parks. Short-duration walking tracks and lookouts are provided at a number of these places. Almost half of the picnic areas are combined with camping areas, while others also serve as trackheads for trips into remoter parts of the park.

Depending upon their design, capacity and location, different picnic areas suit different types of visitors. Open, spacious sites may be favoured by large groups where social interaction is an important aspect of their experience. Visitors seeking a degree of solitude and privacy may prefer smaller picnic areas that contain individually-screened picnic sites.

(A list of all existing picnic or day use areas, including their classification and available facilities, is provided at Schedule 5.)

### Issues and Opportunities

Management issues associated with the provision of picnic facilities in the park include:

- Localised environmental degradation (e.g. vegetation damage and destruction due to firewood collection and trampling, erosion of carpark surfaces and other denuded areas, soil and water pollution);
- Variations in the quality, appearance, design and standards of sites and facilities;
- Competition for facilities between campers and day users at shared sites;
- Social conflicts between large groups and people seeking a degree of solitude and privacy; and
- The need to integrate the provision of recreational opportunities and interpretive facilities at individual

picnic areas with those provided within road corridors and across the entire park.

Opportunities exist within the park to develop:

- Clusters of linked recreational opportunities at day use areas instead of such sites catering solely for picnickers;
- Picnic areas and facilities that are readily accessed by disabled visitors; and
- Day use areas that are accessed by walking tracks that enable visitors to picnic within short distances of their vehicles but away from the sights and sounds of traffic.

### 8.4.1 Management Objective

*Picnicking opportunities are provided in places and in ways that optimise the diversity and quality of visitor experiences available while minimising adverse impacts.*

#### **Policies and Actions**

1. Continue to provide picnic/day use areas in the Minor Road Corridors, Major Road Corridors and Visitor Services Zone.
2. Manage existing and new picnic/day use areas according to the following zoning requirements, utilising the Day Use Area Classification System provided at Schedule 6:
  - Minor Road Corridors - Basic Day Use (D1) or Medium Day Use (D2) sites;
  - Major Road Corridors - Medium Day Use (D2) or Major Day Use (D3) sites;
  - Visitor Services Zone - Medium Day Use (D2), Major Day Use (D3) or Major Facility Area (D4) sites.
3. Permit campfires in picnic/day use areas in designated constructed fireplaces only.
4. Monitor impacts associated with firewood collection at day use areas within the Major and Minor Road Corridors and Visitor Services Zone where campfires are popular. Provide firewood or remove fireplaces and prohibit campfires at day use areas where monitoring indicates that the collection of firewood is unsustainable. Gas or electric barbecues may be provided in the Major Road Corridors and Visitor Services Zone.
5. Remove fireplaces and prohibit campfires at day use areas within the alpine resort management units. Gas or electric barbecues may be provided in these areas.
6. Review all existing Service-provided picnic areas in the park to ensure that:
  - They comply with the site standards appropriate for the zones in which they are located;
  - They comply with the general siting, design and construction standards contained in Section 8.2;
  - The needs of different types of day users (e.g. large and small groups) are accommodated within particular road corridors or parts of the park;
  - Picnicking opportunities are provided for disabled visitors;
  - Wherever possible camping and day use areas are located separately;
  - Walk-in picnic areas (accessed by short walking tracks) are provided;
  - Wherever appropriate, day use areas serve multiple short-duration recreational roles (e.g. the linking of short walks or lookouts with day use areas); and
  - The interpretive facilities provided at particular day use areas comply with the themes, messages and strategies identified in the Communication Plan (Chapter 13).

(Note: The Service will liaise with all other organisations that provide day use facilities in the park concerning the management of such sites.)
7. Upon completion of this review, modify or close existing day use areas as necessary in order to meet the requirements listed above.
8. In keeping with the requirements listed above, develop or improve day use areas at the following locations (Map 7):
  - Black Perry Mountain Lookout (Snowy Mountains Highway);
  - Bullocks Hill Trail;
  - Cumberland Trail;
  - Eucumbene River (Snowy Mountains Highway);
  - Former Island Bend township site;
  - Long Plain Road (between Port Phillip Trail and Murrumbidgee River);

- Browns Fire Trail Lookout (Talbingo);
  - Kings Cross Road Lookout;
  - Ravine/Lobs Hole Road Lookout;
  - Murrumbidgee River (near the Port Phillip and Tantangara Dam Trails);
  - Murrumbidgee River (off Long Plain Road); and
  - Tantangara Dam (in keeping with the existing recreation plan for this area).
9. Redevelop the Blue Waterholes day use/camping area in order to reduce environmental degradation and improve the quality and sustainability of the recreational experiences available (Section 9.4).
  10. Continue to judiciously prune vegetation at lookouts, as required, to maintain views.
  11. Periodically monitor the environmental condition and social issues at popular day use areas and set impact thresholds. If monitoring indicates a need to control use, instigate appropriate management responses.

## 8.5 Camping

### Background

Camping opportunities within Kosciuszko National Park range from those available at the Sawpit Creek (Kosciuszko Mountain Retreat) camping ground, with its powered sites, ablution blocks, kiosk and flushing toilets, to secluded campsites in trackless country where there are no facilities.

Three camping areas are located in the Visitor Services Zone. These are at Sawpit Creek (Kosciuszko Mountain Retreat), Thredbo Ranger Station and Yarrangobilly Caves Precinct. All other vehicle-accessible camping areas in the park are significantly less-developed. Visitor facilities at these lesser-developed sites are typically limited to picnic tables, fireplaces and non-flushing toilets. All are situated within the Minor and Major Road Corridors.

Away from road access, remote country camping is undertaken throughout the park in a multitude of different

locations by bushwalkers, ski tourers, horse riders, cyclists, anglers, canoeists, rafters and climbers. These campers are generally seeking natural settings that provide access to water, a scenic location, flat terrain, shade and close proximity to those features that are of special interest to them. Popular remote area campsites are often associated with huts, many of which have toilets located nearby. The most popular places for remote area camping include the Main Range, Whites River corridor, Jagungal and Pilot wilderness areas, the Tabletop Mountain area and the numerous plains and valleys of the northern end of the park.

(A list of all existing vehicle-accessible camping areas, including their classification and available facilities, is provided at Schedule 5.)

### Issues and Opportunities

Many of the management issues associated with camping are shared with other recreational activities, and include:

- Localised environmental degradation (e.g. vegetation damage and destruction due to firewood collection and trampling, erosion of carpark surfaces and other denuded areas, soil and water pollution);
- Variations in the quality, appearance, design and standards of sites and facilities;
- Competition for facilities between campers and day users at shared sites;
- Social conflicts between large groups and people seeking a degree of solitude and privacy; and
- The need to integrate the provision of recreational



opportunities and interpretive facilities at individual camping areas with those provided within road corridors and across the entire park.

Although visitor-related impacts are usually most apparent at popular vehicle-based camping areas, they also occur to varying degrees in the remoter parts of the park. Back country camping - and impacts - are largely concentrated around a relatively small number of destinations such as huts and watercourses. The alpine landscapes of the Main Range contain popular camping destinations that are highly susceptible to disturbance. Because of this, camping has been prohibited for a number of years in the catchments of the five small alpine

lakes – Albina, Blue, Club and Cootapatamba Lakes and Hedley Tarn.

Opportunities exist within the park to develop:

- Clusters of linked recreational opportunities at camping areas;
- Camping areas and facilities that are readily accessed by disabled visitors; and
- Camping areas that are accessed by walking tracks that enable visitors to camp within short distances of their vehicles but away from the sights and sounds of traffic.

### **8.5.1 Management Objective**

*Camping opportunities are provided that optimise the diversity and quality of visito experiences available while minimising adverse impacts.*

#### **Policies and Actions**

1. Permit vehicle-based camping in designated camping areas only in the Minor and Major Road Corridors and at Sawpit Creek (Kosciusko Mountain Retreat), Threbo Ranger Station and Yarrangobilly Caves in the Visitor Services Zone.
2. Permit walk-in camping throughout the park except:
  - Within 200 m of any road open to public vehicular access except at designated walk-in campsites;
  - In the camping exclusion areas on the Main Range (Section 9.2) and near Blue Waterholes (Section 9.4.); and
  - Within the Visitor Services Zone.
3. Prohibit camping in areas of ecological or cultural sensitivity, or those regarded as unsafe, including but not limited to:
  - Areas of threatened species critical habitat;
  - Vegetation communities that are restricted in distribution, especially vulnerable to disturbance, or likely to come under increasing stress due to climate change;
  - Within 30 m of rivers, streams and lakes;
  - Sites that are vulnerable to disturbance (e.g. exposed soils);
  - Places that contain culturally-sensitive Aboriginal sites or values or cultural heritage features that are vulnerable to disturbance; and
  - Hazardous places (e.g. areas containing unfenced mines).
4. Manage existing and new camping areas according to the following zoning requirements, utilising the Camping Area Classification System provided at Schedule 6:
  - Wilderness Zone – Remote Camp Area (C1), no defined camping areas and no facilities provided with the possible exception of toilets at huts;
  - Back Country Zone – Remote Camp Area (C1), no facilities provided with the possible exception of toilets, and low-key facilities at Coonara Point (C2);
  - Minor Road Corridors – Basic Camping Area (C2) sites;

- Major Road Corridors – Basic Camping Area (C2) or Camping Area (C3) sites; and
  - Visitor Services Zone – Camping only permitted at Sawpit Creek camping area, Thredbo Ranger Station and Yarrangobilly Caves Precinct (all C4).
5. Review all existing camping areas in the park to ensure that:
    - They comply with the site standards appropriate for the zones in which they are located;
    - They comply with the general siting, design and construction standards described in Section 8.2;
    - The needs of different types of campers (e.g. large and small groups) are accommodated within particular road corridors or parts of the park;
    - Camping opportunities are provided for disabled visitors;
    - Wherever possible, camping and day use areas are located separately;
    - Walk-in camping areas (located short distances from road access) are provided;
    - Wherever appropriate, camping areas serve multiple short-duration recreational roles (e.g. the linking of short walks or lookouts with camping areas); and
    - The interpretive facilities provided at particular camping areas comply with the themes, messages and strategies identified in the Communication Plan (Chapter 13).
  6. Upon completion of this review, progressively upgrade, modify or close existing camping areas as necessary in order to meet the requirements listed above.
  7. In keeping with the requirements listed above, develop or improve camping areas at the following locations in the Major and Minor Road Corridors (Map 7):
    - Former Island Bend township site;
    - Long Plain Road (between Port Phillip Trail and Murrumbidgee River);
    - Long Plain (near the Murrumbidgee River);
    - Merambego;
    - Old Geehi Village (including access trail);
    - Port Phillip Fire Trail;
    - Ravine Camping area;
    - Tantangara Dam;
    - Yarrangobilly (on the Caves exit road near the Snowy Mountains Highway or near Cotterills Cottage and on the northern side of the Snowy Mountains Highway near Yarrangobilly Village); and
    - Yellow Bog Hut Ruin.
  8. Redevelop the Blue Waterholes day use/camping area in order to reduce environmental degradation and improve the quality and sustainability of the recreational experiences available (Section 9.4).
  9. Permit camping for a maximum period of three weeks at any camping area, unless otherwise approved by the Service. Shorter maximum stay periods may be imposed at certain sites during peak visitation periods.
  10. Encourage visitors to adopt responsible camping behaviour through the promotion and distribution of the Australian Alps minimal impact camping code.
  11. Actively encourage all visitors to Wilderness and Back Country Zones to use fuel stoves rather than campfires.
  12. Monitor impacts associated with firewood collection at camping areas within the Minor and Major Road Corridors and the Visitor Services Zone where campfires are popular. Permit campfires in designated constructed fireplaces only. Supply firewood or remove fireplaces and prohibit campfires at camping areas where monitoring indicates that the collection of firewood is unsustainable. Gas or electric barbecues may be provided in Major Road Corridor and Visitor Services Zone sites where campfires are prohibited.
  13. Periodically monitor the environmental condition and social issues at popular camping areas and set impact thresholds. If monitoring indicates a need to control use, instigate appropriate management responses which

may include, but not be limited to the introduction of:

- Limits on the number of people permitted to camp in an area;
  - Mandatory minimal impact practises (e.g. campfire and hut fire bans); and
  - Temporary or permanent camping exclusion zones.
14. Introduce a voluntary registration system for campers in the Main Range Management Unit as a means of collecting relevant visitor data. If monitoring indicates that unacceptable environmental or social impacts are occurring, or are likely to occur, initiate management responses, which may include, but not be limited to the introduction of a booking system (Section 9.2).
15. Extend the voluntary registration system and/or booking system to the Jagungal wilderness area and other remote camping areas in the park if necessary.
16. A camping booking system may be introduced for vehicle-accessible camping areas that experience overcrowding during peak use periods such as:
- Blue Waterholes;
  - Geehi (Alpine Way);
  - Lower Snowy River camping areas (Barry Way);
  - Ngarigo (Alpine Way);
  - Thredbo Diggings (Alpine Way);
  - Thredbo Ranger Station;
  - Three Mile Dam (Cabramurra Road); and
  - Yarrangobilly Caves Precinct.

(Note: The management of camping associated with particular recreational activities is further described in sections dealing with those activities.)

## 8.6 Walking

### Background

Walking is the most popular summer recreational activity undertaken in Kosciuszko National Park. The walking opportunities available range from easy short-duration walks on modified or hardened tracks that are suitable for people of various ages and fitness levels, to extended walks of a week or more through untracked country requiring high levels of self-sufficiency, fitness and previous experience. Interpretive signs or brochures provided on some walks assist visitors in understanding the various natural and cultural values of the landscapes traversed by the tracks. On other walks where such information is absent, visitors interpret and appreciate the park in their own particular way. While the experiences afforded by any one walk vary markedly from individual to individual, all provide visitors with first-hand perceptions of the park.

The most popular walks are those that are relatively easy and located at key visitor destinations along the popular

tourist thoroughfares of the Kosciuszko Road, Alpine Way and Snowy Mountains Highway. These include walks such as the Snow Gums track at Charlotte Pass, the Thredbo River track near Thredbo village, the Porcupine track commencing at Perisher Valley and the Waterfall track near Sawpit Creek. The walk from the top of the Crackenback Chairlift to the Kosciuszko Lookout is especially popular, with many visitors continuing on to the summit of Mount Kosciuszko. This is the most popular day walk in the park and attracts visitors from around Australia and overseas. Many people combine a day trip to the top of Kosciuszko with the Main Range walk, which represents the highest ridge walk in Australia. The multi-day Snowies Iconic Walk connecting Thredbo with Crackenback (Bullocks Flat) via Charlotte Pass and Perisher will be one of Australia's premier walks. In the northern end of the park, short walks in the Blue Waterholes, Yarrangobilly, Kiandra and Three Mile Dam areas are also popular.

Extended walks are most commonly undertaken in the Main Range, Jagungal and Pilot areas where popular

destinations include mountain tops and historic huts. There are very few walking tracks, as such, in these areas. Instead, walkers utilise the network of management trails that are closed to public vehicles or walk off-track, which is relatively easy across the open landscapes of the Main Range and the plateau country of the central and northern parts of the park. Two long-distance walking tracks (Australian Alps Walking Track and Hume and Hovell Track) and one multi-purpose trail (the Bicentennial

National Trail) cross the park. All three consist primarily of a series of linked management trails.

Walking is a seasonal activity in elevated parts of the park which are usually snow-covered for several months at a time.

(A list of all walking tracks in the park is provided at Schedule 5.)

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## Issues and Opportunities

Walking provides visitors with one of the best ways to appreciate those values of the park that can only be experienced outside the confines of their motor vehicles. That said, walking tracks often represent narrow corridors of environmental degradation in which the original vegetative cover has been replaced by exposed soil or an artificially hardened surface. Localised problems include soil erosion and the introduction and spread of weeds and pathogens.

In open landscapes, such as those that occur along the crest of the Main Range, walking tracks may also impact upon the aesthetic appeal of a place. Other management issues associated with walking are common to other recreational activities and include problems concerning human waste disposal, the accumulation of rubbish and firewood collection especially, though not exclusively, at campsites.

While some walking tracks have been purposely constructed, many others have evolved over time through repeated use of a popular route. Many such tracks are poorly-sited and eventually require environmental protection works, resulting in the incremental upgrading of track standards and attendant increases in popularity. This, in turn, may result in the displacement of walkers seeking more challenging and less-developed walks to other areas where the problem may begin afresh.

Crowding is a key social and environmental problem at a small number of sensitive sites within the park. During peak visitation periods, large numbers of walkers congregate on the summit of Mount Kosciuszko and are encountered along the raised walkway between the Crackenback Chairlift and Rawson Pass, resulting in off-track use and damage to alpine vegetation.

Optimising the walking choices available to visitors while minimising environmental and social impacts, requires the integration and rationalisation of walking track types, standards, locations and promotion across the entire park. Retaining a wide variety of walking opportunities in the long-term is dependent on the introduction and implementation of management strategies that ensure that track standard parameters assigned to individual tracks are not exceeded. Beyond the management of the existing walking tracks, opportunities exist to:

- Develop additional short-duration walks at key visitor destinations, creating individual sites which offer a variety of walking opportunities;
  - Provide additional wheelchair-standard tracks (only one currently exists); and
  - Develop or redevelop tracks that encourage visitors to reflect upon, or contemplate, the beauty of selected places through the provision of appropriately sited and designed park furniture and information.
-

### 8.6.1 Management Objective

*A range of walking opportunities is provided that encourages visitors to enjoy the park in ways that minimise adverse impacts.*

#### **Policies and Actions**

1. Continue to permit walking throughout the park.
2. Manage walking tracks according to the following zoning/track standard classification scheme, utilising the Walking Track Classification System provided at Schedule 6:
  - Wilderness Zone – Generally Class 6 walking tracks;
  - Back Country Zone – Class 3, Class 4, Class 5 and Class 6 walking tracks (Section 9.2 for exceptions in Main Range Management Unit);
  - Minor Road Corridors – Class 1, Class 2 and Class 3 walking tracks;
  - Major Road Corridors – Class 1, Class 2 and Class 3 walking tracks; and
  - Visitor Services Zone – Class 1, Class 2 and Class 3 walking tracks.

(Note: Walking tracks that commence in a developed zone and continue on into a less-developed zone may be of a standard considered appropriate for the less-developed zone along their entire lengths).

3. Manage walking track markers according to the following zoning requirements:
  - Wilderness Zone – generally remove existing trail markers, do not provide additional markers;
  - Back Country Zone – existing trail markers may be retained, additional markers may be provided on Class 3 walking tracks only; and
  - Minor Road Corridors, Major Road Corridors, Visitor Services Zone – existing trail markers may be retained, additional markers may be provided.
4. Manage trackside signs according to the following zoning requirements:
  - Wilderness Zone – except at trailheads, wilderness zone boundaries and hut interiors, limit signs to those required for environmental protection and operational purposes;
  - Back Country Zone – except at trailheads, hut interiors and along Class 3 walking tracks, limit signs to those required for environmental protection and directional signs (Section 9.2 for exceptions in Main Range Management Unit); and
  - Minor Road Corridors, Major Road Corridors, Visitor Services Zone – safety, directional, regulatory and interpretive signs may be provided at visitor nodes, trailheads, huts and along walking tracks.
5. Prepare a walking track strategy for the entire park, or a series of strategies for precincts within the park, that is/are made available for public comment before finalisation, that:
  - Assigns a preferred long-term track standard to all existing walking tracks, using the Walking Track Classification System provided at Schedule 6;
  - Provides for walking tracks of all classes (Class 1 to Class 6);
  - Assigns appropriate track surfacing requirements using the Track Classification System provided at Schedule 6;
  - Investigates the provision of additional walks. Priority will be given to Class 1 (wheelchair standard) tracks and other short-duration walks commencing at key visitor nodes in the Visitor Services Zone and Major Road Corridors;
  - Rationalises the existing track network to optimise the variety and location of walking track opportunities (this may require the closure of some existing tracks and the construction of new tracks);
  - Provides for clusters of linked walking tracks (of varying types, standards and lengths) at key visitor nodes in the park rather than single walking tracks at a large number of different sites;
  - Creates an integrated system of interpretive walks that is consistent with the management strategies developed for individual heritage corridors and precincts, and the key messages, values and sites identified in the Communication Plan (Chapter 13);

- Provides for the establishment of a suite of tracks that are designed to encourage visitors to reflect upon, or contemplate, the beauty of selected showcase places in the park, across a variety of landscapes and vegetation types;
  - Provides for the maintenance and upgrading of popular trackheads and tracks through regular track inspection and maintenance programs;
  - Includes an inventory of the condition of all walking tracks;
  - Identifies track re-routing requirements for environmental protection or other purposes;
  - Establishes a track monitoring program;
  - Establishes a track-use counting system (linked to the monitoring program and Visitor Data System); and
  - Contains track-specific and trackless area management regimes (e.g. changes to track promotion, promotion of alternative tracks, introduction of number limits and booking systems) designed to ensure that track conditions are retained within the assigned track standard parameters.
6. Within the context of the Walking Track Management Strategy:
- Manage the various informal tracks formed by customary bushwalking use in the Main Range Management Unit and Wilderness Zone as Unmarked Routes (Class 6 Walking Tracks) (Schedule 6). Restrict management infrastructure and works along these routes to that required for environmental protection purposes and do not signpost; and
  - Manage all parts of the Main Range Management Unit and Wilderness Zone away from the walking track network as trackless areas for dispersed use by suitably equipped and experienced visitors. Encourage visitors to these areas to:
    - Fan out rather than walk in single file (to reduce the likelihood of creating additional footpads); and
    - Limit their group size to a maximum of eight people.
7. Investigate and instigate measures designed to reduce crowding problems along the Kosciuszko Walk and on the summit of Mount Kosciuszko during peak visitation periods according to Section 9.2.
8. Limit the use of track pavers to Class 1 short-duration walks in the Major Road Corridors and Visitor Services Zone.
9. Continue to promote and manage the Australian Alps Walking Track consistent with the policies of the Australian Alps Program. The Australian Alps Walking Track may be re-routed to follow the Snowies Iconic Walk.
10. Continue to liaise with staff of the Department of Planning on the management of the Hume and Hovell Walking Track and the Bicentennial National Trail.
11. Do not promote walking in areas of ecological or cultural sensitivity, or those regarded as unsafe, including but not limited to:
- Critical areas of threatened species habitat;
  - Vegetation communities that are restricted in distribution, especially vulnerable to disturbance, or likely to come under increasing stress due to climate change;
  - Sites that are vulnerable to disturbance (e.g. exposed soils);
  - Places that contain culturally-sensitive Aboriginal sites and values or cultural heritage features that are vulnerable to disturbance; and
  - Hazardous places (e.g. areas containing unfenced mines).
12. Encourage walkers to adopt minimal impact bushwalking behaviour through:
- The promotion and distribution of the Australian Alps minimal impact code;
  - The placement of minimal impact walking information within the interiors of all huts open to the public in the Back Country and Wilderness Zones; and
  - The provision of minimal impact walking information at all trackheads utilised by people undertaking full-day and overnight walking trips.

## 8.7 Horse Riding

### Background

Recreational horse riding is primarily undertaken across the expansive snow plains and low wooded ridges of the northern end of the park. The north-south aligned Long Plain, which extends for a distance of some 30 km, and the neighbouring Cooleman, Currango, Kiandra, Nungar and Tantangara Plains are all popular riding locations, as are the numerous smaller plains and low intervening divides that characterise this part of the park. Vehicular access for riders intending to visit these places is principally provided by the Snowy Mountains Highway and various subsidiary branch roads such as Long Plain and Tantangara Roads.

Elsewhere in the park, horse riding is less popular. In the central part of the park it occurs to the west and north of Snowy Plains in the Gungarlin River, Happy Jacks and Tabletop Mountain areas. In the far south, horse riding is undertaken around Tom Groggin on the upper Murray River, around Geehi, at the Pinch River in the catchment of the lower Snowy River, and occasionally at Merambego to the east of the Byadbo wilderness area.

Horse riding is prohibited on the Main Range and certain other alpine and subalpine areas within the park. Recreational horse riding is prohibited in declared wilderness areas (the Wilderness Zone) except in those locations described in 8.7.1(2).

Except for the Thredbo alpine resort area where horse riding is currently permitted under lease conditions, the focus of horse riding in the park is within the Back Country Zone.

The park is traversed by the Bicentennial National Trail (BNT), a multi-purpose trail available to horse riders that extends down the east coast of mainland Australia from Cooktown in far north Queensland to Healesville in Victoria. The 182 km section of the BNT located within the park utilises a series of management trails, linked by short sections of public road.

Horse riding trips in the park vary in duration from a few hours to extended trips of a week or longer, and are undertaken by private parties and commercial groups. Horse camping facilities have been developed at seven sites in the north of the park – Bullocks Hill, Cooinbil Hut, Ghost Gully, Long Plain Hut, Old Snowy Camp, Rocky Plain and Wares Yards. In the south, horses are permitted at the vehicle-based camping areas at Behrs Flat (at Geehi Flats), Tom Groggin and the Pinch River. Remote area camping, with the support of packhorses, occurs at many locations in the park.

Recreational horse riding in the park tends to be a seasonal activity, especially in the northern end where key access roads are closed on an annual basis between the June and October long weekends.

### Issues and Opportunities

Environmental impacts resulting from horse riding and camping with horses, include:

- Vegetation damage and destruction through trampling and grazing;
- Denudation, soil erosion and soil compaction;
- Trackformation;
- Stream bank erosion, sedimentation and pollution of waterways;
- Introduction and spread of weed species (in horse feed and manure);
- Accumulation of horse manure at campsites and along trails;
- Physical damage to rock surfaces;

- Damage to Aboriginal and non-Aboriginal places of cultural significance (e.g. Mount Morgan and the Pinch River area);
- Damage to trees at campsites; and
- Human waste problems at campsites.

Social impacts associated with recreational horse riding include:

- Conflicts with other users, especially at peak periods at vehicle-accessible camping areas where horses are permitted and at popular huts, where the presence of large numbers of horses and riders may discourage other visitors from using a site;

- Competition at peak periods between commercial and private horse riding groups at designated camping areas; and
- Visitor safety concerns (for riders and motorists) where riding is undertaken along roads used by public vehicles.

Illegal horse riding in wilderness areas in the park is also of concern.

These management issues have become exacerbated in recent years with the growing popularity of horse riding in the park. Whereas once horse riding in the mountains was largely undertaken only by local people, the park is increasingly attracting recreational horse riders from

distant places within New South Wales and interstate. Such impacts are especially pronounced at confined locations where horse riding activities are concentrated such as in the Pinch River area, and at designated vehicle-accessible horse camping areas.

The adoption of a minimal impact code of conduct for recreational horse riding in the Australian Alps has assisted in educating riders about environmentally responsible riding practises. Such information is especially valuable for riders from far afield who may be unaware of the susceptible environmental conditions and values present in the park.

### **8.7.1 Management Objective**

*A range of horse riding opportunities is provided in which riders are able to enjoy the park at places and in ways that minimise adverse impacts.*

#### **Policies and Actions**

1. Permit recreational horse riding in the following zones:
  - Minor Road Corridors;
  - Major Road Corridors (approved camping areas); and
  - Back Country Zone, with the exception of the following exclusion areas within which horse riding will be prohibited:
    - The Main Range Management Unit;
    - Whites River Corridor;
    - Ingebyra area;
    - Summit of Mount Morgan;
    - The catchments of Diggers, Pipers and Sawpit Creeks;
    - The slopes of the Thredbo River valley; and
    - The immediate area around Blue Waterholes.
2. Allow recreational horse riding in the Wilderness Zone in the locations that were part of the 2014-2016 horse riding in wilderness trial, as follows:
  - Only permit horse riding on the trails identified in Map 8, those being Nine Mile Trail (from Barry Way to the Ingeegoodbee Trail) and Ingeegoodbee Trail (from the Victorian border to the Tin Mines Hut at the southern end of the Cascades Trail)
  - Each horse riding group, either commercial or non-commercial, will have a maximum of eight horses only
  - Camping with horses is not allowed within 500 metres of huts or further than 100 metres from the existing management tracks.
  - Monitor the environmental and cultural impact of horses on authorised Wilderness routes. Where there is unacceptable environmental damage, review where horse riding is allowed or the conditions under which horse riding can be undertaken. Undertake such a review in consultation with relevant stakeholders.
  - Horse riding on approved Wilderness trails is not permitted between the June long weekend and the October long weekend due to weather and soil conditions.
3. Horse riding will only be permitted within the Thredbo alpine resort lease area under current lease conditions. Upon expiry or review of the current lease, horse riding will no longer be allowed in this area.
4. Prohibit horse riding on all designated walking tracks.



5. Close horse riding areas to riders and prohibit vehicle-based camping with horses on a seasonal basis between the June and October long weekends and at other times as climatic conditions require.
6. Re-route those sections of the Bicentennial National Trail that consist of roads used by public vehicles (Alpine Way, Tantangara Road) so as to avoid the need for riders and motorists to share thoroughfares.
7. Permit vehicle-based camping with horses in the Minor and Major Road Corridors at the following designated camping areas:
  - Behrs Flat (temporarily until Geehi Village site is open to horse riders);
  - Bullocks Hill;
  - Cooinbil Hut;
  - Currango Homestead (for guests only);
  - Geehi Village (new area subject to relocation of Bicentennial National Trail);
  - Ghost Gully;
  - Long Plain Hut;
  - Manjar;
  - Old Snowy Camp;
  - Pinch River Area;
  - Rocky Plain;
  - Tom Groggin;
  - Wares Yards; and
  - Yellow Bog.
8. At all vehicle-based camping areas where horses are permitted:
  - Horses are to be kept at least 50 m from any river, stream, lake, hut or camping area used by campers without horses unless in a designated permanent horse yard constructed by the Service;
  - Prohibit the use of hay. Horses must only be fed processed feeds or cracked grain; and
  - Permit the erection of temporary yards in designated areas. Temporary yards will be removed when a camping area is vacated.
9. Vehicle and horse float parking will be provided where horse camping is permitted to assist in ensuring that parking does not occur within 50m of huts and waterways.
10. Commercial horse riding groups will be required to camp at designated campsites, unless permitted otherwise by consent from the Service. Such consent will be determined on a case-by-case basis.
11. Horse riders must comply with the Australian Alps Horse Riding Code and other relevant codes.
12. Prepare park-specific minimal impact horse riding information that includes the identification of those areas that should be avoided by horse riders.
13. In consultation with user groups and other stakeholders, introduce a booking system for horse riding in the park, covering overnight trips and extended trips, pack-saddle camping and vehicle-based camping with horses. The booking system will detail:
  - Horse number limits for horse riding areas and camping areas; and
  - Areas to be avoided by horse riders to protect natural and cultural values and minimise conflict with other users. These areas will include, but not be limited to:
    - Threatened species critical habitats;
    - Significant vegetation communities and species populations;
    - Riparian areas and wetlands;

- Karst features;
- Highly erodable areas; and
- Heritage places that are susceptible to disturbance or culturally-sensitive.

Review the implementation of the booking system and modify as necessary. Priority for implementation of the booking system should be given to key sites such as the Pinch River and Cooinbil Hut during peak visitation periods.

14. Monitor the environmental and social impacts at popular horse riding areas and all vehicle-based camping areas where horses are permitted and set impact thresholds. If monitoring indicates that unacceptable environmental or social impacts are occurring, or are likely to occur, initiate management responses which may include, but not be limited to the introduction of:

- Reduced horse number limits in particular areas;
- Mandatory minimal impact measures such as restrictions on campfire use;
- Temporary or permanent exclusion zones within horse riding areas;
- Temporary or permanent closures of camping areas to horses;
- Relocation of camping areas to less environmentally sensitive areas within close proximity to existing camping areas;
- Removal of permanent horse yards at designated campsites and replacement with designated areas where temporary yards can be erected;
- Provision of watering facilities for horses at designated campsites; and
- Erosion and environmental protection works at horse camps to minimise environmental impacts.

## 8.8 Resort-based Activities

### Background

Snow-based recreation in the park is largely focused on the four alpine resort areas (Charlotte Pass, Thredbo, Selwyn and Perisher Range) where the most popular activities are alpine skiing, snow boarding and cross country skiing. Other resort-based snow activities include tobogganing, snow tubing, snow play, snow-shoeing and sightseeing (Section 8.10).

The resort village areas contain restaurants, cafes and bars and a variety of other retail outlets. Commercial and club accommodation is available at three of the four resorts (not at Selwyn Snowfields).

Beyond the snow season Charlotte Pass, Thredbo, and Perisher Range resorts continue to cater for visitors.

(Selwyn Snowfields is closed between snow seasons.) Sightseeing, walking, picnicking, fishing and cycling are all popular non-winter activities. The chairlift at Thredbo provides ready access to the start of the Mt Kosciuszko walkway and is well utilised during summer. Charlotte Pass resort also serves as a starting point for walks along parts of the Main Range.

Thredbo differs from the other resorts in that it caters for sports such as golf, swimming, tennis, squash, climbing and downhill cycling. It also regularly holds music festivals and other special events.

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### Issues and Opportunities

The management of most resort-based recreational activities is controlled through a series of leases, licences and planning instruments prepared by the Service and the Department of Planning (Chapter 10).

The resort areas are unique in the park in that they contain concentrations of leisure facilities and services that are more typically associated with urban settings. These

include shops, restaurants, cafes and bars, and facilities at Thredbo such as the sports centre, tennis courts and golf course. Recreational activities that are generally considered to be appropriate in a national park are those that are based upon an appreciation of the natural and cultural values of the place.

### 8.8.1 Management Objective

*Resort-based recreation is based upon enjoyment and appreciation of the natural and cultural values of the park and is managed in accordance with all relevant planning instruments.*

#### **Policies and Actions**

1. All resort-based recreational activities and facilities will be managed in accordance with the relevant provisions of:
  - The *National Parks and Wildlife Act 1974*;
  - This plan of management;
  - Other relevant Environmental Planning Instruments;
  - Leases and licenses; and
  - Environmental management systems.
2. Leases and licences may be granted for the following activities and facilities in resort areas:
  - Accommodation up to the bed limits prescribed in Chapter 10;
  - Commercial outlets providing food and beverages (e.g. restaurants, cafes, bars, bakeries, grocery shops);
  - Commercial outlets providing goods and services associated with the recreational activities undertaken in the resort areas (e.g. ski, outdoor clothing and equipment sale and hire, ski and snow boarding tuition);
  - Local community services (e.g. chemists, medical services, banks, post offices, transport services, theatres, cinemas, conference venues, educational facilities, indoor sporting facilities);
  - Ski slope infrastructure;
  - Associated service and utilities infrastructure;
  - Parking areas;
  - Signage; and
  - Other recreational activities and facilities consistent with the provisions of Chapter 8 of this plan.
3. New outdoor sporting facilities for broad-acre recreational uses (e.g. golf courses) will not be permitted.

## 8.9 Cross-country Skiing

### Background

Kosciuszko National Park is the only place in NSW that is reliably blanketed by a seasonal cover of snow. Although snow conditions vary considerably between and during individual winter seasons, a continuous snow cover commonly extends from the South Ramshead north almost to Kiandra, a distance of some 75 km. This large expanse of snow country provides for a diverse range of cross-country skiing opportunities.

Ski touring trips, ranging in duration from a day to more than a week, are most commonly undertaken in the Main

Range area, commencing at trailheads such as Perisher Valley, Charlotte Pass, Guthega, Guthega Power Station, Crackenback Chairlift and Dead Horse Gap. Mount Kosciuszko, itself, is one of the most popular back country skiing destinations in the park. Elsewhere, ski touring trips are commonly undertaken in the high plateau country of the Jagungal wilderness area, where destinations include Mount Jagungal, the Kerries, the Brassy Mountains, the Grey Mare Range and the numerous huts scattered across the landscape which commonly serve as base camps. The historic crossing from Kiandra to Mount Kosciuszko has

attained something of an iconic status amongst cross-country skiers. Back country areas such as Watsons Crag on the steep western fall of the Main Range have also become popular in recent years for ski mountaineering, reflecting major advances in ski technology and design.

Apart from huts, the infrastructure utilised by cross-country skiers in the back country is limited to a small number of snow pole lines. By comparison, networks of marked groomed and ungroomed ski trails and related cross-country skiing facilities and services are provided within or adjacent to the alpine resorts. Of these, the Perisher Valley-Smiggin Holes cross-country ski area is the most popular. Within Perisher Valley, groomed ski trail loops of 2.5, 5, 7.5 and 10 km in length are popular for cross-country skiing events, with the 2.5 and 5 km trails meeting international standards. Additional trails of 2 and 4 km in length exist at Smiggin Holes. The Sverre Kaaten

Cross-country Shelter at Perisher provides a base for skiing activities on this trail network which include classical skiing, skating and a range of competitive racing events. Perisher Blue Proprietary Limited holds a franchise over the greater proportion of the Perisher trail network. This grants the company an exclusive right for the provision of ski hire, sales and instruction until 2025. Management of cross-country skiing in the Perisher area is assisted by a consultative committee which includes representatives of the Service, Perisher Blue Proprietary Limited, sporting and recreational skiing organisations and commercial cross-country skiing interests. Marked ski trails are also provided in and adjacent to the Charlotte Pass and Mount Selwyn resort areas and at Dry Dam near Cabramurra.

(A list of existing cross-country skiing facilities is provided at Schedule 5.)

## Issues and Opportunities

Management issues associated with back country ski touring include:

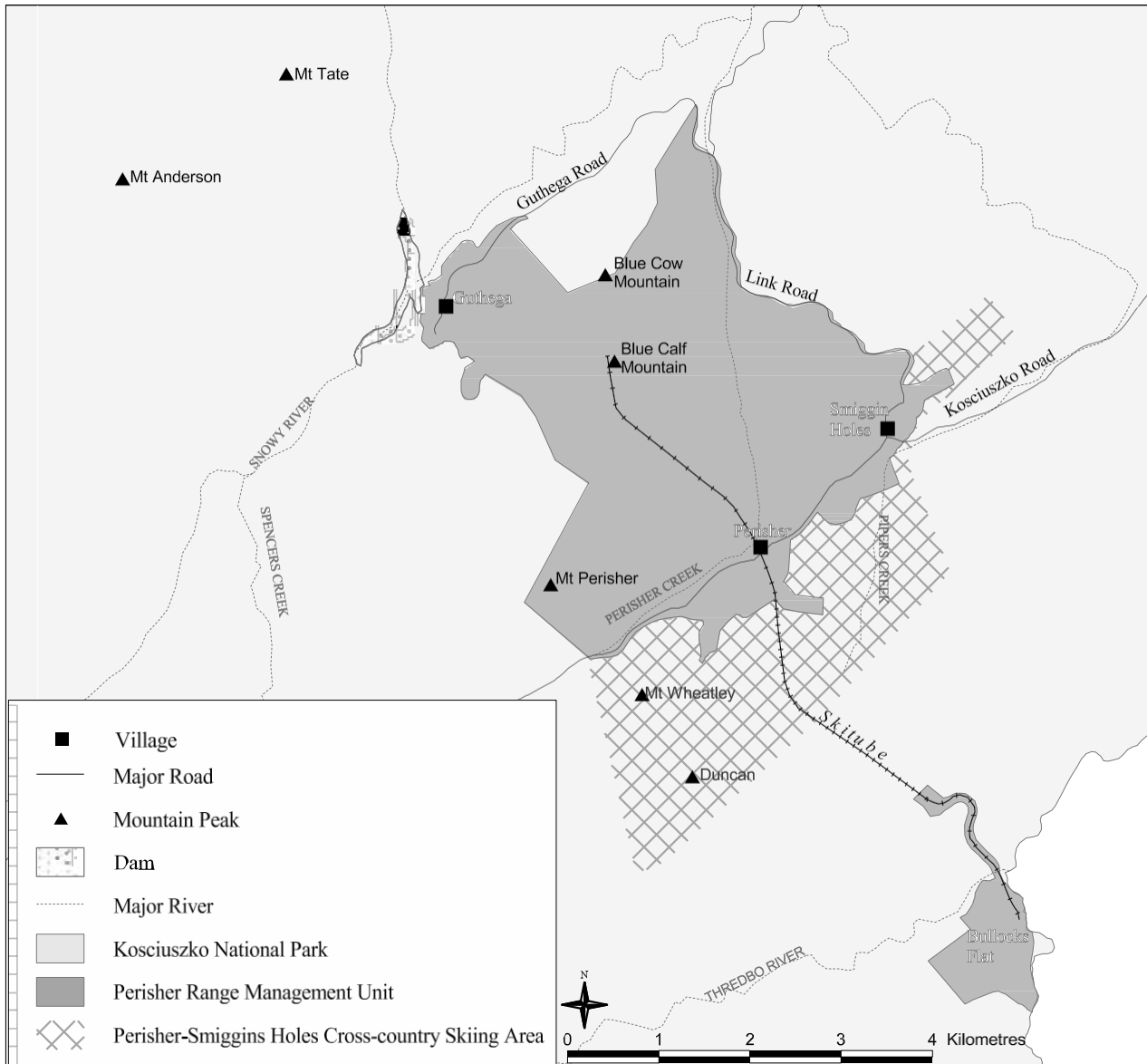
- Campsite impacts, especially around huts (e.g. localised damage associated with firewood collection, inappropriate disposal of human waste);
- Crowding at popular destinations, such as huts and popular mountain peaks; and
- Visitor safety.

Issues and opportunities concerning cross-country skiing along the groomed and ungroomed trail networks in the park include:

- The ongoing need to coordinate the planning and management of cross-country ski facilities and operations within and adjacent to resort areas between the Service, resort operators and the cross-country skiing community;
- Opportunities for private sector investment in the management of the cross-country ski trails at Perisher

- Valley and Smiggin Holes;
- The need for any commercial development of the cross-country ski trails to recognise existing franchise rights;
- The Rock Creek and Pipers Creek catchments are both popular cross-country skiing areas and sources of potable water for the Perisher Range resorts;
- Opportunities to conduct national and international cross-country skiing events in the Perisher-Smiggin Holes ski area; and
- Environmental impacts associated with summer and winter grooming of ski trails.

The long-term implications of climate change for all forms of cross-country skiing in the park may be profound, with the worst-case climate scenario pointing to an eventual retraction in snow cover to the highest parts of the Main Range (Section 6.2). Skiing opportunities are already often hampered in the Dry Dam, Smiggin Holes and Mount Selwyn areas by marginal snow conditions.



Map 5 - Perisher - Smiggin Holes Cross-country Skiing Area

### 8.9.1 Management Objective

*A range of cross-country skiing opportunities is provided that encourages skiers to appreciate the values of the park in ways that minimise adverse impacts.*

#### **Policies and Actions**

1. Continue to permit cross-country skiing in all zones in the park.
2. Retain the existing pole line leading to Mawsons Hut. Additional snow pole lines will not be provided in the Wilderness Zone.
3. Retain existing snow pole lines in the Back Country Zone, Minor and Major Road Corridors, and the Visitor Services Zone where they continue to be required. In the Back Country Zone additional snow pole lines will only be provided at the Perisher and Smiggin Holes Cross-country Skiing Area and where public safety has become an issue, for example along the Kosciuszko Walk between Thredbo Top Station and Rawson Pass. Additional snow pole lines may be constructed in the Minor and Major Road Corridors and the Visitor Services Zone.

4. *[repealed]*
5. Periodically monitor the environmental condition of all campsites and huts that are popular with ski tourers (e.g. damage associated with firewood collection, human waste disposal). If monitoring indicates a need to control use, instigate appropriate management responses which may include, but not be limited to:
  - The discouragement, limiting or prohibition of camping at highly impacted or sensitive sites;
  - The introduction of mandatory minimal impact practices (e.g. campfire and hut fire prohibitions);
  - The trialing of carrying out of human waste (Section 11.6); and
  - The provision of toilets.
6. Prepare and distribute minimal impact codes of conduct and safety information for cross-country skiers.
7. Encourage skiers in the Main Range Management Unit and Wilderness Zone to limit their party size to eight people.
8. Wherever possible, all new cross-country skiing facilities located outside of the Visitor Services Zone are to be temporary rather than permanent in nature and readily removable.
9. Provide cross-country skiing trailhead information, such as signs describing ski trail lengths, conditions, grades, available facilities and services, and safety advice at:
  - Dry Dam;
  - Mount Selwyn;
  - Perisher Valley; and
  - SmigginHoles.
10. Provide cross-country skiing information, including minimal impact skiing and safety advice, at the following general purpose trailheads for back country travel:
  - Charlotte Pass;
  - Dead Horse Gap;
  - Guthega Power Station;
  - Guthega;
  - Kiandra;
  - Ogilvies;
  - Snowy Plain;
  - SpencersCreek;
  - Thredbo; and
  - Three Mile Dam.
11. Manage the area shown on Map 5 as the Perisher-Smiggin Holes Cross-country Skiing Area (2.5, 5, 7.5 and 10 km trails). Within this area:
  - Limit the winter grooming of ski trails to periods of complete snow cover only to protect vegetation;
  - Permit the judicious pruning of vegetation along ski trails;
  - Permit the installation of snow poles, signs, directional markers, bridges, snow fences and counting devices only;
  - Permit artificial snow making and lighting along the 2.5 km ski trail only; and
  - Permit development of a cross-country ski centre within the Perisher Valley Resort Management Unit recognising the current franchise agreements that may include cross-country specific retailers, instructor and coach facilities, family and athlete change facilities, race office and public areas.

12. Continue to work collaboratively with the Cross-country Skiing Consultative Committee on matters relating to cross-country skiing in the alpine resorts and adjacent areas. Membership of this Committee will include the Perisher franchisee and representatives of relevant sporting and recreational skiing organisations, government agencies and commercial cross-country skiing interests.
13. In consultation with the Cross-country Skiing Consultative Committee:
  - Monitor the snow conditions and use of the marked ski trails at Dry Dam. Consider removing cross-country ski facilities from this area if the use of these trails and snow conditions continue to decline;
  - Downgrade, relocate or remove cross-country skiing trailhead information and associated facilities at other sites if warranted because of a lack of skiable snow due to a long-term rise in the snowline;
  - Develop and review a cross-country skiing plan for the Perisher-Smiggin Holes Cross-country Skiing Area. This plan will address management of the ski trails and all associated infrastructure; and
  - Pursue the establishment of a licence, lease and/or partnership arrangement for the management of cross-country ski activities in the Perisher-Smiggin Holes Cross-country Skiing Area.
14. Liaise with the Roads and Traffic Authority concerning the winter management of the Kosciuszko Road (beyond Perisher Valley and/or Spencers Creek) as a shared cross-country ski trail and oversnow vehicle road.

## 8.10 Other Snow Activities

### Background

Many people visit the park with the sole intention of seeing, experiencing and playing with snow. Other people descend slopes on makeshift or purpose-built toboggans and on snow tubes. These activities provide people with no-cost or low-cost options for enjoying the snow and are generally undertaken within a short distance of the main tourist roads in the park or at the alpine resorts.

Snow shoeing and back country snow boarding are undertaken in various parts of the park, on trips ranging from a few hours to a week or more in duration. Such activities are often combined, with snowshoes or cross-country skis being used by people to reach the tops of slopes where they undertake snow boarding.

### Issues and Opportunities

The key management issues associated with these snow activities are:

- Safety risks associated with pedestrians alighting from vehicles parked on roadsides;
- Safety risks associated with tobogganing and snow tubing particularly in marginal snow conditions, on uneven terrain and in areas adjacent to roads;

- Crowding during peak times at popular tobogganing areas creating roadside traffic problems and safety issues; and
- Safety issues due to snowshoeing on groomed ski trails and downhill ski runs.

Opportunities exist to develop and promote safe tobogganing and snow tubing areas in designated places.



### 8.10.1 Management Objective

*A range of snow play, tobogganing, snow tubing, snow shoeing and back country snow boarding opportunities is provided that encourages visitors to safely appreciate the values of the park.*

#### Policies and Actions

1. Provide opportunities for safe snow play within the Major Road Corridors and the Visitor Services Zone.
2. Provide opportunities for tobogganing and snow tubing in designated areas within the Visitor Services Zone where it can be demonstrated that these activities can be managed safely.
3. Subject to full environmental assessment and satisfactory leasing arrangements, allow for the provision of a small snow play and snow tubing area serviced by a rope tow within the alignment of the original lift line at Sponars Chalet.
4. Promote snow tubing as an alternative to tobogganing if it can be demonstrated that the activity can be managed with minimum risk to visitors.
5. Separate snow play, tobogganing and snow tubing areas from those places used for other snow activities.
6. Promote awareness of the inherent risks associated with tobogganing and promote the safe use of toboggans.
7. Prohibit the use of plastic bags and other unsafe substitutes for toboggans.
8. Continue to permit snow shoeing throughout the park, except along groomed ski trails and downhill ski runs in the alpine resorts (Chapter 10).
9. Investigate the possible development of groomed snow-shoeing trails within the Perisher-Smiggin Holes Cross-country Skiing area.
10. Continue to permit back country snow boarding throughout the park.

## 8.11 Cycling

### Background

The public roads and management trail network in the park provides a diversity of cycling opportunities through a range of different landscapes and vegetation types. The cycling experiences afforded by sealed roads such as the Alpine Way, Kosciuszko Road and Snowy Mountains Highway vary markedly from those available on the narrow, unsealed Barry Way which descends steeply into the valley of the lower Snowy River. Different again are the remote country cycling experiences available along the hundreds of kilometres of management trails within the park which are closed to motorised vehicles.

Mountain bike riding is the most popular form of cycling in the park. In the south, Thredbo Village is a hub for mountain bike riding and the shared-use Thredbo Valley Track is very popular. Day trips along the management trail from Dead Horse Gap to Cascade Hut and along the old Kosciuszko Road from Charlotte Pass to Rawson Pass are also popular, as are trips along trails in the Long Plain –

Coleman Plain areas to the north. The park is traversed by the Bicentennial National Trail (BNT), a multi-purpose trail available to cyclists that extends down the east coast of mainland Australia from Cooktown in far north Queensland to Healesville in Victoria. The 182 km section of the BNT located within the park utilises a series of management trails, linked by short sections of public road.

Downhill mountain bike riding, where cyclists descend very steep terrain, is popular at Thredbo where chairlifts provide ready access to rides down the northern slopes of the Thredbo River valley.

Except for the major public roads, cycling in the park is a seasonal activity. Most management trails in the park are closed during the wet winter months to protect trail surfaces and minimise trail erosion.

## Issues and Opportunities

Opportunities exist to promote cycling as an alternative means of experiencing and appreciating the values of the park in a leisurely and relaxed way beyond the confines of motorised vehicles. Managed appropriately, cycling can be enjoyed by significant numbers of visitors with few environmental or social impacts.

Management issues currently associated with mountain bike riding in the park include:

- Damage to trail surfaces including erosion (especially on steep sections of trail and in wet conditions);
- Vegetation damage and destruction resulting in the creation of new tracks and associated erosion problems (commonly where cyclists cut corners); and
- Conflicts with walkers on shared trails including the possibility of collisions.

Management problems created by extended cycle touring trips involving camping are similar to those associated with other remote area overnight use and include:

- Vegetation disturbance and soil erosion at campsites;
- The accumulation of rubbish and human waste; and
- Degradation due to firewood collection and campfire use.

The current policy of permitting cycling on all management trails within declared wilderness areas in the park is inconsistent with the statewide Service policy. It also creates management problems where trails in the park used by cyclists cross into adjoining wilderness areas in the ACT and Victoria where cycling is prohibited.

Cycling along the public roads within the park creates few, if any, environmental or social impacts. It may, however, have significant safety implications for cyclists. This is especially problematic at times of heavy traffic, and on narrow winding sections of road.

Due to the nature of the activity, downhill mountain bike riding in the alpine resorts presents a number of particular management issues including:

- Soil erosion due to braking and turning at speed on track corners;
- Off-track cycling down cleared ski slopes resulting in the creation of new steep tracks that are highly susceptible to erosion;
- The scarring of rock faces and boulders through off-track use; and
- The inherent safety issues associated with this activity.

### 8.11.1 Management Objective

*A range of cycling opportunities is provided that encourages visitors to appreciate the values of the park in ways that minimise adverse impacts.*

#### **Policies and Actions**

1. Permit cycling on all public roads throughout the park.
2. Work with the Roads and Traffic Authority and cycling organisations to:
  - Investigate the appropriateness of providing cycle lanes along sections of the public roads within the park;
  - Investigate the need for roadside signs indicating shared use with cyclists; and
  - Prepare and distribute road safety information relating to the presence of cyclists for motorists and motor cyclists using the public roads in the park.
3. Permit cycling on all roads, management trails, purpose-built cycling tracks, shared-use tracks and multiple-use trails within the Visitor Services Zone, Major and Minor Road Corridors and Back Country Zone subject to risk and environmental assessments and approval. Development of new cycling tracks will require risk and environmental assessments and approval.
4. Permit cycling along the old Kosciuszko Road between Charlotte Pass and Rawson Pass until such time that it is rehabilitated back to a walking track. Until then, provide appropriate signage at the Charlotte Pass Trailhead advising visitors of the shared trail status and impose cycling restrictions during peak periods as necessary.

5. Permit cycling along all sections of the Bicentennial National Trail.
6. Prohibit cycling that does not occur on roads, management trails, purpose-built cycling tracks, shared-use tracks or multiple-use trails; and prohibit cycling on all designated walking tracks.
7. Close some roads, trails, cycling tracks and shared-use tracks to cyclists on a seasonal basis, as necessary.
8. Roads, trails, cycling tracks and shared-use tracks may be temporarily closed to cyclists due to extreme weather conditions, fire events and other natural hazards.
9. Within the Wilderness Zone, permit cycling to occur on a seasonal basis along the following management trails only:
  - Cascades Trail (south to junction with Ingeegoodbee Trail - Pilot Wilderness Area);
  - Dargals Trail (south to junction with Hellhole Creek Trail - Jagungal Wilderness Area);
  - Grey Mare Trail (south to junction with Valentine Trail - Jagungal Wilderness Area);
  - Hell Hole Creek Trail (between Dargals and Round Mountain Trails - Jagungal Wilderness Area);
  - Nine Mile Trail (Pilot Wilderness Area);
  - Round Mountain Trail (Jagungal Wilderness Area); and
  - Valentine Trail (Jagungal Wilderness Area).
10. Introduce a booking system for cyclists using the trails in the Wilderness Zone during peak holiday periods as necessary. Extend the system to other trails if and when necessary.
11. Monitor the environmental impact of mountain biking and manage it within the bounds of threshold limits.
12. Prepare a cycling strategy for the park and surrounding areas that is made available for public comment before finalisation and that identifies:
  - appropriate cycling networks and strategically identifies appropriate areas for and constraints on the development of purpose-built cycling tracks in the park, particularly in the Back Country Zone;
  - management and promotional requirements for the cycling network.
13. Work with Snowy Hydro Limited and cycling organisations on the development of cycling opportunities on management trails.
14. Work with all relevant organisations to publicise the range of cycling opportunities available throughout the region.
15. Prepare and distribute a code of conduct for cycling in the park that includes information on trail protocols, measures designed to minimise any adverse impacts due to cycling, and cycling restrictions in adjoining parks in the ACT and Victoria.

## 8.12 Climbing and Abseiling

### Background

Although the park contains relatively few accessible clifflines, several places offer visitors opportunities to undertake rock climbing and abseiling in relatively remote settings. The cirque at Blue Lake is the best-known rock climbing destination in the park, and the only place on mainland Australia where ice climbing and mixed climbing are regularly undertaken. Elsewhere on the Main Range rock climbing opportunities are limited to a small number of routes on Mount Townsend, Mount Clarke and at Club Lake. Under favourable winter conditions, ice climbing and mixed climbing are also occasionally undertaken at

these three sites and further north at The Sentinel and Watsons Crags, both of which are located on the dramatic western fall of the Main Range.

In the northern end of the park, rock climbing and abseiling are currently undertaken in the Blue Waterholes – Clarkes Gorge area, at Mount Morgan, and along the Blowering clifflines.

Bouldering is occasionally undertaken at sites in the park including the numerous granite tors that characterise the Main Range.

## Issues and Opportunities

Management issues associated with rock climbing and abseiling are principally concerned with environmental damage caused by concentrated and repeated use of relatively small, often sensitive, areas. Such issues include:

- Damage and destruction of vegetation and the formation of foot tracks (and attendant soil erosion) to the base and tops of climbs and down descent gullies;
- Physical damage to rock features and the impairment of aesthetic values through the use of permanent rock bolts and other fixtures;
- Accumulation of human waste; and
- Physical damage to heritage places (such as those atop Mount Morgan).

By comparison, given the protective snow and ice cover present, ice climbing creates few, if any, direct environmental impacts except for those associated with camping. Environmental degradation at Blue Lake is especially concerning given its designation as a wetland of international importance under the Ramsar Convention on Wetlands. The prohibition on camping within the catchment of the lake has reduced, though not eliminated, environmental degradation at this popular recreational destination.

The social impacts of climbing include localised crowding at sites such as Mount Morgan, which may deter other visitors, and the safety issues inherent in these activities.

### **8.12.1 Management Objective**

*Rock climbing, ice climbing and abseiling opportunities are provided in ways that limit disturbance to acceptable levels.*

#### **Policies and Actions**

1. Continue to permit ice climbing throughout the park.
2. Continue to permit rock climbing and abseiling throughout the park except at:
  - Mount Morgan (rock climbing and abseiling are to be prohibited due to the cultural and environmental significance of this location); and
  - Other sites, as identified, where significant values are at risk from these activities.
3. Undertake an assessment of environmental impacts associated with rock climbing and abseiling at Blue Lake. This assessment will include, but not be limited to, impacts associated with climbers accessing the tops and bottoms of climbs and the use of gullies as descent routes. Depending on the results of this assessment, climbing and abseiling at Blue Lake may be prohibited or managed through the introduction of a booking system.
4. Undertake environmental assessments of all popular rock climbing and abseiling sites and establish site-specific monitoring systems and disturbance thresholds. If required, determine site-specific management regimes which may include restrictions on party size and frequency of use or the establishment of exclusion areas or site closures.
5. Record all, and if necessary remove, existing rock bolts, artificial anchor points, climb labels and other permanent fixtures.
6. Prohibit the placement of additional rock bolts, climb labels and other permanent fixtures.
7. Require the use of protective collars where trees are used as temporary anchor points.
8. In consultation with climbing groups, formulate and distribute general and site-specific climbing and abseiling codes of conduct.
9. Work collaboratively with climbers to promote safe and environmentally responsible climbing and abseiling and peer enforcement of the codes of conduct.

## 8.13 Caving

### Background

Of the eight separate karst systems located in the park, caving is most commonly undertaken in the Yarrangobilly and Cooleman Plain areas. These two relatively accessible karst areas contain the best-decorated and highest concentrations of caves in the mountains. Several hundred caves exist at Yarrangobilly, and in excess of a hundred caves have so far been discovered at Cooleman Plain. By contrast, the smaller karst areas of Jounama Creek/Black Perry Mountain, Upper Goodradigbee, Ravine, and Indi contain relatively small numbers of caves, most of which are of limited extent and decoration. No accessible caves are known at Cooinbil and Cowombat Flat.

Guided cave tours are provided through the show caves at Yarrangobilly (Section 9.3). Unrestricted public access is available to four of the relatively robust undeveloped caves at Cooleman Plain, which are commonly visited by

school groups and other large caving parties. Elsewhere, caving access is strictly controlled through a permit system that contains stringent conditions designed to minimise the impacts of all caving visits. Given the fragility of many cave environments, and the potential for irreversible damage, access to these undeveloped caves is restricted to clubs or groups that are members of the Australian Speleological Federation Incorporated, or to approved researchers or overseas organisations. Recreational access to a very small number of caves is completely prohibited for safety or environmental protection reasons.

(Caves to which the public does not have a general right of access are known as Restricted Access Caves. Access to these caves is restricted pursuant to Section 155 of the *National Parks and Wildlife Act 1974*.)

### Issues and Opportunities

Caves represent the most fragile and easily disturbed environments in the park, with all cave visits resulting in some degree of impact. Surface and subsurface impacts associated with caving may include:

- Damage and destruction of vegetation resulting in the formation of foot tracks to cave entrances (and attendant soil erosion and siltation);
- Physical alterations to caves (to permit access);
- Alterations to cave hydrology, including water chemistry;
- Alterations to air movements and micro-climates;
- The compaction or liquefaction of floors;
- The erosion or disturbance of cave sediments and their contents;
- The inadvertent or intentional destruction or damage of speleothems;
- The destruction of cave fauna; and

- The introduction of alien organisms, nutrients, pollutants or materials.

The access regimes for particular caves within the park vary with their relative robustness (potential for damage), the significance of their values, and visitor safety considerations. Despite this, knowledge of the long-term impacts from access to individual caves is poorly understood and rarely based upon the systematic monitoring of changes in cave conditions. The Service is largely reliant on the activities of caving groups to further its knowledge of the cave resources of the park, and to report on the condition of caves that are visited.

(This section should be read in conjunction with Section 6.4 - Karst, Section 9.3 - Yarrangobilly Management Unit and Section 9.4 - Cooleman Plain Management Unit.)

### **8.13.1 Management Objective**

*Caving opportunities are provided in ways that limit disturbance to acceptable levels.*

#### **Policies and Actions**

1. As part of the Karst Management Strategy (Section 6.4) prepare visitor management regimes for all caves in the park based upon their physical, biological and cultural attributes, extent of past damage, resilience to human visitation, use patterns and remoteness. Individual cave management regimes will include prescriptions designed to keep disturbances within the bounds of pre-determined acceptable levels.
2. Visitor management regimes will usually include provisions that:
  - Permit entry to only one party in a cave at any one time;
  - Specify a minimum party size (usually four) and a maximum party size (usually six including the trip leader); and
  - Where appropriate, place limits on the frequency of use.
3. Manage access to Restricted Access Caves through a permit system. The system will also be used as a means of correlating use and disturbance levels in individual caves and as a direct means of informing cavers of minimal impact use requirements.
4. Review and enhance the current caving permit system to include:
  - A single centralised permit-issuing system for all caves in the park, linked to a cave database;
  - Links to the visitor management regimes for individual caves; and
  - Links to the monitoring programs for individual caves.
5. Only grant authority to enter Restricted Access Caves to clubs or groups that are members of the Australian Speleological Federation Incorporated, or to researchers and organisations approved by the Karst Management Committee (Section 6.4).
6. Do not publicise or promote the locations of Restricted Access Caves so as to reduce the likelihood of unauthorised access.
7. Establish monitoring programs for all caves susceptible to disturbance from visitation. These may include:
  - Photopoint monitoring of potential impact sites;
  - Monitoring of sensitive features at risk of erosion from foot traffic; and
  - Monitoring cave fauna communities potentially at risk.(Cave monitoring programs will be directly linked to the visitor management regimes for individual caves).
8. Periodically review cave management regimes to take into account the results of monitoring and any new pertinent information.
9. Cave access may be further restricted or prohibited where monitoring indicates that unacceptable damage has occurred or is likely to occur.
10. Access to the four unrestricted access caves at Cooleman Plain (Barbers, Murrays, Cooleman and Right Cooleman Caves) may be controlled if monitoring indicates that unacceptable damage is occurring or is likely to occur.
11. In deciding whether or not to install a gate or other structure to manage visitor access to a cave, consideration will be given to:
  - The needs of cave fauna (e.g. the movement of bats in and out of caves);
  - Air, water and nutrient flows in and out of caves;

- The safety of users; and
- The physical damage to the cave in installing a gate.

12. In consultation with the Karst Management Committee (Section 6.4) develop codes of conduct specific to particular caves or karst areas. Promote and distribute these codes through relevant avenues such as the Australian Speleological Federation Incorporated, the Service website and at key visitor nodes.

## 8.14 Canoeing and Rafting

### Background

Canoeing and rafting trips are undertaken along sections of several rivers, including the Snowy, Murray, Yarrangobilly and Thredbo Rivers. Of these, day or overnight trips down the Snowy River between Half Way Flat and Willis are most popular, with the nearby Barry Way providing numerous readily accessible river access and egress points. Elsewhere on the Snowy River, trips are occasionally undertaken along the lower Snowy through the Byadbo wilderness, though here travel can be hampered by low river levels due to upstream impoundments and diversions associated with the Snowy Mountains Hydro-electric Scheme. Such diversions have

also resulted in the loss or impairment of canoeing and rafting opportunities on other rivers such as the middle reaches of the Snowy, and the Tumut, Murrumbidgee, Gungarlin and Tooma Rivers. By contrast, the upper Murray River remains undiverted, and trips downstream of Tom Groggin through the Murray Gates provide some of the most challenging whitewater conditions in the park.

Canoeing is also popular on the various impoundments within the park that form part of the Snowy Mountains Hydro-electric Scheme.

### Issues and Opportunities

Canoeing and rafting management issues are primarily associated with river access and egress points and riverside camping. The loss of riparian vegetation and riverbank erosion are common problems at such places. Riverside camping may also result in rubbish and human waste problems, and inadvertent damage to cultural heritage sites, such as Aboriginal campsites and artefact scatters.

The future release of environmental flows from the Snowy Mountains Hydro-electric Scheme into the rivers and streams of the park may increase the potential and the popularity of canoeing and rafting trips, especially along the lower Snowy River.

#### **8.14.1 Management Objective**

*A range of canoeing and rafting opportunities is provided and managed so as to minimise adverse impacts.*

#### **Policies and Actions**

1. Continue to permit canoeing and rafting on all rivers, streams and lakes in the park.

2. Periodically inspect all popular canoeing and rafting river access and egress points to determine the environmental condition of each site. Where necessary, stabilise riverbanks and provide appropriate low-key infrastructure (e.g. steps, fencing).
3. Periodically monitor the environmental condition of all popular campsites along the upper Murray and lower Snowy Rivers and elsewhere as necessary (e.g. vegetation damage and loss, soil erosion, damage associated with firewood collection). If monitoring indicates a need to control use, instigate appropriate management responses which may include, but not be limited to:
  - The designation of formal camping areas at relatively robust sites and the discouragement or prohibition of camping elsewhere;
  - Temporary closure of particular campsites;
  - The introduction of a seasonal river booking system;
  - The introduction of mandatory minimal impact practices (e.g. campfire prohibitions, hygiene practices such as the carrying out of all human waste); and
  - The provision of low-key toilet facilities.
4. Prepare and distribute general and river-specific minimal impact codes of conduct for canoeists and rafters.

## 8.15 Boating

### Background

Motorised boating for fishing, sightseeing or water skiing is a popular activity on a number of lakes located within and adjacent to the park. In the park, the Snowy Mountains Hydro-electric Scheme impoundments of Geehi, Talbingo, Tantangara, Tooma and Tumut Pond Reservoirs provide opportunities for relatively quiet, nature-oriented motorised boating experiences.

By contrast, the extensive Lakes Eucumbene and Jindabyne that adjoin the eastern boundary of the park, and Blowering Reservoir to the northwest, offer

opportunities for water skiing and boating within easy access of a range of nearby support services. Sailing and windsurfing are also undertaken on these lakes, and occasionally on those within the park.

The management of recreation on most of these waterbodies is the responsibility of the NSW Maritime Authority, however the Service provides and maintains many of the recreational facilities at these lakes which include boat ramps, day use areas and formal and informal campsites (these are listed at Schedule 5).

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### Issues and Opportunities

Potential impacts from motorised boating activities include:

- The disturbance and displacement of waterbirds;
- The disturbance of lakeside vegetation and creation of lakeshore erosion;
- Campsite impacts (e.g. localised damage and destruction of vegetation, rubbish and toilet waste problems, damage associated with firewood collection, escaped campfires);

- Water pollution due to waste and fuel discharges; and
- Noise disturbance to other visitors.

The Service provides a range of facilities within the park above the 100-year flood level at Blowering Reservoir. Below this level, management is the responsibility of the Department of Natural Resources. This responsibility split can create enforcement and management problems.



### 8.15.1 Management Objective

*A range of boating opportunities is provided and managed in ways that minimise environmental and social impacts.*

#### **Policies and Actions**

1. Support the continuation of motorised boating on the waters of Geehi, Talbingo, Tantangara, Tooma and Tumut Pond Reservoirs.
2. Support the prohibition of water skiing on Geehi, Tantangara, Tooma and Tumut Pond Reservoirs and Three Mile Dam.
3. Support the ongoing restriction of motorised boating on Three Mile Dam to the use of boats with electric motors and at speeds of less than four knots.
4. Support the prohibition of boating on Dry Dam, which is the water supply for the township of Cabramurra.
5. Permit non-motorised boating on all lakes within the park.
6. Collaborate with the NSW Maritime Authority and other relevant organisations in the provision and management of adequate boat ramp and camping facilities in and adjacent to the park.
7. In conjunction with relevant organisations, review fuel spill response procedures for all waterbodies in the park used for motorised boating activities.
8. Work collaboratively with relevant stakeholders to identify and minimise impacts associated with the recreational use of Blowering foreshores.
9. Work collaboratively with the NSW Maritime Authority and boating groups on issues associated with boating in the park. In particular, prepare and distribute a minimal impact code of practice for boat users specific to the park.

## 8.16 Fishing

### **Background**

The rivers, streams and lakes within and adjacent to the park are recognised as the premier trout fishery in NSW. Although there are limited native fisheries present in the region, recreational fishing in the park and environs is primarily based upon introduced species - Atlantic salmon (*Salmo salar*), brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*). Fishing is undertaken from the banks or shallows of rivers, streams and lakes and from boats.

Recreational fishing is managed by NSW Fisheries under the *Fisheries Management Act 1994*. Individual catchments and impoundments within and adjacent to the park have separate fishing objectives, stocking strategies and classifications. Important fishing waters are classified

as 'notified' trout streams or lakes, which are further classified as trout spawning streams, blue ribbon streams, catch and release streams, general trout streams, general trout dams or trophy trout dams. Each of these categories has specific fishing seasons, bag limits and permitted fishing gear restrictions, though in general most waters are closed to fishing between the June and the October long weekends to protect trout as they aggregate and enter spawning streams. While fishing is permitted in Lakes Jindabyne and Eucumbene throughout the year, some waters in and adjacent to the park are closed all year round, including a section of the Thredbo River and Sawpit and Khancoban Creeks.

## Issues and Opportunities

The management issues associated with fishing in the park include:

- The collection of native invertebrates and frogs for bait;
- Localised damage and destruction of riparian vegetation and riverbank erosion at popular fishing locations;
- The creation of informal riverbank walking tracks and associated soil erosion; and
- Campsite impacts (e.g. localised damage and destruction of vegetation, rubbish and human waste problems, damage associated with firewood collection, escaped campfires).

Improvements in the health of a number of the rivers and streams of the park, including the Snowy River, due to the release of environmental flows from the Snowy Mountains Hydro-electric Scheme may be reflected in improvements in the introduced and native fisheries of these waters.

(The need to balance the requirement to conserve native aquatic species and the ongoing stocking of waters with introduced fish species for recreational fishing is discussed in Sections 6.6 and 11.4.)

### 8.16.1 Management Objective

*Recreational fishing opportunities are provided that permit anglers to enjoy the park while minimising adverse impacts.*

#### **Policies and Actions**

1. Liaise with NSW Fisheries concerning:
  - The development of stocking strategies for introduced fish species that provide for sustainable recreational fishing and the protection of native aquatic species (Section 11.4);
  - The possible development of a sustainable recreational bass fishery in the lower Snowy River;
  - The provision of appropriate recreational facilities at popular fishing locations in the park; and
  - The provision of educational, interpretive and regulatory information for anglers at popular river reaches and lakeshore locations, with particular reference to native fish conservation and minimal impact behaviour.
2. Support and, where appropriate, implement recreational or riparian management strategies identified in the Snowy River Fish Recovery Strategy prepared by NSW Fisheries.
3. Prohibit the collection of live bait from within the park.
4. Periodically monitor the environmental condition of all river reaches and lakeshore locations that are popular with anglers (e.g. vegetation damage and loss, soil erosion, damage associated with firewood collection). If monitoring indicates a need to control use, instigate appropriate management responses which may include but not be limited to:
  - The designation of formal camping areas at relatively robust sites and the discouragement or prohibition of camping elsewhere;
  - Temporary closure of particular campsites;
  - Rationalisation, re-routing and/or undertaking of environmental protection works on riverside and lakeside walking tracks utilised by anglers;
  - The introduction of mandatory minimal impact practices (e.g. campfire prohibitions); and
  - The provision of low-key toilet facilities.
5. Work with NSW Fisheries and angling organisations to prepare and distribute a minimal impact code of conduct for anglers in the park.

## 8.17 Aircraft Activities

### Background

Recreational air activities over the park include flights in powered fixed-wing aircraft and helicopters by private and commercial operators, and the use of non-powered aircraft such as gliders, paragliders and hang gliders.

Most flights are undertaken for sightseeing purposes, with Mount Kosciuszko and the Main Range representing the most popular scenic attractions.

Airspace over the park is managed by the Civil Aviation Safety Authority (CASA) under the *Civil Aviation Act 1988* which applies to all powered and non-powered aircraft. The control of landings and take-offs of all aircraft within the park is the responsibility of the Service. An operational landing strip for light aircraft is located at Cabramurra. Although the strips at Geehi Flats and Island Bend remain serviceable, they are no longer maintained.

### Issues and Opportunities

Scenic flights provide opportunities for people to view and appreciate otherwise remote attractions in the park with virtually no physical environmental impact. For many elderly and disabled people, such flights provide the only means by which they are able to experience these places. Unfortunately, the key scenic flight attractions are also amongst the most popular destinations for on-ground visitors. Walkers, anglers and cross-country skiers may find the noise and sight of overflying aircraft intrusive, especially if their peace and solitude have been hard earned.

In recent years, park agencies in various parts of Australia have worked with CASA, local aircraft operators and aviation clubs to develop and publicise voluntary flight guidelines (Fly Neighbourly Advice) designed to minimise such conflicts and the impacts of aircraft on wildlife.

The landing of powered aircraft in the park for recreational purposes is usually incompatible with the recreational experiences sought by on-ground visitors. For this reason, such landings are generally prohibited.

#### 8.17.1 Management Objective

*Recreational flying opportunities are provided that allow visitors to view and appreciate the park from the air in ways that minimise disturbance for on-ground visitors and wildlife.*

#### Policies and Actions

1. Formulate Fly Neighbourly Advice (FNA) agreements for the Wilderness Zone and the Main Range Management Unit between the Service, locally-based scenic flight and charter operators, and relevant government agencies. Consistent with aircraft safety, FNA agreements will contain but not be limited to:
  - Flight tracking details;
  - Minimum overfly altitudes;
  - Specific areas to be avoided;
  - Restrictions relating to time of day;
  - Limits on the frequency of flights; and
  - Any other operational information designed to minimise noise and visual intrusions for ground observers and wildlife.

Similar agreements may be prepared for other parts of the park if deemed necessary.

2. Periodically review FNA agreements to ensure that impacts associated with recreational flying are minimised. Regularly monitor the compliance of scenic flight operators with FNA agreements.
3. Prohibit landings and take-offs of powered aircraft for recreational purposes.
4. Assess proposals for launching sites for non-powered aircraft in terms of safety, and impacts on other visitors and the natural and cultural values of the park.
5. Assess proposals to take off and land non-powered aircraft in the park on a case by case basis. All such activities are required to be licensed by the Service.

## 8.18 Commercial Activities

### Background

Recreational activities undertaken in the park by businesses or organisations to generate income include cycling, climbing and abseiling, canoeing, rafting, bushwalking, cross-country skiing, fishing, photography and horse riding. Commercial tours range in duration from several hours to several days and are undertaken in a wide variety of locations across the park. Commercial

operations are prohibited within declared wilderness areas.

Commercially-based recreational activities are managed through licence agreements that contain a range of consent conditions, some of which are directed at minimising the impacts of such operations on the values of the park.

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### Issues and Opportunities

Participation in commercially-based tours allows people who may otherwise not feel experienced or confident enough to undertake certain activities or visit certain places to do so. As such, these tours provide opportunities for a broader range of people to experience and appreciate the values of the park.

The environmental and social impacts associated with particular recreational activities are largely the same

irrespective of whether or not they are undertaken by commercial or private groups. In theory, it is easier to regulate the behaviour, and therefore the impacts, of commercial parties through the application of appropriate licence conditions. Despite this, the presence of commercial groups may exacerbate crowding problems and competition for limited facilities at popular recreational destinations during peak visitation periods.

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### **8.18.1 Management Objective**

*A range of commercial recreational activities and opportunities is available in places and in ways that minimise adverse impacts.*

#### **Policies and Actions**

1. Permit commercial recreational activities in the Visitor Services Zone, Major and Minor Road Corridors and Back Country Zone in accordance with Schedule 4.
2. Prohibit all commercial recreational activities in the Wilderness Zone.
3. Require all commercial recreational providers to be licensed and to prepare an environmental management plan for their operations. Licence renewal will be subject to satisfactory compliance with licence and environmental management plan conditions which may include:
  - The setting of maximum and/or minimum group size limits;
  - Minimal impact awareness education for relevant staff and clients;
  - Adoption of mandatory minimal impact procedures;
  - A requirement for self-sufficient camping;
  - Temporal and/or spatial restrictions;
  - Timely submission of trip reports; and
  - Financial payments.
4. Assess requests to undertake recreational activities on a commercial basis against the following criteria:
  - Potential impacts on natural and cultural values;
  - Potential impacts on other visitors including the degree to which the proposed activity is likely to dominate a particular place or unreasonably exclude or restrict the recreational opportunities of other people;
  - Ability to introduce visitors to the natural and cultural values of the park;
  - Safety of participants and other visitors; and
  - Recovery of appropriate commercial returns and any costs to the Service.
5. New commercial tour operators will be subject to an initial one-year trial period. Satisfactory performance during this period will be a prerequisite to the issuing a longer-term licence.
6. Prohibit the establishment of permanent or semi-permanent camps, bases or storage areas by commercial operators.
7. Prohibit the use of motorised vehicles by commercial tour operators on management trails closed to public vehicles except in emergency situations.
8. Competitively tender licences if limits are placed on the number of commercial parties undertaking a particular activity at certain times or locations in the park.
9. Work with licensed commercial tour operators to develop protocols and guidelines for cultural heritage-based tourism operations in the park (Chapter 7).
10. Hold annual workshops for commercial tour operators for minimal impact awareness training and information exchange.
11. Work with commercial tour operators to minimise congestion at popular recreational destinations.

## 8.19 Visitor Accommodation

### Background

Visitor accommodation in the park is primarily concentrated within the alpine resorts (Chapter 10). Elsewhere, accommodation is available at the following places:

- Cabramurra;
- Camp Hudson (Goobarragandra Valley);
- Caves House (Yarrangobilly);
- Currango Homestead;
- Kosciuszko Mountain Retreat (Sawpit Creek);
- Ski Rider Motel (Wilson's Valley);
- Sponars Chalet (Diggers Creek);
- Thredbo Rangers Station; and
- Waste Point Lodge.

The township of Cabramurra is occupied by Snowy Hydro Limited through the Snowy Park Lease agreement between the NSW Minister for the Environment and the corporation. Limited visitor accommodation is available in the township under the terms of the lease and sub-licences to the Scout Association of Australia, Returned

and Services League of Australia and the Cabramurra Ski Club Limited. Currango Homestead provides rustic cottage accommodation and is closed during winter whereas Camp Hudson is leased to the Tumut Shire Council as trustee for the Tumut Citizens Boys Club.

The remaining establishments (Kosciuszko Mountain Retreat, Ski Rider Motel, Sponars Chalet, Waste Point Lodge) are all located in the southern end of the park along or near the Kosciuszko Road. All are largely reliant upon winter visitation.

The various huts scattered across the park are primarily managed as temporary shelters rather than for visitor accommodation.

### Issues and Opportunities

The provision of visitor accommodation beyond the Visitor Services Zone is generally considered to be inappropriate by the Service, which instead encourages the development of accommodation at appropriate locations outside of the park. This policy is directed at

retaining the largely undeveloped character and visual amenity of the park. That said, visitor accommodation can provide a viable function for heritage buildings that might otherwise remain vacant and slowly deteriorate or be subjected to vandalism.

#### **8.19.1 Management Objective**

*The provision of visitor accommodation outside of the Visitor Services Zone is limited.*

#### **Policies and Actions**

1. Permit visitor accommodation in the:

- Minor Road Corridors (at Currango Homestead and Camp Hudson only); and
- Visitor Services Zone at:
  - Alpine resorts (Chapter 10);
  - Cabramurra;
  - Kosciuszko Mountain Retreat;

- Ski Rider Motel (only until 2025);
- Sponars Chalet;
- Thredbo Ranger Station;
- Waste Point Lodge; and
- Yarrangobilly Caves House.

2. With the exception of the alpine resorts, limit visitor accommodation levels to existing capacities and levels specified in existing lease agreements.
3. Ensure that all visitor accommodation complies with all relevant public health and safety standards and the Australian Building Code.
4. Manage visitor accommodation at Currango Homestead and Yarrangobilly Caves House in accordance with the provisions of the conservation management plans that have been prepared for these two places.
5. Continue to lease Camp Hudson to the Tumut Shire Council as trustee for the Tumut Citizens Boys Club.
6. Renew the lease for Ski Rider Motel until 2025. This renewal is conditional upon the motel being relocated during the term of the lease or removed on expiry of the lease in order to reduce the extent of ribbon development and improve visual amenity. The site will then be rehabilitated and rezoned from Visitor Services Zone to Major Road Corridor.
7. In any future reviews of the Snowy Park Lease concerning Cabramurra consider possible research, education and interpretive roles for the township. Other options such as visitor accommodation may be considered in the preparation of the village development control plan as required by the Snowy Management Plan.
8. Work with lessees to retain and enhance the distinctive character and associated visitor experiences afforded by each accommodation facility or precinct located in the park.
9. Consider other options for the adaptive re-use and development of the Thredbo Ranger Station for commercial opportunities to optimise visitor use, education and conservation of the site
10. Prepare and have approved a precinct plan and environmental impact assessment, made available for public comment before finalisation, prior to undertaking any accommodation development

## 8.20 Special Events

### Background

The park serves as a venue for various community events, private functions, cultural practices and sporting competitions such as orienteering, triathlons, cross-country ski racing and running events. Consent from the Service is required under the *National Parks and Wildlife Regulations 2002* to undertake all such events and uses

in the park. Licences are required for public events extending in duration for longer than three days.

The NSW Maritime Authority is responsible for issuing licences for aquatic events, such as regattas, races and displays, on navigable waters in the park.

### Issues and Opportunities

As with all recreational activities, most special events and uses have the potential to impact upon the natural and cultural values of the park and the experiences of other visitors. Such impacts can be especially pronounced if the event or use attracts large numbers of participants and

onlookers to a sensitive and/or confined area. Special

events may also result in the displacement of other visitors from parts of the park.

An opportunity exists to develop a system of blanket or periodic consents for some regular or common events and uses in certain locations in the park.





### **8.20.1 Management Objective**

***Appropriate special events and uses are permitted at places and in ways that minimise adverse impacts.***

#### ***Policies and Actions***

1. Permit appropriate special events and uses (as listed at Schedule 4) in the Back County Zone, Minor Road Corridors, Major Road Corridors and Visitor Services Zone, except in:
  - Areas of threatened species critical habitat (may exclude skiing events if adequate snow cover protects habitat);
  - Significant vegetation communities and species populations;
  - Riparian areas and wetlands;
  - Karst areas;
  - Highly erodible areas;
  - Heritage places that are susceptible to disturbance or culturally-sensitive; and
  - Other areas where the Service considers undertaking such events to be inappropriate.
2. Assess requests for special events and uses against the following considerations:
  - The availability of suitable alternative venues outside of the park;
  - Whether or not the event requires exclusive use of an area (generally considered inappropriate);
  - Potential impacts on natural and cultural values, the significance of those values, and the likely rate and degree of recovery of affected areas;
  - Potential impacts on the experiences of other visitors;
  - The safety of participants, onlookers and other visitors;
  - The potential economic and social impact of the event;
  - The degree to which the event or use is based upon enjoyment and appreciation of the natural and cultural values of the park;
  - The degree to which publicity and media coverage of the event or use will further the management objectives for the park;
  - Whether or not an event or use celebrates, commemorates or is otherwise linked with the history of the park; and
  - The costs (financial and in-kind) incurred by the Service in managing the event or use and any subsequent rehabilitation works.
3. Include the following conditions in consents granted for approved special events or uses:
  - Size or number limits, performance standards, and any other necessary limitations required to protect the natural and cultural values of the area, for safety reasons, or to minimise impacts upon the experiences of other visitors;
  - Provision(s) to modify or cancel consent following approval due to changing conditions (e.g. bushfire or adverse weather conditions);
  - Provision(s) to require the removal of any temporary structures and site rehabilitation by the proponent immediately following completion of the event or use;
  - The lodgement of bonds to ensure adequate care, cleaning and rehabilitation of locations used for special events and uses; and
  - A requirement that organisers prepare an environmental management plan for the event or use, have appropriate insurance cover and abide by all public health and safety requirements.

4. Consider the following in determining limits on the size of an event and/or the number of participants:
  - Potential impacts on natural and cultural values and the experiences of other visitors;
  - The capacity of existing visitor facilities at the proposed site (e.g. number of camping sites available or carparking capacity); and
  - The requirement to retain some capacity for use of the site by other visitors.
5. As far as practicable, inform other users of an area that a special event or use is to be held at the site so that they are able to avoid the area if desired.
6. Create a register of the types of events for which a blanket or periodic consent may be granted (e.g. weddings, community events and ceremonies) in the Visitor Services Zone.
7. Prohibit the use of fireworks in the park with the exception of the Thredbo village, Charlotte Pass village, Perisher village and Mount Selwyn resort areas.  
The use of fireworks may be permitted in these areas subject to consent. Consent will only be granted on the provision that the use does not result in:
  - The dispersal of rubbish (e.g. firework casings); and
  - Noise and light displays likely to disturb wildlife and visitors.
8. Prohibit the use of outdoor helium balloons except for meteorological or incident management purposes.
9. Charge commercially-based fees for approved commercial and/or competitive events and uses that reflect the administrative, management and rehabilitation costs associated with the event or use.

## 8.21 1 New Activities

### Background

It is recognised that over the life of this plan, new recreational activities may emerge that have not been catered for or considered. It is preferable to have some

scope to allow for the consideration and management of appropriate new recreational activities, without requiring the amendment of this plan.

### Issues and Opportunities

It may not always be desirable to amend a plan of management to permit the undertaking of new recreational activities in the park, if they are consistent with the

objectives of the plan. A set of criteria is required against which the appropriateness, or not, of any new recreational activities can be measured.

### 8.21.1 Management Objective

*The introduction and management of new recreational activities in the park can be considered without requiring amendment of the plan of management.*

#### **Policies and Actions**

1. In determining whether or not a recreational activity should be permitted in the park, consider:
  - The provisions of the *National Parks and Wildlife Act 1974*;
  - The provisions of this Plan of Management;
  - Statewide Service policies;
  - The environmental impacts of the activity;
  - Impacts on other park visitors;
  - Public health and safety issues;
  - The degree to which the activity is concerned with the appreciation of the natural or cultural values of the park;
  - Opportunities for the activity to be undertaken outside the park;
  - The ability of the activity to be undertaken without the need for new infrastructure;
  - The compatibility of the activity with existing activities undertaken in the area;
  - The economic and/or social benefits of the activity; and
  - The Service's exposure to risk.

## 8.22 2 Visitor

### Safety Background

Many features of the park, such as cliffs, rivers, caves and disused mines, and the weather, provide inherent risks to the safety of visitors. By their very nature, various recreational activities undertaken in the park, including climbing, canoeing, rafting, snow sports, horse riding and caving also involve an element of risk. For some people, this risk is an important aspect of their chosen recreational activity.

Beyond the personal responsibility of every visitor for their own safety, the Service has a duty of care to minimise the risks people are exposed to during their visit to the park. This may be achieved through installing protective barriers around dangerous features, the siting of visitor facilities away from such places, and promoting public understanding of natural hazards and the consequences of disregarding them. In some parts of the park geological instability necessitates geotechnical assessments and

works to ensure the safety of roads and other facilities. Throughout the park, individual lessees and licence holders also have responsibilities to manage infrastructure and activities in ways that minimise risks to visitors. (For example, resort lessees are required to conduct summer grooming and other works to provide safe ski runs.)

The contamination of potable water supplies presents a risk to the health of visitors. Such pollution is usually associated with the management of human waste and is a safety issue at high visitation sites and remote locations alike. (Environmental health matters are dealt with in Chapters 10 and 11.)

Responsibility for search and rescue operations within the park lies with NSW Police though Service staff, with their local presence and knowledge, members of ski patrols and other organisations also provide assistance.

## Issues and Opportunities

Key management issues associated with visitor safety include the need to:

- Identify all sites within the park that represent safety hazards and ensure that appropriate protective measures, including warnings to visitors, are in place; and
- Encourage all visitors to adopt safe practices, including the need to be appropriately equipped and experienced to undertake their chosen recreational activity.

### 8.22.1 Management Objective

*Visitors are safeguarded from undue, unnecessary and unreasonable hazards.*

#### **Policies and Actions**

1. Manage risk in accordance with the Service's Risk Management Strategic Plan and Quantitative Risk Assessments for all park facilities and services.
2. Prepare and maintain a Risk Register for the park.
3. Prepare and implement a Risk Treatment Plan for each risk rated as extreme or high (as per the Risk Management Strategic Plan). Risk Treatment Plans will be required for moderate risks if existing management controls are considered insufficient.
4. In the event that any rectifiable measures suggested in the Risk Management Plan cannot be effected because of a lack of immediate resources, then consider restricting public access until the risk is reduced to an acceptable level.
5. Ensure up-to-date weather information is available and publicised at visitor centres and other visitor information nodes.
6. Review, and if necessary, improve the content and distribution of visitor safety information in the context of the Communication Plan (Chapter 13).
7. Continue to support and liaise with NSW Police or other designated emergency controllers for incidents in the park.
8. Continue to provide input, assistance and resources for the preparation and implementation of Local Disaster Plans as required under the State Disaster Plan.
9. Prepare an Incident Action Plan on an annual basis. This will include, but not be limited to:
  - Contact details for all relevant organisations and individuals (including all appropriately trained personnel);
  - Information on available equipment; and
  - Specific operational procedures to be used for emergencies.
10. Continue to deploy Service staff and equipment in search and rescue operations at the direction of NSW Police.
11. Ensure that emergency and search and rescue training exercises in the park avoid peak visitation periods and destinations and are undertaken in the context of environmental and risk management plans (Section 12.7).



## CHAPTER 9 Areas of Exceptional Natural and Cultural Significance



*Mount Kosciusko is seen cresting the Australian Alps, in all the sublimity of mountain scenery...[it] is one of those few elevations...[which] present the traveller with all that can remunerate fatigue.*

*Paul Edmund de Strzelecki 1845*

### 9.1 Introduction

Three discrete parts of the park have been identified as containing natural and cultural values of exceptional significance that are particularly vulnerable to human-induced disturbances. These areas are:

- The alpine landscapes of the Main Range;
- The Yarrangobilly karst catchment; and
- The Cooleman Plain karst catchment.

This chapter provides sets of site-specific provisions designed to protect the unique values of these places. These policies and prescriptions build upon those contained elsewhere in the plan of management. They have been grouped together to provide a readily-identifiable picture of how these particular places will be managed.

The management provisions listed in this chapter are not intended to be exhaustive and to gain a comprehensive appreciation of how each of these three areas is to be managed requires reference to other relevant value or activity-based sections of the plan. In particular, the provisions relating to the Yarrangobilly and Cooleman Plain areas should be read in conjunction with those sections of the plan dealing with the management of karst and caving.

Unless otherwise stated, all of the relevant objectives, policies and actions contained in the various sections of this plan apply to these three management units.

### 9.2 Main Range Management Unit

#### Background

The Main Range Management Unit extends along the spine of the Great Dividing Range for a distance of 28 km, between the rocky outcrops of the South Ramshead and Dicky Cooper Bogong. To the west, the unit is bounded by the wilderness area of the Western Fall and by the Schlink Pass Road. This road marks the northern and eastern boundary of the management unit as far south as Guthega Power Station located at the confluence of the Mungyang and Snowy Rivers. From here, the unit adjoins the boundaries of the Guthega Road Corridor, Perisher Range Management Unit, Kosciuszko Road Corridor and Charlotte Pass Management Unit. It then follows the southern break of slope of the Rams Head Range where it adjoins the Thredbo Management Unit. The unit covers

an area of 20 800 ha and is superimposed over the Back Country Zone (Map 6).

Management will focus on protecting and enhancing the condition of the unique natural and cultural values of the unit. Recreation management will be directed at consolidating the recreational roles of ‘grandstand’ sites on the edges of the area while improving the quality of the various recreational opportunities available within the unit. With visitation expected to grow, the need to adopt sustainable recreational management regimes in order to protect and improve the condition of the area is recognised.

## Significance

The management unit contains the highest places on the continent, culminating at 2229 m atop Mount Kosciuszko. It also incorporates the largest contiguous area of snow country and alpine landscapes in Australia. This compact area of only 110 km<sup>2</sup> (representing less than 0.001% of Australia) contains a suite of superlative interrelated natural values. These include all of the Pleistocene glacial and most of the periglacial features present on the Australian mainland, comprising glacial lakes, cirques, moraines, erratics, terraces and blockstreams. A mantle of outstanding fossil and present-day soils covers the mountain tops, while the streams draining the area contain the purest river water in south-eastern Australia and form the headwaters of some of the most important river catchments in the country. The mountains support a host of rare and endemic plant species and communities that provide habitats for a number of unusual animals.

The area experiences extreme weather conditions, with large parts of the management unit being covered in snow for 5-6 months of the year.

The unit holds important cultural significance for Aboriginal and non-Aboriginal people alike, as represented by a myriad of social, historical, scientific and aesthetic values. It is also a key visitor destination, receiving more visitors than anywhere else in the park, with the exception of winter use of the alpine resorts. A variety of graded walks, ranging from short strolls to half-day and day trips, have been developed within the unit, the most popular of which lead to the summit of Mount Kosciuszko. Away from the formal track network, the unit provides numerous opportunities for self-reliant walking trips. By contrast, in winter the area is the preserve of visitors wishing to undertake backcountry snow activities in the virtual absence of recreational infrastructure.

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## Issues and Opportunities

The combination of exceptional, and often fragile, natural and cultural values and high levels of visitation demands special management attention. Management of the unit is also influenced by:

- The intrinsic visitor appeal of the area;
- The extreme seasonal weather conditions;

- The legacy of past disturbances and developments;
- The visual sensitivity of the alpine landscapes; and
- The likely impacts of climate change.

(The management objectives, policies and actions for the Back Country Zone apply to the entire Main Range Management Unit except where otherwise stated).

### 9.2.1 Management Objective

*Management of the Main Range Management Unit is directed at:*

- *Protecting the outstanding natural and cultural values of the area and enhancing their condition;*
- *Maintaining and improving scenic amenity; and*
- *Providing a range of opportunities for visitors to enjoy and appreciate the values of the area in sustainable ways.*



## ***Policies and Actions***

### *Natural and Cultural Values*

1. Limit infrastructure within the unit to that which is:
  - Integral to the protection of the natural and cultural values of the area;
  - Required for the rehabilitation of disturbed sites;
  - Essential for monitoring, research and existing operational purposes; and
  - Required for recreational use as prescribed in this plan.
2. Manage the unit as a priority area for weed and feral animal control. Aim to exclude all feral horses from the management unit (Section 11.4).
3. Prohibit the use of chemical retardants for fire fighting within the catchments of the alpine lakes and wetlands (Section 11.5).
4. Manage the unit as a roadless area. Restrict mechanised access in the unit to that required by the Service, emergency service authorities and Snowy Hydro Limited and limit to:
  - The use of light vehicles for essential management operations;
  - The use of oversnow vehicles for essential management operations, search and rescue incidents and training purposes;
  - The landing of helicopters for essential management, emergency and research purposes; and
  - The use of earthmoving machinery in rehabilitation and walking track management works.
5. Minimise non-emergency management use of oversnow vehicles. Strictly manage this use to reduce any impacts on the recreational experiences of visitors (Chapter 12).
6. Under marginal snow conditions, confine the use of oversnow vehicles to areas of substantial or complete snow cover (Chapter 12).
7. Retain and manage Cootapatamba, Horse Camp, Illawong, Seamans, Schlink and Whites River Huts primarily for their cultural values (Chapter 7).
8. Prohibit the construction of additional huts. Decisions concerning the replacement of destroyed huts will be made through the application of the Hut Rebuilding Guidelines provided at Schedule 3 and the provisions of the Kosciuszko National Park Huts Conservation Strategy (Chapter 7).

### *Scenic Amenity*

9. Undertake viewfield mapping from the crest of the Main Range and popular subsidiary peaks (Section 11.6). The integrity of these views will be enhanced through the modification, screening or removal of structures that unduly impact upon scenic amenity. To this end:
  - Rehabilitate the Kosciuszko Road between Charlotte Pass and Rawson Pass. Reinststate, as far as possible, the natural surface contours of the road corridor and associated quarries and borrow pits;
  - Rehabilitate the disturbed area at Rawson Pass and, as far as possible, reinststate the natural surface contours;
  - Work with alpine resort lessees and the Department of Planning concerning the possible modification, screening or removal of structures and material associated with the developments in the Guthega and Blue Cow areas and the Charlotte Pass and Thredbo Management Units to minimise their visibility from within the Main Range Management Unit;

- Work with Snowy Hydro Limited concerning the removal of infrastructure from within the unit where possible. (This may include the replacement of all snow courses by a snow measuring method that has less visual impact and eliminates or reduces the use of oversnow vehicles within the unit.);
  - Work with TransGrid concerning the possible undergrounding of all or part of the Schlink Pass transmission line or the complete removal of the line;
  - Remove the remains of the Stillwell restaurant, chairlift station and chairlift and rehabilitate the sites. Some evidence may be retained for its cultural values if deemed appropriate following cultural heritage assessment;
  - Remove the rubbish at the Kunama Lodge site. The ruins of the lodge may be retained for its cultural values if deemed appropriate following cultural heritage assessment; and
  - Remove other material posing environmental or safety hazards following cultural heritage assessments and appropriate recording. If appropriate, some evidence may be left to commemorate a site.
10. Work with alpine resort lessees, in particular those of Perisher Range, Charlotte Pass and Thredbo management units, on ways of minimising light spillage and noise pollution that is visible and audible by visitors to the Main Range Management Unit.
11. Design and site all new facilities within, and adjacent to, the unit with the aim of maintaining the scenic amenity of the area.
12. Prohibit the placement of new plaques and memorials in the management unit with the exception of those placed inside huts (Section 12.8).

### *Recreation*

13. Direct visitor management at:
- Providing a range of high quality recreational and learning experiences commensurate with the outstanding natural and cultural values of the area; and
  - Managing associated environmental and social impacts within acceptable thresholds.
14. Manage recreation within the unit based upon the following four tiers of recreational sites and opportunities:
- ‘Grandstand’ sites on the edges of the unit at Charlotte Pass and at the top of the Crackenback Chairlift (consisting of clusters of short-duration walks and interpretive opportunities that allow visitors to experience facets of the alpine environment);
  - A select number of formal walking tracks on the Main Range of multi day, day or part-day duration commencing from these two nodes;
  - Secondary visitor nodes at Guthega Village and Guthega Power Station (consisting of limited visitor facilities and primarily catering for self-reliant day and overnight visitors); and
  - Retention of a number of unmarked routes and the remainder of the unit as untracked country catering for low-impact and dispersed day or overnight use by self-reliant visitors.
15. The types of visitor facilities provided in and adjacent to the unit will be tied to the four recognised recreational sites and opportunity categories below:
- Charlotte Pass and Crackenback Chairlift visitor nodes – Toilets, trip registers, walking tracks (Classes 1, 2 and 3), interpretive, orientation and directional signs and displays, seating, viewing areas, lookouts;
  - Formal walking track network commencing at Charlotte Pass and Crackenback Chairlift – Toilets (possibly at Rawson Pass and Seamans Hut), walking tracks (Classes 2, 3 and 4);
  - Secondary nodes at Guthega and Guthega Power Station - Toilets, trip registers, interpretive, orientation and directional signs and displays, seating; and

- Remainder of the unit - Toilets (only at Horse Camp, Illawong, Whites River and Schlink Huts, and possibly Cootapatamba Hut), walking tracks (Class 6), interpretive and educational signs and displays (only in hut interiors).
16. Provide visitor facilities in accordance with the standards described in Section 8.2 and design, locate and manage these in ways that:
- Minimise impacts on ecological systems;
  - Are compatible with the outstanding values of the unit;
  - Maintain the natural character and appearance of the area and are visually unobtrusive;
  - Do not impinge on the rights of lessees; and
  - Minimise the use of vehicles for operation and maintenance.
17. Prepare site plans for the Charlotte Pass and Crackenback Chairlift visitor nodes in conjunction with resort lessees. These plans will investigate, within the context of the parkwide Walking Track Management Strategy (Section 8.6):
- Options for the provision of additional walks (including wheelchair standard tracks at Charlotte Pass);
  - Interpretive and educational facilities to be provided;
  - Options for shuttle transport for visitors to and from the alpine resorts during peak periods as part of the Integrated Access Strategy (Chapter 10); and
  - Redevelopment of the existing Charlotte Pass visitor node to address car and bus parking and pedestrian traffic.
18. Investigate options for relocating the visitor node at Guthega Power Station to an alternative site nearby.
19. Prepare and implement a human waste management strategy for the Main Range Management Unit. The strategy will aim to effectively address the management of human waste to minimise adverse impacts and the need for permanent toilet facilities within the unit. The strategy will investigate and address the following:
- Best practice human waste management in other areas of Australia and overseas of similar climate, location, visitation and conservation status;
  - The provision of adequate toilet facilities at the visitor nodes at Charlotte Pass, Crackenback Chairlift, Guthega Village and in the vicinity of the Guthega Power Station;
  - The provision of adequate information at these visitor nodes regarding the limited availability of toilets in the Main Range Management Unit, and the preference for visitors to use toilets provided at these nodes;
  - The need for, number and location of toilets to be located within the unit;
  - The most appropriate effluent disposal system for toilet facilities within the unit;
  - The most appropriate form of access for servicing of toilets and effluent removal that minimises the impact on the environment and the experience of visitors within the unit;
  - The location and design of toilet facilities to ensure:
    - The design is in sympathy with the outstanding landscape values and the cultural heritage values of the management unit;
    - The provision of a minimum number of toilets;
    - The use of existing disturbed areas and opportunities for landscape repair;
    - That any toilets provided are readily removable and rehabilitated should they no longer be required in the future; and
    - Effluent disposal is not reliant on vehicle access to the site; and
  - A carry-out human waste disposal system for visitors to those parts of the management unit not serviced with toilets (Section 11.6).

20. Work in partnership with the Thredbo Resort lessee concerning construction of a toilet/park information building(s) at the start of the Thredbo - Mount Kosciuszko walk, adjacent to the Crackenback Chairlift top station.
21. Permit dispersed overnight camping except within the catchments of:
  - Lake Albina;
  - Blue Lake;
  - Club Lake;
  - Lake Cootapatamba; and
  - Hedley Tarn;and within 200 m of:
  - The trackheads at Charlotte Pass, Crackenback Chairlift, Guthega Village and Guthega Power Station;
  - The walkway from Crackenback Chairlift to Mount Kosciuszko;
  - The summit of Mount Kosciuszko and Rawson Pass; and
  - Where the Main Range Walk crosses the Snowy River at Foremans Crossing (immediately below Charlotte Pass).
22. In order to protect the natural character and values of the unit, do not provide formal camping facilities and designated campsites.
23. Introduce a voluntary self-administered registration system for campers in the Main Range Management Unit. The objective of this system will be to collect visitor data relevant to the long-term management of the area. If monitoring indicates that unacceptable environmental or social impacts are occurring, or are likely to occur, initiate management responses, which may include, but not be limited to the introduction of a booking system.
24. Establish an integrated system of overnight camping registers and track counters to measure the use of individual tracks and areas. Registers will be provided at the trackheads at:
  - Charlotte Pass;
  - The top of the Crackenback Chairlift;
  - Guthega Village; and
  - Guthega Power Station.
25. Manage the Main Range Management Unit as a Fuel Stove Only Area with the exception of possible ongoing use of the fireplaces or stoves at Seamans, Horse Camp, Schlink and Whites River Huts.
26. The use of hut stoves will be determined on a case-by-case basis to ensure the protection of huts from fire damage and minimise environmental impacts associated with firewood collection (Chapter 7).
27. Where the use of hut stoves is permitted, provide firewood.
28. Manage the formal walking track network in this unit according to the following track standards (Schedule 6):
  - The Snowgums Boardwalk (at Charlotte Pass Trailhead), Kosciuszko Walk (from the Thredbo Chairlift), Summit Walk (the old summit road from Charlotte Pass to Rawson Pass), Charlotte Pass to Foremans Crossing (Snowy River) - Class 2;
  - Snowies Iconic Walk (Thredbo - Charlotte Pass - Guthega Village - Perisher -Crackenback) - Class 3;
  - Main Range Walk (Foremans Crossing - Blue Lake - Rawson Pass) - Class 3; and
  - Dead Horse Gap Track and Mount Stillwell Track - Class 4.
29. Prepare a walking track management plan for all of the above tracks as a component of the Walking Track Management Strategy (Section 8.6). This plan will detail:
  - Parameters for particular track sections (including width, gradient, surfacing, drainage, the use of steps);
  - Track re-routing required for environmental protection or other reasons;
  - Track inspection and maintenance programs;

- Recommended maximum group sizes for tracks;
- Track monitoring requirements; and
- Management actions to be undertaken in response to changes in track condition.

30. Introduce measures to reduce the concentration of walkers on the Kosciuszko Walk and at the Mount Kosciuszko summit during peak visitation periods. Options to be investigated will include but not be limited to:

- Encouraging staggered starting times from the Crackenback Chairlift;
- Encouraging extended operating hours for the chairlift;
- Setting maximum group size limits;
- Mandatory staggered scheduling of commercial groups;
- The possible introduction of number limits for peak days and times of day on the summit of Mount Kosciuszko; and
- The promotion of alternative destinations.

31. Progressively remove and replace existing track pavers with a more appropriate track surfacing material.

32. Limit the further use of pavers in the unit to natural rock pitching.

33. The Australian Alps Walking Track may be re-routed to follow the Snowies Iconic Walk.

34. Manage the various informal tracks formed by customary bushwalking use in the unit as Unmarked Routes (Class 6 Walking Tracks) (Schedule 6). These include the following tracks:

- Dead Horse Gap - South Ramshead;
- Guthega Village - Mount Twynam;
- Guthega Village - Guthega Trig - Consett Stephen Pass;
- Hannells Spur (with the exception of markers for safety and environmental protection purposes);
- Main Range Walk - Mount Twynam - Consett Stephen Pass - Rolling Grounds;
- Mount Kosciuszko - Mueller Peak saddle - Mount Townsend;
- Mueller Pass - Lake Albina (numerous);
- Ramshead - South Ramshead;
- The Sentinel; and
- Watsons Crags.

Restrict management infrastructure and works along these routes to that required for environmental protection purposes. These routes will not be signposted.

35. *[repealed]*

36. Retain existing trail markers and snow pole lines where they continue to be required. Prohibit the provision of additional markers or pole lines in the management unit except at the Perisher and Smiggin Holes Cross-country Skiing Area and where public safety has become an issue, for example along the Kosciuszko Walk between Thredbo Top Station and Rawson Pass (Section 8.9).

37. Introduce a monitoring system to estimate the limits of acceptable change of walking tracks (including unmarked routes), untracked areas and key visitor nodes in the unit. As necessary, tracks, routes or untracked areas may be temporarily closed or limits placed upon their use in order to:

- Limit environmental degradation;
- Retain the desired track standard; or
- Prevent the formation of new informal tracks.

38. Manage all parts of the management unit away from the walking track network for dispersed use by visitors experienced and equipped for navigation and weather hazards. In all such areas, encourage visitors to:
  - Fan out rather than walk in single file (to reduce the likelihood of creating additional footpads); and
  - Limit their group size to a maximum of eight people consistent with the Australian Alps agency standards.
39. Prohibit recreational horse riding and other forms of animal transport within the management unit (Section 8.7).
40. Prohibit camping with horses within the management unit (Section 8.7).
41. Permit cycling along the old Kosciuszko Road between Charlotte Pass and Rawson Pass until such time that it is rehabilitated back to a walking track. Cycling restrictions may be imposed to reduce crowding and safety issues during peak periods (Section 8.11).
42. Permit ice climbing at Blue Lake.
43. Undertake an assessment of environmental impacts associated with rock climbing and abseiling at Blue Lake. This assessment will include, but not be limited to, impacts associated with climbers accessing the tops and bottoms of climbs and the use of gullies as descent routes. Depending on the results of this assessment, climbing and abseiling at Blue Lake may be prohibited or managed through the introduction of a booking system (Section 8.12).
44. Formulate Fly Neighbourly Advice (FNA) agreements for the management unit (Section 8.17).
45. Prohibit special events likely to exacerbate crowding problems or result in environmental degradation including the formation of new footpads (Section 8.20).
46. Provide interpretive facilities in the Main Range Management Unit within the context of the Communication Plan (Chapter 13).
47. Visitor information will principally be provided by off-site measures (e.g. publications, visitor centre displays) and seasonal guided walks.
48. The provision of on-site interpretive signs and displays within the unit will principally be confined to the trackheads at:
  - Charlotte Pass;
  - Top of the Crackenback Chairlift (Thredbo);
  - Guthega Village; and
  - Guthega Power Station;and in the interiors of Cootapatamba, Horse Camp, Illawong, Seamans, Schlink and Whites River Huts.
49. Provide minimal interpretive facilities on Class 3 and 4 walking tracks and ensure all such facilities are located at ground level or close to ground level to protect scenic quality.
50. Relocate the existing sign on the summit of Mount Kosciuszko to a location back along the walking track to a site where it is not visible from the summit to reinstate a special sense of place to the highest place on the continent.
51. Prohibit the construction of additional signs or other facilities on or near the summit of Mount Kosciuszko.
52. Formal walking tracks and associated destinations may be publicised.
53. In an effort to retain their current standard, do not publicise the Unmarked Routes (Class 6 Walking Tracks) within the unit or associated destinations. Encourage alpine resort lessees and other organisations to adopt a similar policy.
54. Information on weather conditions, safety, recommended equipment and clothing, minimal impact behaviour, and other visitor-use conditions will be widely publicised, including at trackheads, visitor centres, in the media and in visitor publications (Chapter 13). Minimal impact provisions, including the camping restrictions and the

prohibition on campfires, will be publicised in display material provided at the key trackheads. This material will include specific conditions for people visiting the Blue Lake Ramsar site.

55. Promote the management unit primarily as a day-use destination.

## 9.3 Yarrangobilly Management Unit

### Background

The Yarrangobilly Management Unit is delineated by the Yarrangobilly River catchment above Little Glory Hole Creek and covers an area of 18 122 ha (Map 6). The unit is dissected by the Snowy Mountains Highway between Rules Point and Yarrangobilly Village. It includes most of the Jounama Pine Plantation. The management unit is superimposed over areas included in all five of the park management zones:

- Wilderness Zone (southern parts of Bogong and Goobarragandra wilderness areas);
- Back Country Zone (areas north and south of the Snowy Mountains Highway);
- Minor Road Corridors (Yarrangobilly Access Roads);
- Major Road Corridors (Snowy Mountains Highway); and

- Visitor Services Zone (Yarrangobilly Show Caves Precinct).

Management will primarily be directed at protecting and enhancing the condition of the outstanding natural and cultural values represented within the unit. The overriding management consideration will be the vulnerability and irreplaceability of the karst resource and its associated biota and cultural values. Recreation management will largely focus on enhancing the recreational, interpretive and educational roles of the Yarrangobilly Show Caves Precinct and the Snowy Mountains Highway Corridor while minimising disturbance in the remainder of the management unit.

### Significance

The unit contains a suite of outstanding surface and subsurface karst features. These include gorges, blind valleys, arches, springs and pinnacle fields, and several hundred limestone caves of considerable aesthetic, scientific, educational and recreational value. In addition to unusual cave biota, the area supports a diverse range of plants and animals including a number of rare and endangered species.

Although the cultural significance of the area to Aboriginal people is little understood, it is known to contain a large number of sites of Aboriginal occupation

and use. Physical evidence also remains of various non-indigenous land uses such as mining, grazing and forestry. The most obvious place of cultural significance in the unit is associated with early cave tourism. The complex of historic buildings, plantings and assorted tourist facilities within the Yarrangobilly Show Caves Precinct represents the cultural and recreational centrepiece of the area. Recreational opportunities in the management unit range from guided cave tours, swimming in the thermal pool and caving, to sightseeing, picnicking, camping, walking, fishing, canoeing and rafting.

## Issues and Opportunities

The key management issues and opportunities in the unit relate to the protection and presentation of karst values. Impacts associated with visitation to the show caves are especially significant, as is the potential to improve the quality of visitor experiences available at this site. Beyond the caves themselves, the historic buildings and landscapes of the Show Caves Precinct present re-use and educational opportunities with potential to further showcase this part of the park.

The scope to enhance the recreational and interpretive

roles of that section of the Snowy Mountains Highway located within this unit is also considerable. As with the show caves, this potential is based upon both the natural and cultural values of the corridor. Opportunities are also available to enhance the visual amenity of this important tourism thoroughfare.

(The management objectives, policies and actions for the underlying management zones apply to the respective parts of the Yarrangobilly Management Unit except where otherwise stated).

### 9.3.1 Management Objective

*Management of the Yarrangobilly Management Unit is directed at:*

- *Protecting the outstanding natural and cultural values of the karst catchment and enhancing their condition; and*
- *Providing a range of opportunities for visitors to enjoy and appreciate the values of the area in sustainable ways. The key role of the Yarrangobilly Show Caves Precinct in providing high-quality recreational and learning experiences that are environmentally sustainable is strengthened.*

## Policies and Actions

### Natural and Cultural Values

1. Establish monitoring programs for specific caves, as required, to collect information directed at improving the management of karst environments and processes (Section 6.4).
2. Aim to exclude all feral horses from the management unit (Section 11.4).
3. Restrict the use of chemicals in the management unit to those that are environmentally acceptable (Section 6.4).
4. Minimise the use of earth-moving machinery in the management unit (Section 6.4).
5. Continue harvesting and rehabilitating the Jounama Pine Plantation (Section 11.3). Management of the entire plantation and adjoining areas will aim to:
  - Remove the seed source to prevent further pine invasion;
  - Remove pine wildlings;
  - Revegetate the area as closely as possible to a natural condition with native plants of local provenance;
  - Rehabilitate redundant roads and remove all other redundant infrastructure;
  - Protect cave systems and other important karst features; and
  - Interpret the history of the plantation to the public.
6. Clear-fell the remaining stands of pine in the Jounama Plantation in coupes designed for ease of revegetation and catchment protection.
7. Establish research and monitoring programs, if deemed necessary, to measure the degree of success in rehabilitating the area (including the incidence of wildling establishment). Ongoing management of the plantation area and environs will be guided by the results of this research and monitoring.



8. Prepare an environmental management system (EMS) for the Yarrangobilly Show Caves Precinct within the context of the parkwide EMS for all Service operations (Section 12.2). The EMS will aim to ensure the adoption of best available practices and technologies with regards to managing visitation in environmentally sustainable ways. This will include but not be limited to:
  - Sewagetreatment;
  - Stormwater management;
  - Water supply;
  - Energy generation and conservation;
  - Fuel delivery and storage;
  - Management of solid and liquid wastes; and
  - Management of roads and parking (including siltation issues and water quality issues such as the use of de-icing agents).
9. Prepare cave management regimes for the show caves at Yarrangobilly within the context of the Karst Management Strategy (Section 6.4). These will prescribe the best available techniques and materials to protect the values of the caves, maximise visitor safety and optimise the quality of the visitor experiences available. Particular attention will be paid to:
  - Access design (stairs, railings, materials and construction techniques);
  - The safety of in-cave structures (safety audits of cave infrastructure);
  - Electrical wiring and equipment designed to Australian standards;
  - The placement of lights and electrical wiring to show cave formations and features without damaging or impinging on cave environments;
  - The management of cave lighting so as to minimise the effects of lampenflora, provide enhanced visitor experiences and reduce levels of electricity consumption;
  - The need for cave cleaning as a consequence of lint, body wax and dirt introduced by visitors;
  - The need to monitor and manage cave environments; and
  - The establishment of acceptable limits of disturbance and associated visitor management strategies.
10. Manage the Yarrangobilly Show Caves Precinct in accordance with the Conservation Management Plan for the area (Chapter 7).
11. Manage the Yarrangobilly Village and related sites in an integrated way that optimises the protection and public appreciation of the cultural values of the area (Chapter 7). A Heritage Precinct Plan will be prepared for the area including:
  - The main village site;
  - Cotterills Cottage;
  - Yarrangobilly Village cemetery; and
  - All associated sites and ruins.

### *Recreation*

12. Concentrate the provision of recreational infrastructure within the Yarrangobilly Show Caves and Yarrangobilly Village Precincts (Chapter 7).
13. Permit public vehicular access along:
  - The Ravine/Lobs Hole Road; and
  - The Goobarrangandra Powerline Road (those sections within the park).
14. Elsewhere, limit mechanised access to that required for essential management, emergency and research purposes, or visits that form part of the cultural site access program (Chapter 7).
15. Liaise with the Roads and Traffic Authority (RTA) concerning the management of the Snowy Mountains

Highway and Yarrangobilly access roads. In particular, pursue:

- The relocation and rehabilitation of the RTA depot and stockpile site at Yarrangobilly Village (Section 8.3); and
  - Rationalisation of the Yarrangobilly access roads including the possible conversion of the exit road into a two lane entry and exit road, and closure of the existing entry road to public vehicular access.
16. Permit vehicle-based camping near Cotterills Cottage at Yarrangobilly Village. Investigate options for a new vehicle-based camping area on the northern side of the Snowy Mountains Highway near Yarrangobilly Village and develop the preferred site following detailed site design, environmental impact assessment, exhibition and the finalisation of a Yarrangobilly Caves precinct plan.
  17. Investigate opportunities then develop a preferred option for camping in the Yarrangobilly Caves area, following detailed site design, environmental impact assessment and finalisation of the Yarrangobilly Caves Precinct Plan. Prohibit vehicle-based camping elsewhere in the management unit.
  18. Develop short-duration walking tracks in the Yarrangobilly Village area consistent with the Heritage Precinct Plan to be prepared for the site (Chapter 7).
  19. Investigate options for the provision of visitor accommodation at Caves House in the Yarrangobilly Show Caves Precinct (Section 8.19) including leasing for commercial purposes.
  20. Confine the provision of on-site interpretive signs and displays within the unit to the Yarrangobilly Show Caves and Yarrangobilly Village Precincts.
  21. Permit part of Caves House in the Yarrangobilly Show Caves Precinct to be developed as a visitor interpretation centre and museum.
  22. The Heritage Precinct Plan for Yarrangobilly Village will guide the provision of interpretive and educational facilities and services for the precinct and include an investigation of managing all or part of Cotterills Cottage as an interpretive facility. Ideally, Caves House and Cotterills Cottage will form two of a series of interrelated cultural interpretation nodes sited along or near the Snowy Mountains Highway which is to be managed as a Heritage Corridor (Chapter 7).

## 9.4 Cooleman Plain Management Unit

### Background

The Cooleman Plain Management Unit encompasses the entire catchment of the Cooleman Plain karst area in the northern end of the park.

To the west and south the unit is bounded by the crests of the Cooleman Mountains and Gurrangorambla Range. In the east, it includes parts of the Goodradigbee River valley and to the north, it comprises parts of the Peppercorn and Tinpot Creek catchments. The unit covers an area of 10 500 ha (Map 6).

The management unit is superimposed over areas included in three park management zones:

- Wilderness Zone (part of the Bimberi wilderness area);
- Back Country Zone (Cooleman Plain catchment south of Blue Waterholes Trail); and

- Minor Road Corridors (Blue Waterholes Trail).

Management will primarily be directed at protecting and enhancing the condition of the outstanding natural and cultural values represented within the unit. The overriding management consideration will be the vulnerability and irreplaceability of the karst resource and its associated biota and cultural values. Recreation management will focus on the provision of low-key recreational and interpretive opportunities in the Blue Waterholes, Cooleman Mountain and Coolamine Homestead areas while minimising disturbance in the remainder of the management unit.

## Significance

The landscapes of the unit vary from the broad grassy Cooleman Plain, pocked with sinkholes and rimmed by timbered hills, to the dramatic gorges and waterfalls of Cave Creek and the forested valleys of the Goodradigbee River and its tributaries. The unit contains an outstanding collection of karst features including dry valleys, springs, stream sinks and more than one hundred caves. These varied and unusual landscapes contain important Aboriginal sites and a scattering of more recent historic places relating to mining and grazing ventures. Amongst these, the Coolamine Homestead complex, which consists

of the homestead and various outbuildings, introduced deciduous trees, fences and yards, represents one of the most significant historic precincts in the park.

Recreation within the unit is centred around Blue Waterholes and the nearby gorges and caves of Cave Creek. Car-based camping along the narrow ridge above Blue Waterholes and at Cooleman Mountain is seasonally popular, as is fishing, walking and caving. The unit receives very little visitation in the winter months as the access roads to the area are closed at that time.

## Issues and Opportunities

The key management issues in the unit relate to the protection of surface and subsurface karst values, particularly in the Blue Waterholes area. Improved road access has been accompanied by an increase in the popularity of this part of the unit, resulting in localised degradation of the Blue Waterholes camping and day use area and nearby karst features situated along Cave Creek. Opportunities exist to improve the sustainability of

recreational use of this area and enhance visitor amenity while retaining the low-key and remote nature of this special place in the park.

(The management objectives, policies and actions for the underlying management zones apply to the respective parts of the Cooleman Plain Management Unit.)

### 9.4.1 Management Objective

*Management of the Cooleman Plain Management Unit is directed at:*

- *Protecting the outstanding natural and cultural values of the karst catchment and enhancing their condition; and*
- *Providing a range of opportunities for visitors to enjoy and appreciate the values of the area in sustainable ways. The key role of the Blue Waterholes area in providing low-key recreational and learning experiences that are environmentally sustainable is strengthened.*

### Policies and Actions

#### Natural and Cultural Values

1. Establish monitoring programs for the four unrestricted access caves in the unit (Barbers, Murrays, Cooleman and Right Cooleman Caves) within the context of the Karst Management Strategy (Section 6.4). Control access to these caves, or parts of them, if unacceptable damage is occurring or is deemed likely to occur.
2. Aim to exclude all feral horses from the management unit (Section 11.4).

3. Restrict the use of chemicals in the management unit to those that are known to be environmentally acceptable (Section 6.4).
4. Minimise the use of earth-moving machinery in the management unit (Section 6.4).
5. Manage the Coolamine Homestead Precinct in accordance with the Conservation Management Plan for the area (Chapter 7).
6. Open the Coolamine Homestead complex to the public at all times except when it is closed for maintenance works.
7. Restrict the use of vehicles within the fenced surrounds of Coolamine Homestead for essential management purposes.
8. Prohibit horses in the fenced surrounds of Coolamine Homestead.

### *Recreation*

9. Concentrate recreational infrastructure at the Cooleman Mountain camping area, Coolamine Homestead complex and the Blue Waterholes area.
10. Permit public vehicle access along the Blue Waterholes Trail only (terminating at the Blue Waterholes visitor node) which will be maintained as a Dry Weather 2WD road.
11. Seasonally close the Blue Waterholes Trail.
12. Elsewhere, permit mechanised access for essential management, emergency and research purposes, or visits which form part of the cultural site access program only (Chapter 7).
13. Permit vehicle-based camping at the camping areas at Cooleman Mountain and Blue Waterholes. These sites will be managed as Basic Camping (C2) areas (Schedule 6).
14. Manage day-use sites at Coolamine Homestead and Blue Waterholes as Basic Day Use (D1) areas (Schedule 6).
15. Redevelop the Blue Waterholes camping/day use area to reduce environmental degradation and improve the quality and sustainability of the recreational experiences available.
16. Introduce a campsite booking system for Blue Waterholes for peak visitation periods if necessary.
17. Permit dispersed camping throughout the unit except along that section of Cave Creek between Nicoles and Clarkes Gorge, which will be managed as a day-use area.
18. Prohibit horses in the Blue Waterholes camping/day use area and environs including the Nicoles Gorge-Blue Waterholes section of Cave Creek. In this area restrict horses to the Blue Waterholes Fire Trail.
19. Introduce a monitoring program to measure environmental degradation associated with visitor activities at the Blue Waterholes camping/day use area, the Cooleman Mountain camping area and the Nicoles Gorge-Blue Waterholes-Clarkes Gorge section of Cave Creek. Manage visitor activities at these places within impact thresholds.
20. Prohibit camping with horses in the management unit.
21. Prohibit accommodation in the management unit.
22. Confine the provision of on-site interpretive signs and displays within the unit to the Cooleman Mountain camping area, Coolamine Homestead complex and Blue Waterholes area.
23. Consider the provision of additional interpretive material within the buildings in the Coolamine Homestead complex.

## CHAPTER 10 Areas of Exceptional Recreational Significance



*...scores of young people are frequently engaged climbing the lofty summits with snow-shoes and then sliding down with a velocity that would do credit to some of our railway trains.*

*Monaro Mercury 1861*

### 10.1 Introduction

Four parts of the park have been identified as containing recreational values of exceptional significance. These areas are the alpine resorts at:

- Charlotte Pass;
- Thredbo;
- Selwyn; and
- Perisher Range.

(Perisher Range resort consists of Perisher Valley, Smiggin Holes, Guthega, Blue Cow, the Link Area and Bullocks Flat).

The four alpine resorts are managed primarily for snow-based recreation including downhill and cross-country skiing, snow boarding and snow play. They are the most popular seasonal recreational destinations in the park and the most developed places in terms of recreational facilities. The resort areas contain ski lift infrastructure and a variety of retail outlets and sporting facilities with attendant municipal services. Accommodation is provided at three of the four resorts (Charlotte Pass, Thredbo and Perisher Range).

Beyond winter, some of the resorts, Thredbo in particular, attract people who participate in activities such as

walking, mountain bike riding and fishing, or who visit simply to relax and enjoy food and accommodation in mountain settings.

Recreational values aside, the resorts extend into significant subalpine and alpine environments. Although highly impacted by resort developments, these places retain important natural and cultural values.

This chapter contains general provisions that apply to all four of the resort areas and site-specific prescriptions that relate to individual resorts. The management provisions listed in this chapter are not intended to be exhaustive. Each of the four resort management units is wholly contained within the Visitor Services Zone. Most of the infrastructure servicing the resorts is included in the Alpine Resorts Management Unit, including relevant sections of major and subsidiary roads, management trails and resort-related infrastructure.

(Unless otherwise stated, the management provisions that relate to the Visitor Services Zone apply to the resorts, as do all other relevant objectives, policies and actions contained throughout this plan.)

### 10.2 Alpine Resorts Management Units

#### Background

##### *History*

The former mining township of Kiandra, now located in the park, was the first place in Australia where skiing was practised as a recreational activity. The Kiandra Snow

Shoe Club was formed in 1863, with Banjo Paterson as one of its more notable members. By the end of the 19th century skiing was firmly established as a recreational pursuit in the Snowy Mountains, though Kiandra's

popularity as a skiing destination diminished as mining tapered off. With the opening of the Kosciusko Road and the Hotel Kosciusko at Diggers Creek, skiing activity shifted to the southern end of the mountains. This trend was further strengthened in 1930 with the opening of the Chalet at Charlotte Pass. The Chalet complex greatly facilitated skiing access to the Main Range, including skiing on the steep western face. The Chalet was destroyed by fire in 1938 and rebuilt in the following year.

The commencement of the Snowy Mountains Hydro-electric Scheme in 1949 brought many European migrants to the mountains who were interested in pursuing winter recreation. Ski clubs were formed, and commercial accommodation and ski lifts were constructed at places such as Thredbo, Perisher, Guthega and Smiggin Holes. In the 1980s additional ski resorts were developed at Mount Selwyn and Blue Cow. A rail tunnel, known as the Skitube, was also constructed to facilitate skier access to Perisher and Blue Cow resorts from the valley of the Thredbo River

at Bullocks Flat. In 1995 Perisher, Smiggin Holes, Blue Cow and Guthega were amalgamated into one ski resort.

### *Management Arrangements*

The four alpine resorts operate under a system of leases granted to private organisations in accordance with the provisions of the *National Parks and Wildlife Act 1974*. Each lease contains individual conditions and tenure periods and confers certain rights and obligations on each lessee. Both the Service and the NSW Department of Planning (DoP) are now responsible for administration and planning in the alpine resort management units and associated sites. The Service is responsible for managing the resort leases and other commercial agreements, municipal services (for the Perisher Range resort), the natural and cultural values of the lease areas, public health and interface issues between the resorts and adjoining parts of the park.

**Table 2 Summary of Roles and Responsibilities in Alpine Resort Management Units**

Department of Environment and Conservation	Department of Planning
Strategic and operational planning for Kosciusko National Park.	Strategic planning for the alpine resorts e.g. Development Control Plans.
Protection of the park's natural and cultural values.	Responsibilities under the <i>Environmental Planning and Assessment Act 1979</i> for all development and building matters under Parts 3, 4 & 4A e.g: <ul style="list-style-type: none"> <li>• Pre-application liaison;</li> <li>• Referral of development applications;</li> <li>• Advertised development;</li> <li>• Land use permissibility;</li> <li>• Accommodation capacity;</li> <li>• Heritage conservation; and</li> <li>• Specific development control measures for each of the alpine resorts.</li> </ul>
Lease compliance e.g. environmental performance, rental and health inspections.	
Lease amendments e.g. negotiate terms and conditions.	
Responsibilities for environmental protection under the <i>Protection of the Environment Operations Act 1979</i> and the <i>National Parks and Wildlife Act 1974</i> .	
Law enforcement e.g. skidoo use.	
Municipal services e.g. water, sewage and waste disposal for particular resorts.	
Public health e.g. pool/spa testing and kitchen/food stall inspections.	
Responsibilities under the <i>Environmental Planning and Assessment Act 1979</i> for certain activities carried out by, or on behalf of, public authorities under Part 5.	

The role of DoP is to provide the strategic and statutory planning framework to guide planning and development in the resorts and to administer development control. DoP is responsible for the assessment of any development requiring consent under Parts 3 and 4 of the *Environmental Planning and Assessment Act 1979* on behalf of the Minister for Planning and for the preparation of Environmental Planning Instruments. (Table 2 summarises the key roles and responsibilities of both agencies.)

At the time of writing this plan, the NSW Government released a statement on the context for the future development of the NSW alpine resorts. This statement is presented in Schedule 7.

The Plan of Management and the Alpine Resorts Environmental Planning Instruments provide an integrated planning system for the alpine resorts. The plans are based on a vision that seeks to:

- Develop viable, high quality resorts;
- Provide opportunities and benefits for the regional community; and

- Ensure that all visitors have the opportunity to enjoy a range of recreational activities in the unique alpine environment, while acquiring a memorable experience and understanding the significance of the park.

The Plan of Management defines the boundaries of the alpine resorts and associated sites (to which the Alpine Resort Regional Environmental Planning Instruments apply) and provides the broad framework for the management of these parts of the park. The Alpine Resorts Environmental Planning Instruments govern development in the resort management units and associated sites. They provide development control provisions and standards applicable to both existing and proposed developments.

Prior to granting consent for a development in the alpine resorts or associated sites, the Minister for Planning must be satisfied that it will be authorised by or under the *National Parks and Wildlife Act 1974*. The Minister for the Environment or the Director-General of the Department of Environment and Conservation is the determining authority for most activities undertaken by or on behalf of public authorities in these parts of the park.

## Significance

The alpine resorts are of state and regional significance. This significance is shaped by the:

- Location of the resorts within a national park;
- Popularity of the resorts;
- Diversity of natural and cultural values present in these areas;
- History of skiing in the park and its influence on the growth of snow sports in Australia;
- Limited opportunities available elsewhere in Australia for snow sports;
- Range of visitor facilities and services available; and
- Economic benefits to state and regional economies.

Unlike other ski resorts on mainland Australia, the alpine resorts in New South Wales are located in a national park. The three southern resorts are situated adjacent to the highest and some of the most scenic landscapes in Australia.

Up to one million people a year visit the alpine resorts making them the most popular and intensely used parts of the park and an important tourism destination in NSW. In

the winter months the resorts cater for a wide range of snow experiences including downhill skiing, cross country skiing, snowboarding and snow play. They also serve as popular gateways to more remote parts of the park.

The resorts contain cultural values of state and regional significance (Chapter 7). These include values for Aboriginal people, evidence of past land uses such as grazing, and significant buildings and places associated with the history of skiing in the park including the first ski club lodges at Charlotte Pass, Thredbo and Perisher. These buildings reflect the early influence of the Kosciusko State Park Trust in ensuring that ski lodges were constructed in a way that was sympathetic to their natural setting. Some buildings illustrate the influence of European alpine designs while others are examples of more modern architecture.

The alpine resorts contain natural values that are recognised as having international and national significance (Chapter 6) including:

- Restricted habitats of threatened species;
- Subalpine and alpine plant communities;
- Geological and geomorphological features;
- Alpine rivers and streams; and
- Alpine humus soils.

The resorts provide significant economic, employment and social benefits at state, regional and local levels. They

rely on communities located outside the park to provide support services and seasonal staff. Conversely, business activity in these communities is often driven by demands generated by the resorts which act as catalysts for regional development.

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## Issues and Opportunities

The potential implications of climate change on snow cover, depth and duration may severely impact on the recreational values of the resorts. A snow model developed by CSIRO indicates that by 2020, reductions in snow cover at high elevation resorts (Thredbo, Perisher Range and Charlotte Pass) may be relatively small. A more significant impact on snow cover is likely at the lower elevation resort at Mount Selwyn. Beyond 2020 the effects of climate change are less certain but likely to be more pronounced.

Reductions in natural snow cover may be countered by increased production of artificial snow at the resorts. This may allow winter visitation to be maintained or even increased over the period of existing leases. But the capacity of the resort lessees to make and retain snow may also be influenced by climatic factors, such as reductions in the number of hours that are cold enough for snow making and the more rapid melting of snow due to higher temperatures.

The need to understand the environmental implications of this activity is likely to grow as the resorts become increasingly reliant on artificial snow making due to predicted climate changes (Section 6.2).

The alpine resorts are partially or completely located within fragile alpine and subalpine environments that are exceptionally rare on a continental scale. This places a large onus on the lessees and regulating authorities to ensure that all future developments and operations are undertaken in ecologically sustainable ways. Not to do so will result in ongoing degradation of the natural and cultural values that attract visitors to these places and jeopardise the long-term economic viability of the resorts. Opportunities exist to adopt and improve business practices that ensure that all lessees, licensees and other authorities are accountable for their own environmental performance against criteria established for each resort.

The ability of the alpine resorts to sustain visitation is currently measured through skifield infrastructure. Bed numbers or accommodation limits have typically been used to fix the size of the resorts, though the relationship between accommodation levels and the environmental health of these areas is unclear. There is insufficient information available to determine whether growth in visitation and infrastructure can be sustained at any of the resorts without increasing environmental degradation. This information may be gained through the introduction of integrated programs to monitor the condition of environmental attributes at each of the resorts and the application of rigorous scientific analysis. Such an approach may, over time, lead to the development of measures other than accommodation levels that more accurately reflect the environmental capacity of the resorts.

In July 1997 a landslide demolished two buildings in Thredbo Village, killing 18 people. While not caused solely by a natural event, this tragedy highlighted the need to ensure geotechnical risks are actively managed by all operators providing facilities and services to resort visitors.

The *National Parks and Wildlife Act 1974* places obligations on all lessees, licensees and other authorities to ensure that the type and style of facilities and services provided in the alpine resorts are consistent with the Act. The quality of the resort experience and visitor satisfaction is determined, primarily, by the type and style of facilities and services provided and the capacity of these services to meet visitor expectations. It is essential that resorts have identities and aesthetic appeals that complement their settings and are commensurate with their status as being part of a national park.



Maintaining the viability of the resorts requires coordination across government agencies, lessees, licensees, tourism authorities and other providers responsible for service delivery. Leasing management, including policy certainty and security of tenure, is a crucial tool in encouraging the vitality of individual resorts. The management of visitor access to the resorts during peak visitation times is also a key consideration.

While the alpine resorts have traditionally focused on winter activities, opportunities also exist to expand the range of non-winter recreational activities available, consistent with legislation, leases, approved master plans and environmental management considerations. That said, the overriding principle that appropriate recreational activities in the park are those that are primarily associated with appreciating the natural and cultural values of the area also applies to the alpine resorts

### 10.2.1 Management Objective

*The alpine resorts provide for a range of principally snow-based recreational opportunities that promote enjoyment, understanding and appreciation of the natural and cultural values of the park.*

## Policies and Actions

### Visitor Facilities and Services

1. Any activity which involves the provision of a visitor facility or service in the alpine resort management units, other than those provided by the Service, may not be undertaken except in accordance with the following conditions:
  - The activity is undertaken within the context of a lease or licence;
  - The activity promotes opportunities for visitors to enjoy, appreciate and protect the park's values;
  - The activity recognises and protects the international, national and state significance of the park's natural and cultural values;
  - The activity is in accordance with the zoning scheme provided at Schedule 6;
  - The activity promotes the principles of ecologically sustainable development;
  - The activity is undertaken within the context of bushfire protection strategies that are consistent with the parkwide fire management plan (Section 11.5);
  - The activity is undertaken within the context of emergency management strategies developed in conjunction with relevant authorities; and
  - The activity is undertaken within the context of an environmental management system as follows:
    - The lessee or licensee will have, or be part of, an environmental management system developed and implemented for the resort management unit according to the requirements of Section 12.1;
    - Existing lessees or licensees must meet this requirement within two years of the Minister's adoption of this plan;
    - The existing condition of the natural and cultural values is documented as part of an environmental inventory to accompany the environmental management system prepared for each resort management unit;
    - The lessee or licensee establishes minimum environmental performance standards approved by the Service, for inclusion in the environmental management system. The performance standards will be developed with a view to achieving certification under a scheme relevant to the tourism industry;
    - The lessee or licensee contributes to, or undertakes, annual monitoring of the activity against the performance standards contained in the environmental management system;
    - The lessee or licensee prepares and implements a Rehabilitation Plan consistent with the Park Restoration Plan as part of the environmental management system.
    - The lessee or licensee provides a report on environmental performance and condition assessment of the natural and cultural values in the resort management unit to the Director General annually.

- If the activity occurs within an area of known geotechnical risk, the activity is undertaken within the context of a geotechnical management system as follows:
    - the lessee/sub-lessee will have in place and keep updated, or be part of, a geotechnical management plan developed for the resort management unit in accordance with the Australian Geomechanics Society “Landslide Risk Management AGS Volume 42 No 1 March 2007” or any subsequent guidelines that are published by the Australian Geomechanics Society;
    - existing lessees/sub-lessees must demonstrate compliance with the geotechnical management plan by May 2012;
    - the lessee will be responsible for the overall implementation of the geotechnical management plan. The lessee/sub-lessee will undertake any relevant actions, works or monitoring regimes required of them in the plan. This may arise through factors that lie within and/or outside their property boundaries.
2. Any activity which involves the use of chemical and biological additives for snowmaking in the alpine resort management units may not be undertaken except in accordance with the following conditions:
    - The chemical or biological additives are not likely to have an adverse impact on the natural and cultural values of the park;
    - The activity is licenced by the Service for a period of up to five years at any one time; and
    - The licensee contributes to research on the impact of snowmaking on the natural values in the resort areas.
  3. Work with lessees and other relevant authorities in the development and coordination of regional tourism strategies (Section 8.1).
  4. Consult with resort lessees/licensees, local communities, tourism organisations and other relevant authorities on the development of policies likely to impact on them.
  5. Work with lessees/licensees and other government authorities in programs that aim to assess the physical capacity of infrastructure and future demand for facilities and services provided in the alpine resort management units.
  6. Coordinate a program designed to investigate alternative mechanisms for measuring and regulating the carrying capacity of each resort. Liaise with DoP, resort lessees and licensees and other relevant organisations on the design and implementation of the program.
  7. Ensure consistency in the design, construction and marking of walking tracks provided by lessees/licensees in the alpine resort management units with the Walking Track Classification System (Schedule 6).
  8. Permit special events in the alpine resort management units consistent with the provisions of Section 8.20.
  9. Work with lessees/licensees in the presentation of the park’s values through the provision of interpretive facilities and services within and adjacent to Thredbo, Charlotte Pass, Perisher Range and Selwyn Management Units (Chapter 13).
  10. Coordinate the development of an education and interpretation strategy for the alpine resorts. The aim of the strategy is to manage the development of education and interpretation facilities and services across the resorts and the interface of other zones in the park. The strategy will form part of the Communication Plan (Chapter 13).
  11. Include as part of the strategy education and training programs relevant for resort employees involved in providing recreational activities for visitors to the park.
  12. Participate in cooperative marketing strategies employed across the resorts to promote the values of the park and the facilities and services available.

13. Consider the following matters when any development control plan or development application relating to an alpine resort management unit is submitted or referred to the Director-General for comment or adoption:
- The consistency of the plan or application with the provisions of any lease or licence, the plan of management and Service policies;
  - The ability of the proposal to promote opportunities for visitors to enjoy, appreciate and protect the park's values;
  - Any additional visitor facilities or services that may be required to support visitors in other areas of the park as a result of the plan or application;
  - The existing condition of the natural and cultural values of the resort management unit;
  - The potential impact of the plan or application on the natural and cultural values of the park;
  - The environmental performance of the resort under the established environmental management system for the resort management unit;
  - Any potential impact on park operations;
  - Any potential impact on bushfire risk; and
  - The potential impact on the safety of visitors to the management unit or other parts of the park.

### Accommodation

14. Any activity which involves the establishment and use of accommodation in the alpine resort management units may not be undertaken by lessees except in accordance with the following conditions:
- The bed numbers for the management units must not exceed 10,433 beds:
  - The bed numbers for each alpine resort management unit must not exceed:
    - Perisher Range Management Unit by – 4952 beds;
    - Thredbo Management Unit – 4820 beds;
    - Charlotte Pass Management Unit – 611 beds;
    - Selwyn Management Unit – 50 beds (essential servicing staff only including a minimum of 4 beds for the volunteer ski patrol).
15. The bed numbers specified for premises listed in Schedule 8 are the approved accommodation limits for each of these establishments. These bed numbers include staff and guest accommodation.
16. Establish and update a register of the type and number of beds approved for construction by DoP to 30 June of each year for the purposes of updating Schedule 8.
17. Update Schedule 8 on an annual basis and make it available for examination by the public.
18. The re-allocation of bed numbers in Schedule 8 will not be permitted unless:
- It does not result in the total accommodation limit for the resort management unit in which the variation is sought being exceeded; or
  - It is proven and established that the listed figure is contrary to former approval given under an existing leasing agreement.
19. Any amendment to Schedule 8 brought about by re-allocation of the bed numbers resulting from the above will not require an amendment to the plan.
20. Add new accommodation establishments, so far as they are consistent with this plan, to Schedule 8 following their inclusion in lease/licence agreements. Remove from the Schedule any accommodation associated with any lease/licence agreement that expires or is terminated if the beds are not re-allocated within the management unit.
21. Any proposed change to the accommodation limits for the alpine resort management unit is subject to an amendment to this plan.

22. Only consider an amendment to increase the accommodation limits within the alpine resort management units when all of the following matters have been adequately addressed:

- The potential impacts of the increase on the natural and cultural values of the park;
- The impact of climate change on the proposed increase;
- The consistency of the proposal with the Alpine Resorts Environmental Planning Instrument and other relevant strategies and plans;
- Alternative measures of carrying capacity have been assessed;
- There is demonstrated demand for additional overnight accommodation in the resort that cannot be provided elsewhere in the park or by adjacent communities;
- The resort management unit where the accommodation increase is proposed has an environmental management system in place and is able to demonstrate improvements in environmental performance over a period of at least five years;
- The physical capacity of existing infrastructure servicing the resort management units can meet the demand of additional visitors without adversely impacting on park values; and
- There is an economic benefit to local communities within and adjacent to the park.

23. Require lessees and licensees within the alpine resort management units to report on compliance with licensed bed limits through the environmental management system prepared for each resort management unit.

24. Conduct audits on accommodation numbers within the alpine resort management units and develop programs to ensure compliance within stated limits. Consider any breaches in lease renewals.

### Other Infrastructure

25. Permit the upgrading of municipal services to improve environmental performance and meet statutory obligations.

26. Ensure all lessees/licensees and other users of the facilities in the alpine resort management units meet the cost of providing municipal services to visitors.

27. Manage the disposal of waste from the alpine resorts in accordance with the requirements of Section 11.6.

28. Develop waste avoidance and resource recovery targets for each alpine resort management unit in association with lessees/licensees and other government agencies. The targets will be consistent with state and regional reduction targets and will be specified in the environmental management systems established for each resort management unit.

29. Manage the discharge of effluent, wastewater and stormwater in the alpine resort management units consistent with the provisions of Section 11.6.

30. Manage the use of water from streams, rivers and lakes and enhance water quality within the alpine resort management units consistent with the provisions of Sections 6.6 and 11.6. Continue the stormwater management and road sealing programs in all alpine resort management units in consultation with relevant authorities.

31. Manage the provision of domestic water supplies in the alpine resort management units in accordance with the requirements of the NSW Department of Health.

32. Permit the supply of utilities in the alpine resort management units consistent with the provisions of Section 11.6 and Chapter 12.

33. Participate with DoP in the development of an Integrated Access Strategy for the alpine resort management units in association with the Roads and Traffic Authority (RTA), resort operators and local government. The strategy will aim to encourage an efficient transport and access system to the alpine resorts and within each resort management unit. The strategy will also consider provisions to facilitate disabled access to and within the resorts in consultation with relevant equitable access organisations.
34. Permit the use of oversnow vehicles in the alpine resort management units for approved management purposes only by lessees and other authorities consistent with lease and licence conditions and the provisions of Chapter 12.
35. Permit the landing of aircraft in the alpine resort management unit for approved management purposes.

### 10.2.2 Management Objective

*All activities, facilities and services provided in the alpine resort management units meet environmental health and safety obligations.*

#### Policies and Actions

1. Manage environmental health in the alpine resort management units according to the requirements of the *Public Health Act 1991*.
2. Prepare an Environmental Health Plan for each alpine resort management unit, and for other key destinations in the park, in conjunction with lessees/ licensees and the Department of Health.
3. Ensure the cost of managing environmental health is met by lessees/ licensees.
4. Recoup from relevant lessees/licensees fees levied on the Service by the NSW Fire Brigades and other emergency services.

### 10.2.3 Management Objective

*The alpine resorts are managed through a lease and licence framework that allows the private sector to provide opportunities for visitors that extend beyond those delivered by the Service and result in direct benefits to the community.*

#### Policies and Actions

1. Establish an efficient information management system for the administration of leases in the alpine resort management units.
2. Any new lease or licence, or renewal of a lease or licence, for the provision of a visitor facility or service within the alpine resort management units may only be granted if the lease or licence:
  - Is consistent with the provisions of the plan of management and the Alpine Resort Environmental Planning Instrument;
  - Requires the lessee or licensee to have, or be part of, an environmental management system developed and implemented for the resort management unit according to the requirements of Section 12.1;
  - Requires an ongoing financial contribution for environmental research and rehabilitation programs in the alpine resorts;
  - Is not likely to adversely impact on park operations;
  - Is not likely to adversely impact on local communities adjacent to the park;
  - Recognises and plans for the possible implications of climate change; and
  - Is not likely to adversely affect public health or safety.

## 10.3 Charlotte Pass Management Unit

### Background

Charlotte Pass Village is located at the headwaters of Spencers Creek and is operated by Charlotte Pass Village Proprietary Limited (with the exception of the independent Kosciuszko Alpine Club lodge). The company provides a range of lifts and transport facilities for skiers as well as accommodation and other facilities and services for its guests.

The lease, which commenced on 20 December 1974, expires on 30 June 2015 and is for the conduct of a year-round tourist and holiday resort and ancillary village, and purposes reasonably incidental thereto.

It confers certain specified development rights and obligations on the lessee, which include the establishment of lodges and lifting facilities as well as the continued operation of the Kosciuszko Chalet.

A separate lease exists between the Minister for the Environment and the Kosciuszko Alpine Club.

The management unit coincides with the lease area which covers 165 ha.

### Issues and Opportunities

Issues and opportunities relating to the Charlotte Pass Management Unit include the following:

- The resort is a small resort offering a unique alpine experience in a village-type atmosphere;
- The resort is strategically located adjacent to the Main Range Management Unit and associated ‘grandstand’ sites (Section 9.2);
- The resort is accessed via the Kosciuszko Road. During the snow season, the road is closed to public vehicles and guests. Freight and waste are transported to and from Perisher;
- The village area contains the Kosciuszko Chalet that has significant cultural heritage values;
- There has been limited systematic auditing of the environmental performance of the resort since its establishment;
- The resort contains significant natural values including threatened species habitat. It includes one of a handful of populations of the mountain pygmy-possum;
- The resort is located in the headwaters of the Spencers Creek catchment;
- The visual impact of infrastructure on the Main Range Management Unit; and
- The removal of redundant infrastructure and rehabilitation of disturbed sites is necessary.

#### 10.3.1 Management Objective

*The Charlotte Pass Management Unit is managed so as to provide opportunities for visitors to enjoy, understand and appreciate the values of the park in ways that minimise adverse impacts.*

#### Policies and Actions

1. Any activity which involves the provision of visitor facilities and services by lessees or licensees will not be permitted except in accordance with the provisions of this plan and the following conditions:
  - An environmental management system is developed and implemented in accordance with Section 12.1;

- Lessees contribute to the maintenance of any facility or service being promoted by the lessee that is managed by the Service;
  - A Rehabilitation Plan consistent with the Park Restoration Plan (Section 11.1) is developed and implemented; and
  - The lessee promotes opportunities for visitors to enjoy, understand and appreciate the values of the Charlotte Pass Management Unit and coordinates these activities with the management of the Main Range Management Unit (Section 9.2).
2. As part of the environmental management system an independent environmental audit of the Charlotte Pass Management Unit will be prepared within two years of the Minister's adoption of this plan. The audit will identify the natural and cultural values of the management unit, the condition of those values and all resort operations likely to impact on those values. It will be used to determine the environmental performance requirements for inclusion in an environmental management system and rehabilitation plan for the Charlotte Pass Management Unit.
  3. Any activity which involves the ongoing provision of visitor facilities and services in the Charlotte Pass Management Unit beyond 2015 will not be permitted unless the Director General is satisfied:
    - That the continued provision of visitor facilities and services is in accordance with the provisions of this plan; and
    - The existing lessee:
      - Can demonstrate at least three years of improvements in environmental performance based on the results of the environmental audit and environmental management system established for the resort management unit;
      - Has prepared and implemented a rehabilitation plan for specific areas within the resort management unit according to Service requirements;
      - Contributes to the recovery program for *Burrhamys parvus* (mountain pygmy-possum) in accordance with the Recovery Plan;
      - Contributes to ongoing research and rehabilitation programs in the resort management unit; and
      - Has prepared and implemented a plan for the use of the resort during non-winter months that is consistent with proposed strategies to manage visitation to the Main Range Management Unit (Section 9.2).
  4. Permit accommodation in Charlotte Pass Management Unit to a maximum of 611 beds.
    - A minimum of 4 of these beds are to be provided for the volunteer ski patrol. These beds will not be available for commercial utilisation and will not attract a premium or rental.
  5. Permit recreation activities and the provision of facilities and services consistent with the provisions of Chapter 8 and the lease.
  6. Require the lessee to investigate interpretation and educational opportunities and to coordinate these activities with the management of the Main Range Management Unit (Section 9.2) and the parkwide Communication Plan (Section 13.1).
  7. Continue to provide cross-country trails in and adjacent to the Charlotte Pass Management Unit consistent with the requirements of Section 8.9.

## 10.4 Thredbo Management Unit

### Background

Thredbo resort is operated under lease by Kosciuszko Thredbo Proprietary Limited. A wide range of winter and non-winter facilities are provided that actively encourage visitor use of the area on a year-round basis.

The term of the Thredbo head lease runs from the 29 June 1962 to 28 June 2007 with a further 50 year option.

The lease is for the conduct of a year-round resort and purposes reasonably incidental thereto. The lease confers certain rights and obligations on the company. The existing accommodation facilities in the Thredbo Management Unit are listed in Schedule 8.

The management unit is defined by the lease area and covers an area of 960 ha.

### Issues and Opportunities

Issues and opportunities relating to the Thredbo Management Unit include the following:

- The resort is a popular year-round destination for visitors to the park and the region;
- The resort lies adjacent to the Alpine Way, a major sealed road through Kosciuszko National Park providing a year-round link between NSW and Victoria;
- The resort is strategically located adjacent to the Main Range Management Unit and associated 'grandstand' sites (Section 9.2);
- The resort contains significant natural values including threatened species habitat;
- An international downhill ski run has been developed which lies partly within the Main Range Management Unit. The lessee seeks to retain use of the course for special events;
- The visual impact of infrastructure on the Main Range Management Unit; and
- The impact of visitation to the resort on adjacent areas of the park.

#### 10.4.1 Management Objective

*The Thredbo Management Unit is managed so as to provide opportunities for visitors to enjoy, understand and appreciate the values of the park in ways that minimise adverse impacts.*

#### Policies and Actions

1. Any activity associated with the provision of visitor facilities and services by lessees and licensees will not be permitted except in accordance with the provisions of this plan and the following conditions:
  - An environmental management system is developed and implemented in accordance with Section 12.1;
  - A maximum of 4820 beds is to be provided;
  - A minimum of 20 beds is to be provided for the volunteer ski patrol. These beds will not be available for commercial utilisation and will not attract a premium or rental;
  - The lessee contributes to the operation or maintenance of any facility or service being promoted by the lessee that is managed by the Service; and



- The lessee coordinates recreational opportunities with strategies for the management of the Main Range Management Unit (Section 9.2) and other zones adjacent to or near the resort.
2. Ensure all activities associated with the running and preparation of race events, which use that part of the International Ski Run located in the Main Range Management Unit, are in accordance with Section 8.20.
  3. Ensure any licence to use the International Ski Run:
    - Prohibits the construction of lifts or buildings or manipulation or disturbance of the ground or vegetation within the proposed licence area;
    - Requires the organising body of the event to provide and distribute information on the special values of the proposed licence area; and
    - Contains specific provisions for the management of spectators and the media to minimise the impact on the values of the area.
  4. Require the lessee to maintain walking tracks on that part of the walking route to Mount Kosciuszko and Dead Horse Gap that is within the Thredbo lease area. Walking tracks will be managed in accordance with walking track classifications presented in Schedules 5 and 6.

## 10.5 Selwyn Management Unit

### Background

This resort is managed under a lease with Mount Selwyn Snowfields Proprietary Limited for a period of 45 years until 2028. The lessee is required to operate ski lifts and a ski school and to provide power, sewerage facilities, water, rubbish disposal, parking and some other services. The lessee is responsible for snow clearing and maintenance of the Kings Cross Road between the Cabramurra Road and Selwyn Snowfields as well as roads and car parks within the resort area.

The primary focus of Selwyn Snowfields is to provide day visitors with low-cost opportunities for skiing and snow activities catering predominantly for beginners, novices and intermediate skiers. Accommodation is only provided for staff.

The management unit is defined by the lease area and covers an area of 203 ha.

### Issues and Opportunities

Issues and opportunities relating to the Selwyn Management Unit include the following:

- Selwyn Snowfields is more likely to be impacted by climate change than other resorts in the park due to its elevation and aspect;
- The resort will require access to additional water for snow-making to remain viable;
- The resort provides a unique low-cost option for families to experience snow;
- The resort provides important economic activity and recreational resources for the communities of Adaminaby, Tumut and Tumbarumba; and
- The resort is located close to the Snowy Hydro Limited operational centre of Cabramurra.

### 10.5.1 Management Objective

*The Selwyn Management Unit is managed so as to provide low-key opportunities for visitors to enjoy, understand and appreciate the values of the park in ways that minimise adverse impacts.*

#### **Policies and Actions**

1. Any activity associated with the provision of visitor facilities and services by lessees and licensees will not be permitted except in accordance with the provisions of this plan and the following conditions:
  - An environmental management system is developed and implemented in accordance with Section 12.1;
  - A maximum of 50 beds for essential servicing staff is provided;
  - The lessee contributes to the maintenance of any facility or service being promoted by the lessee that is managed by the Service;
  - The lessee is to coordinate recreational opportunities with strategies for the management of other zones adjacent to or near the resort; and
  - The lessee develops strategies to improve the variety and quality of visitor experiences available.
2. The Director General will work with the lessee to investigate options for the future of the resort.
3. Permit the maintenance and development of cross-country trails and trailhead facilities, which complement those in adjacent areas and that are consistent with Section 8.9.
4. Provide for parking in specific locations along the Kings Cross ridge adjacent to the existing road leading up to Selwyn Snowfields.
5. Permit water to be drawn from Three Mile Dam for snow-making purposes.

## 10.6 Perisher Range Management Unit

### **Background**

The Perisher Range Management Unit (1598 ha) contains the resort areas of Perisher Valley, Smiggin Holes, Guthega, Blue Cow, the area formerly known as the Link Management Unit and Bullocks Flat Skitube terminal. The unit includes parts of the major roads servicing the resort including the Link Road which is currently managed by the Roads and Traffic Authority. It also includes the substratum portions of the Skitube Tunnel from Portal 1 to Blue Cow Mountain. The Perisher Range Management Unit is the largest alpine resort complex in Australia and is commonly known as Perisher Blue Ski Resort.

All land occupied by club and commercial lodges, as well as resort operators within the management unit is managed under a system of leases and sub-leases administered by the Service. The major leases are held by Perisher Blue Proprietary Limited.

### **Major Leases**

#### *Perisher Valley*

Pursuant to a deed of agreement executed on 14 January 1980 between the Minister for the Environment and Murray Publishers Proprietary Limited and Murray Leisure Group Limited, Murray Publishers Proprietary Limited was granted new lease rights over various buildings and the ski lift installations in Perisher Valley. These leases are due to terminate on 31 December 2025. The company was also granted exclusive franchise rights within a defined area for ski lifts, instruction, hire and sales, which will expire on 31 December 2025. This lease is now operated by Perisher Blue Proprietary Limited.

Separate leases exist for each accommodation premise listed in Schedule 8.

### *Smiggin Holes*

Pursuant to a deed of agreement executed on 14 January 1980 between the Minister for the Environment and Smiggins (Kosciuszko) Limited and associated companies, Smiggins (Kosciuszko) Limited was granted lease rights over various buildings and the ski lift installations in Smiggin Holes. These leases are due to terminate on 31 December 2025. The company was also granted exclusive franchise rights within a defined area for the provision of ski lifts. These lease and franchise rights have been transferred to Perisher Blue Proprietary Limited.

Separate leases exist for each accommodation premise listed in Schedule 8.

### *Guthega*

The principal lease, covering the provision and operation of the ski lifts and associated amenities (including ski school, kiosk, first aid centre and public toilets), is held by Perisher Blue Proprietary Limited. The lease is for a term from 1 July 1968 to 30 June 2013.

Separate leases exist for each accommodation premise listed in Schedule 8.

### *Blue Cow*

Following investigation of the alpine skiing potential of the Blue Cow area, a lease between the Minister for the Environment and Mt Blue Cow Ski Bowl Proprietary

Limited was executed on 18 June 1985. The lease is for the construction and operation of a day use resort and expires on 17 June 2030. This lease is now operated by Perisher Blue Proprietary Limited.

### *The Link Area*

The Link Area is located in the headwaters of Blue Cow Creek and adjoins the resorts of Guthega, Blue Cow and Perisher Valley and the Main Range Management Unit. The Link Area includes part of the west-facing slopes of Blue Calf Mountain and the north-east facing slopes of Back Perisher Mountain. The area is managed under license by Perisher Blue Proprietary Limited.

### *Bullocks Flat*

Bullocks Flat is located next to the Thredbo River adjoining the park boundary. It contains the Bullocks Flat terminal of the Skitube railway to Perisher Valley and Blue Cow, car parking areas associated with the Skitube terminal and the above-ground section of railway line.

A lease exists between the Minister for the Environment and Perisher Skitube Joint Venture for the construction and operation of the Skitube terminal, car parks and railway, the conveyance of passengers, freight and municipal services by Skitube and the conduct of summer recreational activities. It expires on 30 June 2030. This lease is now operated by Perisher Blue Proprietary Limited.

## Issues and Opportunities

Issues and opportunities relating to Perisher Range Management Unit include the following:

- Master plans for the redevelopment of the ski slope and village areas were approved in 2001 (Perisher Range Resorts Master Plan and Perisher Blue Ski Slope Master Plan 2002);
- The unit includes parts of the Perisher and Smiggin Holes Cross-country Ski Area;
- The resort contains significant natural values including threatened species habitat. This includes one of a handful of populations of the mountain pygmy-possum;
- The major leases require rationalisation;
- The visual impact of infrastructure on the Main Range Management Unit; and
- The potential impact of visitation to the resort on adjacent areas of the park as the resort shifts from winter to an all-season resort.

### **10.6.1 Management Objective**

*The Perisher Range Management Unit is managed so as to provide opportunities for visitors to enjoy, understand and appreciate the values of the park in ways that minimise adverse impacts.*

#### **Policies and Actions**

1. Any activity associated with the provision of visitor facilities and services by lessees and licenses will not be permitted except in accordance with the provisions of this plan and the following conditions:
  - An environmental management system is developed and implemented in accordance with Section 12.1.
  - A maximum of 4952 beds is provided;
  - A minimum of 30 of these beds is to be provided for the volunteer ski patrol. These beds will not be available for commercial utilisation and will not attract a premium or rental;
  - Lessees contribute to the maintenance of any facility or service being promoted by the lessee that is managed by the Service;
  - Lessees coordinate recreational opportunities with strategies for the management of the Perisher Range Management Unit and other zones adjacent to or near the resort and the Perisher - Smiggin Holes Cross-country Ski Area (Map 5);
  - Visitor access to Blue Cow terminal is permitted only by the Skitube railway from Bullocks Flat via Perisher Valley; and
  - Public road access to Blue Cow or the Link area is prohibited. Summer construction and management access to these areas will be permitted via the road from North Perisher or Guthega Road.
2. Permit the provision of cross-country skiing facilities consistent with Section 8.9.
3. Prepare municipal infrastructure funding plans and require contributions from lessees/licensees in accordance with those plans.
4. Rationalise existing ski lift infrastructure leases and establish new lease arrangements for the Perisher Range Resorts.

## CHAPTER 11 Restoration and Protection



*...we find we have a continent degraded by inappropriate use – its soils eroded ... its vegetation fast degrading; its water resources polluted; its native animals becoming endangered...*

*Mary White 1994*

### 11.1 Integrated Park Restoration

#### Background

Land degradation in what is now Kosciuszko National Park reflects an accumulated history of almost 200 years of European use of the land. The same can be said for almost anywhere in Australia. The loss of native vegetation and soils, and the spread of weeds and feral animals are environmental problems that beset much of the continent. They often represent symptoms of environmental stress

and imbalance as well as being problems in their own right.

This chapter contains management objectives, policies and actions aimed at restoring and protecting the significant environmental values of the park.

#### Issues and Opportunities

Erosion control, revegetation, and weed and feral animal control are often undertaken as separate tasks, although these problems rarely exist in isolation from each other. In many instances, an integrated approach to ecological restoration that addresses all threats to a place

simultaneously represents the best chance of attaining long-term environmental improvements. Similarly, many of these problems demand attention across the broader landscape, across multiple land tenures, and with the involvement of adjacent landowners and managers.

#### 11.1.1 Management Objective

*Soil conservation, revegetation and introduced plant and animal control programs are delivered in an integrated way across the park.*

#### Policies and Actions

1. Prepare and implement a Restoration Plan that integrates soil conservation and rehabilitation works with introduced plant and animal control programs across the entire park. The Restoration Plan will provide an overarching framework that sets objectives, key performance indicators, methods and priorities for site-specific rehabilitation projects and control programs based upon the significance of park attributes under threat. The Plan will guide the operations of the Service, park lessees and all other organisations operating within the park and will be developed with relevant parties.
2. Ensure that environmental management systems developed by the Service and its lessees and licensees (Section 12.1) are consistent with the objectives, methods and priorities of the Restoration Plan.

3. Integrate the rehabilitation programs directed at former Snowy Mountains Hydro-electric Scheme sites with the Restoration Plan.
4. Review the Restoration Plan every five years to incorporate the results of new research, the findings of mapping and monitoring projects, and the evaluation of works and programs against key performance indicators contained in the plan (Chapter 16).
5. Actively participate in the development and implementation of rehabilitation initiatives in cooperation with other Australian Alps park agencies and relevant catchment management authorities.
6. Investigate new ways of fostering inter-agency and community cooperation in site rehabilitation and introduced plant and animal control programs including the sharing of data, equipment, expertise and training opportunities amongst lessees, licensees, park neighbours, relevant private and public authorities, and local communities.
7. Establish mechanisms for community involvement in restoration and protection programs (Chapter 13).

## 11.2 Soil Conservation and Rehabilitation

*...go into the high country and see for yourself: look at the 12-inch layer of black humic soil which, in places, is disappearing into space: look at the creek banks that are falling off in chunks and dissolving in the water: look at the sandy and gravelly beaches that were once completely covered with scrub...*

*Baldur Byles 1964*

### Background

Human-induced erosion has significantly degraded many of the soils of the park. The legacy of more than a century of grazing, burning and mining, combined with the spread of introduced animals such as rabbits, horses, goats and pigs, has been the widespread loss of topsoil through extensive sheet and gully erosion. This degradation has been especially severe in the alpine and subalpine areas of the park and the steep-sided lower valley of the Snowy River.

Soil conservation work commenced in the park in the early 1950s and focused on the alpine and subalpine country. Over a period of 25 years, some 1550 ha of eroded land along the spine of the Main Range (between Mount Kosciuszko and Gungaharra) and in the Bulls Peaks area were intensively treated, as was the New Chum Hill minesite at Kiandra. This work included extensive mulching and sowing, the paving of eroded flow lines, and the construction of small dams and drainage banks.

The construction of the Snowy Mountains Hydro-electric Scheme also resulted in the disturbance of a large number

of sites in the park, many of which still require rehabilitation. The Service and Snowy Hydro Limited have identified major sites (e.g. large spoil dumps, quarries) and minor sites (e.g. township sites, spoil dumps, landfills, small quarries) associated with the Scheme that are in need of remedial work. Using funding provided by Snowy Hydro Limited, the Service is responsible for the restoration of these sites, though Snowy Hydro Limited remains responsible for any liability arising under the *Contaminated Land Management Act 1997*.

In addition to persistent erosion problems associated with past land uses and infrastructure development, current recreational and management activities also create soil disturbance. Of particular concern are:

- Soil disturbance and erosion associated with fire (fuel reduction burns and wildfires);
- The removal of vegetation and rocks, soil erosion, compaction and slumping, redirection of drainage and landscape modification of ski slopes;

- Erosion associated with the cumulative impact of a wide range of recreational activities including walking, driving, caving, cycling, horse riding, climbing and abseiling; and
- Soil disturbance associated with introduced animals such as rabbits, pigs and horses.

## Issues and Opportunities

The key issues associated with soil conservation and rehabilitation in the park are the need for:

- A strategic, parkwide approach to site rehabilitation based upon a comprehensive knowledge of the problem and the significance of the values threatened;
- Integration between soil conservation and revegetation works, and weed and feral animal control programs;
- Ongoing maintenance of existing rehabilitation works and new remedial projects in the alpine and subalpine areas;
- The identification of disturbed sites with important cultural values and management of such sites so as to retain those values;
- Management of human activities and developments in ways that minimise the creation or exacerbation of erosion problems; and
- Management of fire so as to strategically reduce fire hazards without contributing to soil erosion problems.

### 11.2.1 Management Objective

*Disturbed sites are stabilised and the creation of new sites of disturbance is minimised.*

#### **Policies and Actions**

1. Undertake soil conservation and rehabilitation programs within the context of the Restoration Plan.
2. In relation to soil conservation and rehabilitation, include in the Restoration Plan:
  - An inventory of human-disturbed sites within the park, including information on the extent and severity of erosion and treatment histories;
  - Rehabilitation priorities across the entire park based upon the significance of the values threatened and the potential for rapid deterioration. Provide special attention to:
    - The protection of species and communities likely to come under stress from climate change;
    - The stabilisation of erosion hotspots on the Main Range and elsewhere;
    - The rehabilitation of eroding groundwater areas, especially valley bogs in the alpine and subalpine areas;
    - Stabilisation of actively eroding sites within the catchments of lakes, rivers and streams of high nature conservation value;
    - An evaluation program to measure the degree of success of various site treatments. This evaluation will aim to improve the efficiency and effectiveness of such programs; and
    - Fire management guidelines aimed at minimising land degradation problems associated with fire prevention and suppression programs.
3. Ensure the Restoration Plan is linked to, and informed by, the Geodiversity Conservation Strategy (Section 6.3).
4. Initiate a regular monitoring program to measure changes in the condition of degraded sites and detect the creation of new erosion problems. This program will initially focus on the Main Range and other high-use areas and may be combined with mapping of weed species and abundance (Section 11.3). Low-level, high-resolution aerial photography or satellite imagery may be employed in this program.

5. Ensure erosion hazard and status assessments are made whenever proposed developments or activities are likely to result in significant new ground disturbance.
6. Assess the potential impacts on soil values as part of the assessment process for restoration works.
7. Minimise the creation of new sites of soil disturbance in the park, especially in the alpine and subalpine areas.
8. Rapidly stabilise any newly disturbed sites.
9. Regularly inspect and maintain, repair or upgrade existing soil conservation works.
10. Ensure all environmental management systems for operations in the park include provisions to minimise soil disturbance and are in keeping with the requirements of the Restoration Plan (Section 12.1).

### **11.2.2 Management Objective**

*All site rehabilitation works are undertaken in ways that protect the values of the park.*

#### **Policies and Actions**

1. Undertake rehabilitation works according to current best practice as adopted by the Australian Alps park agencies.
2. Restrict the amount of soil imported into the park to that required for essential rehabilitation works where local soil is unavailable.
3. All soil imported into the park, or transferred between sites within the park, must be free of pathogens and weeds and wherever possible be physically and chemically compatible with the area into which it is to be introduced.
4. Develop soil “banks” for use in the park.
5. Wherever possible use local provenance plant species for revegetation work. If it is necessary to use introduced grasses for soil stabilisation works, use non-invasive or sterile hybrid varieties species that die out under competition from native species.
6. Monitor water quality and sediment flux before and after rehabilitation works and alter site management as necessary.
7. Pursue revegetation opportunities through government schemes and partnerships.

### **11.2.3 Management Objective**

*The cultural values of human-disturbed sites are identified and managed so as to retain their cultural significance.*

#### **Policies and Actions**

1. Identify and manage sites of human-created disturbance with important cultural values so as not to detract from their cultural significance.



2. Interpret disturbed sites with important cultural values within the context of the Communication Plan (Chapter 13). These may include examples of past land uses and practices such as:
  - Mining (Kiandra and elsewhere);
  - Agriculture (foreshores of Blowering Reservoir);
  - Electricity generation (Snowy Mountains Hydro-electric Scheme sites);
  - Forestry (Jounama Plantation); and
  - Soil conservation works (Main Range).

### 11.3 Introduced Plants

*...(the blackberry) deserves to be naturalised on the rivulets of any range...*

*Baron Ferdinand von Mueller 1895*

#### Background

The invasion of introduced plants into natural ecosystems represents one of the major threats to the conservation of biological diversity in the park. The environmental impacts of introduced plant species can be summarised as:

- Competition for resources with native species (including sunlight, moisture, nutrients);
- Prevention of recruitment of native plant species (e.g. by shading);
- Alteration of geomorphological processes (e.g. by changing infiltration or runoff rates);
- Alteration of hydrological cycles and the ecology of streams;
- Alteration of the nutrient content of soils;
- Alteration of fire regimes;
- Changes in the abundance of native wildlife;
- Provision of habitat for introduced animal species;
- Restrictions on the movement of wildlife and humans; and
- Alterations to the visual character of natural areas.

Weed invasion in the region that now includes the park has been dramatic over the last 100 years. In the 1890s, only seven introduced plant species were recorded in the Kosciuszko area. By 1952, weed species accounted for over 11% of the total number of known vascular plant species in the park. This had increased to nearly 16% by 1981 and 27% by 2002. Two-thirds of the 330 weed species currently found in the park occur in the alpine and subalpine areas.

The high number of weed species present in the park reflects a land use history of prolonged human

disturbance. Activities such as grazing, logging and mining, the construction of the Snowy Mountains Hydro-electric Scheme, the establishment of settlements, tourism developments, soil conservation works, arboreta, recreational pursuits and park management operations have all resulted in the introduction and spread of weeds. So too has the development of lands adjoining the park for agricultural and forestry purposes. Natural vectors for spread include wildlife and feral animals, wind and water.

Weed infestations are mostly restricted to disturbed areas such as roadsides, alpine resorts, powerline easements, sites associated with grazing, hydro-electricity generation, mining or timber milling, former and existing settlements, and soil stabilisation works.

The current weed distribution in the alpine and subalpine areas of the park has been categorised as roadside or path weeds (78% of weed species present), alpine resort weeds (58%), grazing weeds (25%) and rehabilitation weeds (11%). Many species are included in more than one category.

Weed management in the park is governed by the provisions of the *Noxious Weeds Act 1993*, the *National Parks and Wildlife Act 1974* and national, statewide and regional weed control strategies. A number of weed control programs in and around the park are cooperative ventures with organisations such as Snowy Hydro Limited, lessees, other government agencies, local shires, community groups and other utility providers.

## Issues and Opportunities

While some weed control programs have been highly successful, the long-term effectiveness of all programs can be further improved when undertaken within the context of integrated ecological restoration programs.

Other key issues associated with weed management are:

- The level of knowledge and understanding of:
  - The attributes, impacts and distributions of many weed species;
  - Modes of dispersal;
  - Species and population-specific trends in weed distributions;
  - The long-term effectiveness of current control programs and methods, particularly in relation to the protection of park values; and
  - The presence, distribution and impacts of exotic pathogens;
- The management of introduced plants of cultural significance;
- The implications of climate change on weed distributions;
- The likelihood of further weed introductions and spread due to continuing human use and access, park operations and the development of additional infrastructure;
- The spread of weed species across land tenure boundaries necessitating a coordinated community-wide approach to control; and
- The level of understanding and support within the community of the Service's weed control strategies and programs.

### 11.3.1 Management Objective

*The distribution and abundance of all existing weed species found in the park are reduced and populations are eradicated wherever feasible.*

#### **Policies and Actions**

1. Undertake weed control programs in the park within the context of the Restoration Plan.
2. In relation to weed control, include in the Restoration Plan:
  - A prioritised program aimed at rehabilitating threatened species habitat, maintaining or improving the integrity of ecological communities and attempting to halt and reverse the spread of weed infestations;
  - A database of all known weed species and populations. This will include abundance and distribution information, treatment histories for all species, and mapping of distributions of priority species in the Main Range Management Unit and all karst catchments;
  - A systematic long-term monitoring program designed to measure trends in weed distributions, abundance, introductions and impacts;
  - The development of directed research programs aimed at improving knowledge and understanding of the attributes and impacts of weed species. Special emphasis will be given to weeds of the alpine and subalpine areas and work aimed at predicting and managing the possible implications of climate change for weed distributions;
  - An early detection, reporting and response system for new weed species and new outbreaks of existing species; and
  - An evaluation regime to measure the effectiveness of weed control efforts, particularly in relation to conservation outcomes. All control programs will be described and critically reviewed to determine the reasons for their success or failure so that future programs can be adapted accordingly to ensure better results.

3. Assess weed control priorities against established criteria to ensure the most effective use of resources. Two sets of criteria will be used in assigning weed control priorities. The first set of criteria is as follows:
- A species for which a national or state control program has been developed;
  - A species which threatens native plant or animal species or communities which are under stress due to climate change;
  - Any relevant action specified in a threat abatement plan developed for a weed species which has been listed as a key threatening process under the *Threatened Species Conservation Act 1995*;
  - Actions identified in recovery plans for threatened species;
  - A species that the community has identified as a high priority for action (this includes, but is not restricted to, pest plants declared under the *Noxious Weeds Act 1993*). Priority will generally be given to those species for which state or regional management strategies have been developed, or where there is support for a collaborative program;
  - A species which threatens the natural, cultural, recreational or economic values of an area within the park or on neighbouring land;
  - A weed population currently of limited distribution but known to be a significant problem in other natural areas within Australia or overseas;
  - A weed species for which continued management is necessary to maintain benefits gained from previous control programs;
  - A species for which a window of opportunity occurs (e.g. where an effective biocontrol agent is available);
  - A species which must be controlled/contained to allow another high priority management program to be effective;
  - The location of the infestation (e.g. within habitat of a threatened species) and the potential of an area to regenerate naturally; and
  - Weed species considered to have latent potential for rapid expansion due to climate change.

The second set of criteria relates to the probability of practical success of a control operation. These criteria are:

- The level of commitment from relevant stakeholders (short, medium and long-term) to ensure successful control;
  - The existence of an effective means of controlling the pest species;
  - The immediate availability of resources to undertake effective control;
  - The likely availability of resources in the medium to long-term to maintain control efforts;
  - The existence of necessary information to effect control or eradication; and
  - The probability that the weed species will be replaced by native species.
4. The level of significance of the park values and the values of adjoining lands actually or potentially threatened by introduced plant species will be a key consideration in determining weed control priorities.
5. Wherever possible, use weed control measures that utilise multiple control methods, target multiple weed species and form part of an integrated ecological restoration program.
6. Clear-fell the remaining stands of pine in the Jounama Plantation and revegetate the coupes with native plant species of local provenance (Section 9.3).
7. Investigate programs that test for the presence, abundance, distribution and impacts of exotic pathogens in the park. Control programs will be developed and implemented if deemed necessary, feasible and practical.
8. Ensure all performance requirements in environmental management systems for operations in the park are consistent with the weed control objectives, priorities and requirements described in the Restoration Plan.

### **11.3.2 Management Objective**

*Exotic species with significant amenity or cultural values are retained and managed so as to prevent their spread into native plant communities.*

#### **Policies and Actions**

1. Undertake a parkwide and/or thematic research program to improve the level of knowledge of the cultural values of exotic plant species found in the park.
2. Establish a register of exotic plantings to be retained for cultural or amenity values, together with tailored management regimes designed to prevent the invasion of these species into native plant communities (Chapter 7). Decisions concerning the replacement of senescent plants or the re-establishment of historic gardens or plantings will be made on a case-by-case basis within the context of the natural and cultural attributes of each place, and where available, in accordance with the provisions of conservation management plans or related documents.
3. Remove or replace any culturally significant plantings that are invasive with non-invasive similar species.
4. Remove plantings of exotic species that have no cultural or amenity value and are not included on the register.

### **11.3.3 Management Objective**

*The park is kept free of new weed species and new weed populations.*

#### **Policies and Actions**

1. Minimise the disturbance of new sites with the aim of limiting opportunities for new weed infestations.
2. Use plant species of local provenance for revegetation work. If it is necessary to use introduced plants for soil stabilisation, then use non-invasive species or sterile hybrid varieties that die out under competition from native species.
3. Where direct seeding is not used, propagate all plants used in rehabilitation programs in soil known to be weed and pathogen free.
4. Restrict the use of fertilisers in revegetation works to areas where it is shown that they are needed for successful plant establishment.
5. Maintain native seed harvesting programs, and storage and propagation facilities for use in site revegetation projects.
6. Ensure that all environmental assessments for proposed activities and developments consider the likely introduction and spread of weeds as a result of the proposal and that relevant conditions and monitoring requirements are incorporated into approvals.
7. Develop and implement an early detection program for new weed species and new outbreaks of existing species within the context of the Restoration Plan.
8. Incorporate hygiene measures aimed at minimising weed introductions and spread (including exotic pathogens) into all relevant work programs and contracts for activities.
9. Provide educational advice on weed hygiene procedures to relevant park employees, contractors, lessees, researchers, staff of relevant private and public authorities, and to park neighbours and visitors.

### 11.3.4 Management Objective

*All weed control programs are undertaken in ways that protect the values of the park.*

#### **Policies and Actions**

1. Evaluate the environmental acceptability of all weed control methods before they are adopted.
2. Permit the broadscale application of chemicals only if environmental impact assessments conclude that there will be no detrimental effects on the park's values.

### 11.3.5 Management Objective

*Weed control is strategically coordinated across the greater landscape and involves neighbours, public and private authorities, and local communities.*

#### **Policies and Actions**

1. Participate in the development and implementation of weed control initiatives with Australian Alps park agencies.
2. Participate in the development and implementation of regional weed control initiatives with other state government agencies, local government, community groups and relevant catchment management authorities.
3. Investigate new ways of fostering inter-agency and community-wide cooperation in weed management including the sharing of data, equipment, expertise and training opportunities amongst park neighbours, relevant private and public authorities, other protected area management agencies, and members of local communities.
4. Support the involvement of members of the community in voluntary activities associated with weed control planning and programs. This will include education, consultation and participation in selected control programs.
5. Integrate community involvement and feedback into weed control planning and program implementation.
6. Promote the weed control strategies and efforts undertaken by the Service, especially within local communities.

## 11.4 Introduced Animals

*The rabbits were so thick we could knock them over with the broom handle stick, as many as we liked, the whole day long.*

*Cecil Piper on the Goobarragandra in the 1920s.*

### **Background**

Various introduced animals that inhabit Kosciuszko National Park are recognised as threats to the area's natural, cultural and recreational values, and to

agricultural production on neighbouring lands. The detrimental impacts of introduced animals include:

- Vegetation damage and destruction;
- Soil erosion;
- Creation and proliferation of tracks;
- Deterioration in water quality and the health of aquatic ecosystems;
- Selective grazing leading to the decline or loss of palatable plant species;
- Competition with, or predation on, native animal species contributing to reductions in numbers and local extinctions;
- Genetic contamination of native animal species (e.g. dingoes);
- Competition with, or predation on, domestic livestock on adjacent pastoral properties;
- Introduction and spread of exotic plants and pathogens;
- Reductions in aesthetic quality where damage is obvious and extensive; and
- Threats to visitor safety.

Populations of introduced animals began to establish in the Kosciuszko area with the commencement of European settlement in the early 1800s. Successive waves of different land uses in the mountains were accompanied by additional introductions, some of which were escaped domestic animals, while others were, and are, deliberate releases. Today, the most obvious and problematic introduced animal species found in the park and the surrounding region are dogs, horses, pigs, foxes, cats, goats, rabbits, hares, deer, starlings, black rats, house mice, several fish species and European bees.

For some visitors, the sighting of introduced animals, such as feral horses, detracts from their visit while for other people such encounters may add to the richness of their experiences in the park. This attachment to feral

horses, as distinct from any other exotic species inhabiting the park, is due in part to their romanticised place in Australian history.

Similarly, while some visitors deplore the ecological impacts associated with introduced fish species, many others rely upon such species as the basis for their recreational fishing pursuits.

Control and management of introduced animals is primarily governed by the provisions of the *Rural Lands Protection Act 1998* and the *National Parks and Wildlife Act 1974*. Control programs within the park are also guided by national, statewide and regional priorities and strategies, all of which are considered in the Service's regional pest management strategies.

As with weed control, the management of introduced animals is a community-wide problem that is best addressed across all land tenures and in a regional context. In recent years, the number and scale of cooperative programs undertaken with neighbours and local authorities has grown with cooperative wild dog and fox control programs being key focus areas.

In 1981 the three gazetted stock routes that traversed the park were revoked. Despite this, the Service has continued to permit the movement of livestock along these routes. Only the northernmost route (linking the Murrumbidgee River/Yaouk area with the Big Dubbo Hill/Buccluch area) has been used in recent years under licence from the Service.

The Service works cooperatively with neighbours to try and prevent the entry of stock into the park from adjoining properties.

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## Issues and Opportunities

As with weed control efforts, measures to control introduced animals are often stand-alone projects that do not form part of an integrated ecological restoration program. Other key issues associated with the management of introduced animals in the park include:

- The need to find a balance in determining control priorities between protecting agricultural production on adjoining lands and the protection of park values;
- The level of knowledge and understanding of the abundance, distribution and population trends for most introduced animal species found in the park and their impact on park values and on those of adjoining lands;
- The implications of climate change on the abundance and distribution of introduced animal species;
- The level of knowledge concerning the presence, distribution and impact of exotic pathogens spread by introduced animals in the park;

- The impact of feral animals on the condition of the water catchment values of the park;
- Limited understanding of the long-term effectiveness of current control programs and methods, particularly in relation to conservation outcomes;
- The need to develop and refine species-specific control strategies;
- The ongoing deliberate introduction of pigs and deer into the park for illegal recreational hunting purposes;
- The need to balance the requirement to conserve native aquatic species and the ongoing stocking of rivers with introduced fish species for recreational fishing;
- The movement of introduced animals across land tenure boundaries necessitating a coordinated community-wide approach to control; and
- The level of understanding within the community of the Service's introduced animal control strategies and programs.

Issues relating to the movement of stock through the park include:

- Vegetation damage and destruction;
- Soil erosion, especially at stream crossings;
- Pollution of waterways;
- Weed dispersal; and
- Conflicts with park visitors.

The route used to move stock is, in part, a narrow corridor that separates declared wilderness areas. As such, the potential exists for livestock to stray into wilderness areas.

From time to time livestock enter the park from neighbouring properties and graziers are contacted by the Service to remove them.

### 11.4.1 Management Objective

*The distribution and abundance of introduced animal species found in the park are reduced and populations are eradicated wherever feasible.*

#### **Policies and Actions**

1. Undertake introduced animal control programs within the context of the Restoration Plan.
2. In relation to introduced animal control, include in the Restoration Plan:
  - A database of all known introduced animal species and populations. This will include mapped abundance and distribution information, and control histories for all species;
  - A systematic long-term monitoring program designed to measure trends in introduced animal distributions, abundance, introductions and impacts;
  - A directed research program aimed at improving our knowledge and understanding of the attributes and impacts of introduced animal species on and off-park. Special emphasis will be given to:
    - Introduced animal impacts in the alpine area including the possible implications of climate change on such species;
    - Impacts on rare and threatened native animal and plant species and communities;
    - Impacts on the values of lands adjoining the park;
    - Feral horse population/environmental impact studies;
    - Work directed at dingo population identification and the minimisation of further genetic contamination;
    - Impacts associated with introduced fish species;
    - Understanding the nature and complexities of interspecies interactions;
    - Work aimed at improving our knowledge and understanding of the introduced invertebrate fauna of the park;
    - Work aimed at improving our knowledge of introduced animals currently of limited distribution but known to be a significant problem in other natural areas within Australia or overseas; and
    - An evaluation program to measure the efficiency and effectiveness of introduced animal control efforts.

3. Successful control strategies will be described and critically reviewed to determine the reasons for their success, and other programs will be adapted accordingly.
4. Wherever possible, utilise introduced animal control measures that include multiple control methods, target multiple species and form part of an integrated ecological restoration program.
5. Assess introduced animal control priorities according to established criteria to ensure the most effective use of resources. Two sets of criteria will be used in assigning introduced animal control priorities for the park. The first set of criteria is as follows:
  - A species for which a national or state control program has been developed;
  - A species which threatens native plant or animal species or communities that are considered to be under stress due to climate change;
  - Any relevant action specified in a threat abatement plan developed for an introduced animal species that has been listed as a key threatening process under the *Threatened Species Conservation Act 1995*;
  - Actions identified in recovery plans for threatened species;
  - A species that the community has identified as a high priority for action (this includes, but is not restricted to, pest animals declared under the *Rural Lands Protection Act 1998*). Priority will generally be given to those species for which state or regional management strategies have been developed, or where there is support for a collaborative program;
  - A species that threatens the natural, cultural or recreational values of an area;
  - A species that threatens the water catchment values of the park;
  - The level of significance of the value(s) actually or potentially threatened;
  - A species which threatens the agricultural production of lands adjoining the park;
  - An introduced animal population currently of limited distribution but known to be a significant problem in other natural areas within Australia or overseas;
  - An introduced animal species for which continued management is necessary to maintain benefits gained from previous control programs;
  - A species for which a window of opportunity occurs (e.g. goat control during floods or droughts);
  - A species that must be controlled/contained to allow another high priority management program to be effective; and
  - A species that must be controlled/contained to minimise risks to visitors.

The second set of criteria relates to the probability of practical success of a control operation. These criteria are:

- The level of commitment from relevant stakeholders (short, medium and long-term) to ensure successful control;
  - The existence of an effective means of controlling the pest species;
  - The immediate availability of resources to undertake effective control;
  - The likely availability of resources in the medium to long-term to maintain control efforts; and
  - The existence of necessary information to effect control or eradication.
6. Investigate the need for a program to test for the presence, abundance, distribution and impacts of exotic pathogens spread by introduced animals in the park. Control programs will be developed and implemented if deemed necessary, feasible and practical.
  7. Ensure all performance requirements in environmental management systems for operations in the park are consistent with the introduced animal control objectives, priorities and requirements described in the Restoration Plan.
  8. Work closely with park agencies in Victoria and the Australian Capital Territory to ensure effective cross-border management of feral animals.



9. Aim to exclude feral horses from the:
  - Main Range Management Unit;
  - Yarrangobilly Management Unit;
  - Cooleman Plain Management Unit;
  - Safety risk areas such as highways;
  - Areas of the park where horses have not been recorded;
  - Areas of the park adjoining other Australian Alps national parks and reserves; and
  - Feeder areas for all of these parts of the park.
10. Implement the Feral Horse Management Plan for the alpine area. Prepare a similar plan for the entire park which will be linked to the Restoration Plan.
11. Ensure that all stocking of waterways within the park is conducted in accordance with the *Freshwater Fish Stocking in NSW Fishery Management Strategy* (NSW Fisheries 2004) or any other subsequent strategy.
12. Liaise with NSW Fisheries to ensure those lakes and sections of rivers and streams that are currently free of introduced fish species are not stocked with such species. Periodically test these waterbodies for the presence of introduced fish with the aim of keeping them free of such species.

### **11.4.2 Management Objective**

*The park is kept free of new introduced animal species and populations.*

#### **Policies and Actions**

1. Prohibit the introduction of European or other introduced bees for honey production or any other purpose.
2. Ensure all environmental assessments for proposed activities and developments in the park consider the implications of likely animal introductions as a result of the proposal and incorporate relevant conditions and monitoring requirements into approvals.
3. Investigate ways of improving the level of success in identifying and prosecuting people deliberately releasing introduced animals into the park.

### **11.4.3 Management Objective**

*All introduced animal research and control programs utilise methods that are humane and do not adversely impact upon park values.*

#### **Policies and Actions**

1. Undertake introduced animal research in accordance with the guidelines prepared by the Service's Animal Care and Ethics Committee established under the *Animal Research Act 1985* to ensure compliance with the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes.
2. Ensure introduced animal control techniques minimise the infliction of pain associated with the capture or induction of death and the injury or death of non-target species. Ensure all methods used comply with the provisions of the *Prevention of Cruelty to Animals Act 1997*.
3. Evaluate the environmental acceptability of all introduced animal control methods before they are adopted.

### **11.4.4 Management Objective**

*Introduced animal control is strategically coordinated across the greater landscape and multiple land tenures, and involves neighbours, public and private authorities, and local communities.*

#### **Policies and Actions**

1. Participate in the development and implementation of introduced animal control programs and research with the Australian Alps park agencies and other relevant authorities.
2. Encourage the development and implementation of cooperative introduced animal control initiatives that encompass the park and adjoining lands and involve adjacent land owners and managers. Base these initiatives upon the priorities and programs contained within the Restoration Plan.
3. Investigate new ways of fostering inter-agency and community-wide cooperation in the management of introduced animals. These will include the sharing of data, equipment, expertise and training opportunities amongst lessees, park neighbours, relevant private and public authorities, and local communities.
4. Continue to involve members of the community in introduced animal control planning and programs. This may include education, consultation and participation in such control programs. Involvement programs need to take account of safety and liability issues inherent in most of the control methods.
5. Promote community awareness and understanding of the potential and actual impacts of introduced animals on the values of the park through the Communication Plan (Chapter 13).
6. Promote the introduced animal control strategies and programs undertaken by the Service, especially within local communities.

### **11.4.5 Management Objective**

*Impacts of livestock on the values of the park are minimised.*

#### **Policies and Actions**

1. Prohibit the movement and grazing of stock in the park. The issuing of licences to move stock through the park will cease within two years of the Minister's adoption of this plan.
2. Licences to use the northern route prior to cessation of stock movement will contain conditions to ensure the park's values are protected. Licences will include conditions that specify:
  - The maximum number of cattle permitted;
  - The number of days cattle are permitted on the route;
  - The type and number of support animals permitted;
  - Designated camping sites;
  - The requirement that an environmental management plan be prepared and approved prior to the activity being carried out;
  - Any environmental monitoring to be undertaken; and
  - Fees payable to the Service.
3. Seek the co-operation of all neighbours in preventing the entry of stock into the park.
4. Consult with adjoining property owners regarding replacement of fencing where incursions of domestic stock occur from adjoining properties.

5. Encourage the Victorian National Parks Service to exclude grazing from areas under their control that adjoin the park, in particular, in the Cowombat Flat, Ingeegoodbee River and Tingaringy Creek areas.
6. Impound unauthorised stock found within the park as necessary.

## 11.5 Fire

*During the time I was on the range the lower parts of the country were burning, and I was prevented from getting angles on any distant points by the dense masses of smoke obscuring the horizon...*

*Reverend W B Clarke 1860*

### Background

Fire has long been part of the Australian landscape. It has helped shape the animal and plant communities inhabiting the continent through processes of selection, adaptation and extinction.

Environmental records indicate that wildfires, in what is now the park, have occurred throughout at least the last 350 000 years.

Documentary evidence of the use of fire by the Aboriginal people that inhabited and visited the mountains is extremely limited. Fires are known to have been used during summer trips to the high country to smoke-out Bogong moths and for cooking. Elsewhere fire would have been used to promote new growth to attract game and to clear undergrowth for easier walking. Although there are no recorded accounts of large wildfires occurring directly as a result of these fires, it can be expected that they did occasionally occur. Fires ignited by electrical storms would have been relatively frequent occurrences.

The Reverend W B Clarke's visit to the high country coincided with a period of intensive use of fire by European settlers as they cleared the foothills and lower valleys surrounding the mountains. Beyond the settled districts, the seasonal introduction of domestic sheep and cattle grazing into the mountains was also accompanied by changes in fire occurrence, frequency, extent and distribution. This was particularly so in the alpine and upper subalpine areas. The extent to which individual graziers burnt their high country runs varied considerably, though open grazing country was commonly burnt during spring and towards the end of each summer, if and when seasonal conditions allowed. This practice was intended

to encourage a greater growth of grasses and forbs in the following spring and summer, and to suppress the growth of shrubs.

The Snowy Mountains Hydro-electric Scheme focused attention on the need for more effective wildfire control and suppression to protect the water catchment values of the high country. The Hume - Snowy Bushfire Prevention Scheme was established in 1951 to coordinate cooperative fire prevention activities in the mountains.

Under the scheme, proposals were developed for fuel reduction burning over more than 70% of the park (later up to 93% with the inclusion of the Byadbo lands). Blocks of 2500 to 4200 ha were identified for burning on a 7 to 15 year cycle with the aim of reducing fuel loads to below 10 t/ha. Although this ambitious program was only ever partially implemented, it continued for more than three decades.

In 1986 fire management responsibilities within the park were transferred from the Hume - Snowy Bushfire Prevention Scheme to the Service. Since then, fire management has been based on asset protection and ecological considerations, and the Service has significantly upgraded its fire management capacity.

The Service is represented on all of the Bushfire Committees (established under the *Rural Fires Act 1997*) that cover the park and is involved in the preparation and implementation of the Bush Fire Risk Management Plans for these areas. The Service, in consultation with the Bushfire Committees, prepared a fire management plan for the park in 1998. Fire management planning and

operational procedures are provided in the Service's statewide Fire Management Manual.

Fire management within the park is governed by various legislative requirements and policies, most notably the provisions of the *Rural Fires Act 1997* and *National Parks and Wildlife Act 1974*. NSW Fire Brigades has responsibility for response and suppression of structural fires within alpine resort areas. Owners or occupiers are required to manage for, prevent and suppress bushfire occurrences on lands they are responsible for.

In 2003, the Australian Alps Ministerial Council formulated a set of key principles to guide fire management throughout the Australian Alps. In summary, the Council agreed that fire management strategies should be:

- Based upon the imperatives of firefighter safety and the protection of life and property;
- Consistent with the protection of natural and cultural values;
- Broadly based and integrate fire prevention, preparedness, response and recovery strategies;
- Practical, achievable and cost-effective;
- Based upon a strategic analysis of risks to assets;
- Focused on the protection of significant values and assets;
- Based upon sound science;
- Informed by the known and likely implications of climate change;
- Based upon a landscape-wide approach; and
- Supported by the community.

## Issues and Opportunities

Fire management in Kosciuszko National Park has been, and remains, a major issue of controversy. Considerable research into fuel accumulation, fire behaviour and fire impacts has been undertaken over the past 30 years. Despite this, the variety of vegetation communities in the park, which present a range of different fuel structures and loads, combined with often steep and inaccessible terrain, make predicting fire behaviour and the suppression of wildfires extremely challenging.

Of all recorded wildfires in the park since 1956, 41% were started by people (22% illegally, 11% from campfires, 6% from negligence or accident, 2% from management), 20% by lightning strikes, and 39% were from unknown causes. As in national parks elsewhere in Australia, evidence suggests that increased visitation and public access equate with an increased risk of wildfires.

The proportion of fires ignited by different sources bears no relationship to the size – and impact – of individual fires. Under drought conditions during the 2002–2003 summer period, a series of wildfires ignited by lightning strikes burnt 486 000 ha of the park and a total of 1.1 million ha across the Australian Alps. The ecological consequences of such major fire events can be profound, resulting in changes to vegetation community distributions and age classes, loss of habitat, localised extinctions, severe soil erosion and rapid deterioration of water quality.

The loss of cultural features, such as huts, can also be considerable, as can the aesthetic, recreational, economic and social costs of such fires.

Other key issues associated with fire management in the park are:

- The need to protect human life and property;
- The need to manage fire across the broader landscape and across all land tenures;
- The incomplete understanding of fire behaviour and effects, including the impacts of different fire regimes on individual plant and animal species;
- The use of fire for habitat manipulation or ecological purposes;
- The need to recognise the different responses of vegetation communities to fire and to determine where burning will most effectively reduce hazards;
- The need to reduce fire hazards while recognising the ecological imperative that many vegetation communities in the park currently require long fire-free periods;
- Managing fire so as not to impact upon catchment stability and water quality;
- The need to link fire management with weed and feral animal control objectives and site restoration programs to maximise environmental benefits;
- The potential impacts of fires within the park on the operations of lessees;

- Reconciling pressures for more management trails, fire breaks and water points within the park with conservation imperatives;
- The need for fire suppression activities to be conducted so as to minimise environmental impacts;
- Smoke management and public health and safety issues associated with prescribed burning;
- The potential impacts of climate change on the incidence and severity of wildfires;
- Fire preparedness and responsibilities of lessees in the park and of park neighbours;
- The desirability of greater community involvement in fire planning and management decision-making; and
- The levels of understanding within the community of the Service's fire management planning, policies and programs.

### 11.5.1 Management Objective

*Fire management is aimed at ensuring:*

- *No human life is lost or person injured as a result of fire;*
- *Infrastructure within and beyond the boundaries of the park is not damaged from fire;*
- *Important natural features, especially alpine areas, restricted, rare or endemic plant or animal communities and species, and karst systems, are protected from detrimental impacts associated with fire;*
- *A natural diversity of vegetation communities and age classes is promoted;*
- *Fire does not contribute to catchment instability and water quality problems;*
- *Sites and features of cultural significance are protected from fire; and*
- *Wilderness quality and scenic amenity are retained.*

### Policies and Actions

1. Ensure fire management in the park is based upon:
  - The overriding imperative of protecting human life and property;
  - Effective measures to minimise the impact of fire on park values and infrastructure and those of adjoining lands;
  - An understanding that recurrent wildfire has been a feature of the region and its vegetation for millennia;
  - An understanding that large tracts of vegetation are in early phases of post-fire regeneration as a consequence of past fire history, and that the dominant vegetation management objective will be to achieve a more diverse range of age classes especially long-unburnt or old growth vegetation;
  - The understanding that catchment stability is a vital conservation function; and
  - Assessments of vegetation systems, fuel structures and the application of the principles of combustion physics, to ensure that stated objectives and outcomes are valid and achievable.
2. Manage fire within the context of the Services's Fire Manual and the Kosciuszko National Park Fire Management Plan. The plan will form the basis for the preparation and implementation of annual fire management work programs and will be consistent with:
  - The requirements of all relevant legislation;
  - Bush Fire Management Plans;
  - The Fire Management Principles adopted by the Australian Alps Ministerial Council;
  - The Service's statewide Fire Management Strategy;
  - The Service's statewide Fire Planning Policies; and
  - Programs prescribed in the Restoration Plan (Sections 11.1 - 11.4).

- 3 The Fire Management Plan will aim to ensure that:
  - Strategic fuel reduction measures are prescribed such that the likelihood of loss of human life and damage to infrastructure within and beyond the park is minimised;
  - Desirable fire regimes for the maintenance of biodiversity and the creation of representative ranges of successional stages and age classes are met for all vegetation communities in the park;
  - Fire is not implicated in the extinction or decline of any plant or animal species;
  - The fire management guidelines for fauna listed under the *Threatened Species Conservation Act 1995* and other species of significance are adhered to;
  - Fire sensitive soils and landforms, including karst systems, are protected from the deleterious effects of fire;
  - Catchment stability and water quality are not impaired by the impacts of fire;
  - Aesthetic values and wilderness quality are not reduced by fire management practices; and
  - All heritage places and objects are protected from fire.
4. Fire planning will include the mapping and regular updating of information on all pertinent assets and values of the park and neighbouring lands. Where appropriate fire sensitivity and significance levels will be assigned to these values. Fire planning will consider using, but will not be limited to, the following mapping layers:
  - Basic topographic attributes (e.g. slope, aspect, elevation);
  - Soil types (including sensitivity ratings, zoning, and condition);
  - Features of geodiversity significance, including all karst catchments;
  - Vegetation communities, including information on age classes;
  - Rare, endangered and restricted plant communities and species;
  - The habitats of rare and endangered native animal species;
  - Distributions of plant and animal species and communities considered likely to come under stress due to climate change;
  - Wilderness quality;
  - Scenic quality and viewfield mapping for popular visitor destinations;
  - Heritage places and objects;
  - Fire histories, including ignition sources and firepath information;
  - Fuel attributes;
  - Management trails and fire breaks, including natural firebreaks, with condition/maintenance histories;
  - Water points;
  - Popular recreational destinations and corridors; and
  - Infrastructure and assets.
5. Conduct all fire operations in accordance with the provisions of the Service's Fire Management Manual.
6. Review the Fire Management Plan every five years. Confine these reviews to amendments associated with:
  - Pertinent new research findings and information or the emergence of significant previously unforeseen management issues;
  - The implications of recent fire history;
  - The results of monitoring programs, where they indicate the need for changes to management; or
  - New or amended legislation, or new practices, equipment or technology.
7. Ensure fire protection strategies are prepared by leaseholders for all lease areas. Ensure these strategies are consistent with the relevant Bush Fire Management Plan for the region and the Fire Management Plan for the park. These strategies will be reviewed every five years concurrent with the review of the Fire Management Plan.
8. Continue to use the analysis of bushfire threat and risk to refine fire protection strategies within the park, in particular around assets and villages.

### **11.5.2 Management Objective**

*Fire suppression and protection operations are undertaken in ways that minimise adverse effects on the values of the park.*

#### **Policies and Actions**

1. The suppression of wildfires and associated public safety issues will take priority over other non-emergency operations.
2. Ensure early detection and rapid suppression are key elements of the fire suppression strategy for the park.
3. Ensure fire suppression operations are consistent with the operational guidelines contained in the Fire Management Manual and are undertaken in ways that minimise impacts on the values of the park.
4. Base wildfire suppression activities upon predetermined strategies designed to minimise associated impacts on park values, wherever possible.
5. Prohibit the use of chemical retardants for fire-fighting within the catchments of the alpine lakes and wetlands, and restrict their use in karst catchments.
6. Undertake environmental impact assessments for proposed fire management works programs as required.

### **11.5.3 Management Objective**

*Fire detection and access infrastructure and operations permit rapid suppression of fire.*

#### **Policies and Actions**

1. Continue the present fire detection system, which includes the use of fire towers, road patrols and aerial surveillance flights, and periodically evaluate the system to determine possible improvements.
2. Prohibit the construction of new fire towers in the Wilderness Zone and where possible co-locate any new fire towers with existing infrastructure in other areas.
3. Maintain aerial surveillance during severe fire weather conditions or specific periods identified in the Fire Management Plan.
4. Maintain a strategic road access, water point and helipad network as prescribed in the Fire Management Plan. Periodically review the operational utility of these features.
5. Assess the operational utility of new management trails, helipads, breaks and water points resulting from suppression operations as soon as practicable after a fire. Rehabilitate these works unless they are assessed as being required for ongoing use under the Fire Management Plan.

### **11.5.4 Management Objective**

*Prescribed burning is strategic in nature and undertaken in ways that minimise associated adverse effects.*

#### **Policies and Actions**

1. Ensure that fuel reduction programs within the park are aimed at protecting life and property, park values and the spread of fires onto neighbouring lands, and are strategic in nature.
2. Undertake environmental impact assessments for proposed fuel reduction and habitat manipulation burns as required.
3. Manage prescribed burning operations so as to minimise the drift of smoke over nearby towns and communities, wherever possible.
4. Inform local communities of intended prescribed burning operations.

### **11.5.5 Management Objective**

*The incidence of wildfires ignited from human causes in the park is minimised.*

#### **Policies and Actions**

1. Investigate the cause of all wildfires.
2. Work with fire management authorities to investigate ways of improving the level of wildfire investigation and success in identifying and prosecuting arsonists.
3. Implement parkwide or site-specific bans on the use of solid fuel fires whenever warranted by fire danger conditions.
4. Brief all contractors working in the park on measures designed to minimise fire risks associated with their activities and ensure all contractors carry fire suppression equipment, where required.
5. Provide visitors with information on the appropriate use of campfires as prescribed in the Communication Plan (Chapter 13).
6. Actively encourage all visitors to the Wilderness and Back Country Zones to use fuel stoves rather than campfires.
7. Prohibit the use of campfires in the Main Range Management Unit.

### **11.5.6 Management Objective**

*Fire management decision-making is informed by the results of relevant research.*

#### **Policies and Actions**

1. Identify and undertake, or contribute to, research projects aimed at improving our knowledge and understanding of fire management in the park. These may include, but not be limited to determining:



- The ecological impacts associated with the 2003 wildfires;
  - The most appropriate fire regimes for particular vegetation communities and individual plant and animal species. Emphasis will initially be given to the management of restricted, rare or endangered communities and species, and those known to be fire-sensitive;
  - The effects of various fire management regimes and practices on catchment hydrology and stability;
  - The effects of fire on soils and landforms, including karst systems;
  - The role that fire can play in managing weed and feral animal species;
  - The effects of various fire management regimes and fuel reduction treatments on fuel loads and structures;
  - Fire behaviour prediction modelling;
  - The environmental effects of chemical retardants;
  - The most effective strategic fire protection measures;
  - The likely implications of climate change on the incidence and severity of wildfires and appropriate management responses;
  - The levels of effectiveness of the various fire suppression strategies employed and possible improvements; and
  - The contribution of prescribed burns to greenhouse gas emissions.
2. Ensure the results of this and other relevant research informs fire management decision-making and is considered in reviews of the Fire Management Plan.

### **11.5.7 Management Objective**

*Fire management is strategically coordinated across the greater landscape and multiple land tenures and involves the community.*

#### **Policies and Actions**

1. Ensure fire management in the park is integrated with that of neighbouring lands irrespective of land tenure.
2. Continue to participate in community-based fire management planning and operations, primarily through involvement in local Bush Fire Management Committees.
3. Continue to liaise with all relevant public and private authorities and individuals regarding fire management including the Rural Fire Service, State Forests, Department of Planning, NSW Fire Brigades, Snowy Hydro Limited, lessees, local councils and park neighbours.
4. Promote the development and adoption of common data-sharing agreements for the transfer of fire information amongst relevant agencies, communities and individuals.
5. Raise awareness of fire management issues within neighbouring communities and amongst park visitors. This will include:
  - Descriptions and explanations of the fire management decision-making, research and strategies adopted for the park;
  - Fostering understanding of the implications of fire and its impact on park values; and
  - The promotion of fire safety and fire protection procedures for park neighbours and park visitors.

## 11.6 6 Environmental Quality

*Some water from the Snowy will save me.*

*Charlie Woodhouse on his deathbed 1921*

### Background

Environmental quality refers to the condition of the basic natural attributes that underpin the health of all life forms within the park, including humans. It also encompasses the state of a number of parameters that relate to the environmental character and sustainable use of the park.

In summary, environmental quality covers the often interrelated issues of:

- Water quality;
- Water consumption;
- Soil contamination;
- Waste generation;
- Energy consumption;
- Air pollution;
- Light pollution;
- Noise pollution; and
- Scenic quality.

Environmental quality is managed, in part, according to the provisions of the *Protection of the Environment Operations Act 1997*. This Act provides for the licensing of scheduled activities that are likely to impact on environmental quality, such as sewage treatment plants and landfills, by the Department of Environment and Conservation (DEC). Air and noise pollution are also managed by DEC under this legislation.

All water extraction in the park is licensed by the Department of Natural Resources under the *Water Management Act 2000*.

The purity of the water is a fundamentally important value of Kosciuszko National Park; one upon which human health and that of all resident aquatic ecosystems depend. Water quality in most of the natural and artificial lakes of the park, the numerous streams and rivers, subterranean water bodies and groundwater is relatively high. The alpine lakes of the Main Range have especially low nutrient levels and are the freshest waterbodies on the Australian mainland. Various rivers and streams within the park are also recognised for their low nutrient status.

The maintenance of natural flow regimes is also essential for the ongoing integrity of aquatic ecosystems within and downstream of the park, for river-based recreational pursuits such as fishing and canoeing, and for downstream users. The natural flows of 60% of all watercourses within the park are diverted and utilised for electricity generation and, ultimately, irrigation. Beyond the Snowy Mountains Hydro-electric Scheme, most of the water drawn from the rivers and streams of the park is consumed for domestic supplies and snow-making purposes within the alpine resorts and associated developments.

Soil is contaminated when the level of a hazardous substance is greater than that which would naturally occur at the same site. The presence of hazardous waste within the park is mostly associated with past or ongoing storage of hydrocarbons and with existing and former landfill sites that contain solid wastes. These include putrescible and inert household and commercial waste, and builders' spoil and clean fill generated during construction activities. Only one landfill site in the park remains operational, it is located at Sawpit Creek.

Electrical energy consumption is fundamental to the operation of many park facilities, most notably the provision of goods and services, particularly in the Visitor Services Zone. The operation of resort infrastructure generates localised air and noise pollution and light spillage that may be visible for considerable distances. The burning of fossil fuels within the park is primarily associated with motorised transport, with most visitors travelling in private vehicles. Private vehicle use represents the principal generator of air and noise pollution along the key transport corridors of the park.

In more remote locations where visitors may expect they have left the noise of mechanised access behind, aircraft can present unwanted noise and visual intrusions. Except for these restricted and, in some cases, seasonal and transitory disturbances, the quality of the air of the park is usually very high and the incidences of noise pollution

are mainly localised. From time to time, however, wildfires and hazard reduction burns can adversely impact upon air quality over large parts of the park.

Along with clean water and air and a sense of tranquillity, many visitors to the park expect to encounter natural scenery that is visually unmodified by humans. Natural

beauty, based upon the dramatic vertical relief of the mountains, open vistas, extensive forests, snow-covered landscapes and a sense of wildness, is a key motivation for many people to visit the park. For many, it is also a source of inspiration and renewal.

## Issues and Opportunities

Recreational use, in all its forms, can result in changes in the quality of groundwater and surface water flowing into lakes, rivers and streams. In particular, the management of human waste presents a critical environmental problem at high-visitation and remote destinations alike.

Effluent from the sewage treatment plants associated with the alpine resorts and other high-use sites is discharged into watercourses in the park. Water quality measurements have been taken in the Thredbo River for more than 20 years and in tributaries of the Snowy River since the early 1990s. Biological health has been assessed by examining the composition of the invertebrate fauna using the Australian Rivers Assessment Tool or AUSRIVAS model, and water quality has been gauged by measuring nutrient (phosphorous and nitrogen) levels, turbidity, electrical conductivity, pH and dissolved oxygen levels. The results of this monitoring suggest that the sewage treatment plants discharging into these watercourses create constant but generally mild pollution. The long-term impact of these effluent discharges on the park's rivers and streams is unknown.

Such treatment does not occur in the less popular or remoter parts of the park. Although new and replacement toilets at camping and day use sites throughout the park utilise sealed systems, septic tanks remain in use at a number of locations as do numerous pit toilets, some of which may directly contaminate groundwater. Elsewhere, at less popular campsites, no toilet facilities are provided.

While the potable water supplied to the alpine resorts is disinfected with chlorine or ultra-violet radiation, water sourced from various streams and lakes within the park may be contaminated by micro-organisms due to inadequate human waste treatment or disposal.

Other threats to water quality include:

- Stormwater runoff from visitor infrastructure such as carparks and roads;
- The application of road de-icing agents;
- Increased sediment loads from road and walking track erosion and after fire events;
- Nutrient enrichment from feral animals; and
- Ongoing disturbances associated with catchment modifications from past grazing and mining activities.

Existing and former storage sites for hazardous wastes, including service stations, workshops and landfills, are also sources of groundwater, surface water and soil contamination. Snowy Hydro Limited is responsible for any potential liability arising under the *Contaminated Land Management Act 1997* regarding contaminated sites associated with the Snowy Mountains Hydro-electric Scheme. The management of all other contaminated places is the responsibility of the Service. This includes the management of various redundant landfill sites and the landfill facility at Sawpit Creek. While the Service intends to close and rehabilitate the Sawpit Creek landfill once an alternative site is established outside the park, the future management of solid waste generated in the park is linked to raising the levels of recycling and re-use of materials. The creation of markets for recycled materials, and their rates of uptake, has in the past limited the viability of recycling as a self-sustaining industry in the region.

While the environmental and recreational impacts from stream flow alterations associated with the operation of the Snowy Mountains Hydro-electric Scheme will be partially redressed in future years through the release of environmental flows, for most affected watercourses the changes to flow regimes will remain permanent and

profound. Increasing visitation and reliance on artificial snow-making within the alpine resorts is already resulting in greater localised water demand, placing further pressure on the aquatic values of affected streams. Such trends highlight the need to introduce stringent water conservation measures for all operations.

Reductions in air and noise pollution and the problem of light spillage in the park require the adoption of a suite of measures including:

- The introduction of energy conservation and light management measures across all relevant activities and operations conducted in the park;
- The provision of viable and convenient public transport systems to reduce the use of private vehicles, especially during the snow season;
- The introduction of flight regimes for low-flying aircraft operating over the park designed to minimise impacts upon wildlife and the experiences of on-ground visitors (Section 8.17 and Chapter 12); and
- Measures to minimise air quality problems for park

visitors and local communities associated with hazard reduction burns (Section 11.5).

Although the scenic quality of the park is generally high, many landscapes are marred by visually intrusive developments. On a parkwide scale, the collective infrastructure of the Snowy Mountains Hydro-electric Scheme, in the form of roads, transmission lines, power stations, aqueducts and impoundments, represents the single most visually intrusive element in the landscape. By contrast, while the alpine resorts only occupy relatively small areas, some of the facilities extend into high elevation sites, often visible from distant places. In addition to these, many minor visual intrusions are scattered across the park. Considerable scope exists, even in the most highly modified places, to ameliorate or mute the visual impact of existing infrastructure through removal, replacement, modification, re-siting, undergrounding or screening. Equally, the maintenance or enhancement of scenic quality is a key consideration in the provision of new facilities.

### **11.6.1 Management Objective**

*Environmental quality is maintained or improved.*

#### **Policies and Actions**

1. Apply the best available and practicable technology to protect water quality. Provide particular attention to reducing nutrient levels, biological oxygen demand and non-filterable residues in the treatment of wastewater where effluent is to be released into watercourses. In the event that desired water quality standards cannot be attained by using best practicable technology, aim to reduce the sources of pollution.
2. Periodically review developments in wastewater treatment technologies, especially in areas of similar climate and high conservation value, nationally and internationally.
3. Formulate water quality objectives and targets for catchments in the park. Aim to ensure that the standards for effluent discharged into watercourses do not impair water quality above the levels prescribed.
4. Expand water quality monitoring programs to include all watercourses and waterbodies in the park potentially at risk from pollution. Continue to utilise the AUSRIVAS model and other appropriate bacteriological indicators.
5. As part of this monitoring regime, annually assess the water quality of the five glacial lakes and streams and rivers adjacent to popular campsites on the Main Range.
6. Utilise water quality monitoring results to inform management decision-making concerning recreational activities, infrastructure development and other uses.
7. Liaise with other authorities regarding water quality of lakes, rivers and streams as appropriate.
8. Notify visitors if and when monitoring indicates that water quality at popular day-use and camping areas does not meet the Australian Drinking Water Guidelines.

9. Investigate the need for toilets at all huts, popular campsites and day-use destinations and provide toilet facilities as necessary in accordance with Schedule 6.
10. Manage all toilets to ensure that unacceptable impacts to groundwater quality are avoided.
11. Prohibit the construction of additional pit toilets. Progressively replace existing pit toilets with sealed toilet systems that do not result in localised groundwater contamination.
12. Investigate and, if necessary, trial a system in which visitors are required to carry out human waste from popular areas where toilets are not provided. Depending on the results of the trial, introduce the system.
13. Encourage the investigation of the use of recycled sewage and grey water including recycling (following treatment) for purposes such as irrigation and domestic reuse.
14. Effluent reuse will be subject to environmental impact assessment and the provisions of relevant legislation.
15. Require all lessees to implement all possible water conservation measures.
16. Monitor the impacts of using road de-icing agents on water quality. Depending on the monitoring results, restrict or prohibit this practice if safe road conditions can be obtained by other means.
17. Establish a register of the locations within the park where liquid fuels and other toxic substances are stored. Manage all such sites in accordance with the *Dangerous Goods Act 1978*.
18. Assess sites that are of high risk of being contaminated from hydrocarbons or any other pollutant and require lessees or other appropriate authorities to develop environmental management plans for such sites.
19. Rehabilitate all existing landfills in the park and prohibit additional landfills.
20. Remediation strategies for contaminated sites within the park will be guided by the results of regular groundwater monitoring programs.
21. Restrict the use of herbicides, pesticides and fertilisers to those that are known to have no long-term environmental effect.
22. Monitor the use of groundwater within the park for water supply to ensure ongoing suitability and availability.
23. Liaise with authorities that have an interest (legal or otherwise) in water quality and catchment protection within the park.
24. Liaise with Snowy Hydro Limited concerning the quality of water discharged from impoundments in the park and establish water quality targets for inclusion in the environmental management plan required to be prepared for the Snowy Scheme.
25. Environmental management systems will be prepared and implemented for Service operations and the activities of all lessees, licensees and other authorities operating in the park (Section 12.1).

### **11.6.2 Management Objective**

*Environmental accidents, pollution events and contamination are responded to rapidly and effectively to protect park values and visitor safety.*

### **Policies and Actions**

1. Work with relevant authorities to ensure that emergency management and response procedures are in place for environmental accidents and pollution events.

### **11.6.3 Management Objective**

*Scenic quality within the park is maintained and, wherever possible, enhanced.*

#### **Policies and Actions**

1. Adopt and apply a Visual Management System (VMS) with the aim of maintaining and enhancing the visual quality of the landscapes of the park in a systematic way.
2. The VMS will entail:
  - Mapping of viewfields from popular recreational destinations and vantage points and the visual catchments of popular recreational routes;
  - Assessing the current scenic quality and character of these viewfields using a variety of classes and sensitivity levels based upon considerations such as:
    - The sensitivity of different landscape and vegetation type(s) to absorb intrusions over time;
    - The numbers and types of recreational users;
    - Established and future viewing patterns;
    - The type(s) of visual intrusions; and
    - The scale of any visual intrusions (dominance or otherwise) and their locations within the foreground, midground or background of viewfields.
  - The setting of desired visual quality levels for each of the management zones and units of the park and for individual recreational sites and corridors based upon the zoning objectives; and
  - The setting of viewfield protection guidelines for each of the management zones and units of the park and for individual recreational sites and corridors to inform decision-making concerning the management of existing visual intrusions and proposed new developments.
3. Develop a viewfield databank consisting of maps of viewed areas, photographs or computer-generated images to enable the visual impact of any future developments to be determined.
4. Prohibit proposed new developments or activities likely to result in intrusions inconsistent with the desired visual quality levels and viewfield protection guidelines described in the VMS for a particular management zone, unit or place.
5. Based upon the desired visual quality levels described in the VMS, prepare and implement a Scenic Quality Enhancement Strategy (SQES) in cooperation with relevant lessees and operators with the aim of achieving these standards. The strategy will include:
  - Treatment options for individual visual intrusions (e.g. removal, modification, replacement, re-siting, screening, or undergrounding of infrastructure); and
  - A prioritised works program to enhance visual quality.
6. Within the context of the SQES:
  - Remove all redundant structures that are no longer required for operational purposes and not of cultural value unless where doing so would create unacceptable environmental impact; and
  - Work with relevant authorities to promote the development and implementation of an undergrounding program for phone and electricity lines (Section 12.6).
7. Liaise with local governments on management prescriptions to preserve the scenic amenity of approaches to the park.
8. Liaise with local governments and the Department of Planning regarding any changes to the provisions of local or regional environmental plans and strategies that may impact on the environmental quality of the park.

## CHAPTER 12 Operations and Authorised Uses



*In 1959, when the Kosciuszko State Park Trust had been in existence for 15 years, it had a park staff of four, a works depot, a single male barracks and six houses at Waste Point, a type writer, a four-draw filing cabinet and various old vehicles and plant.*

*Neville Gare, Superintendent, Kosciuszko State Park Trust 1961*

### 12.1 Environmental Stewardship

#### Background

The NSW National Parks and Wildlife Service (the Service) is the principal management authority for the park. Service staff are engaged in a broad range of on-ground operations on a daily basis directed at protecting, conserving, presenting and rehabilitating the values of the park. Many such operations are reliant upon, or associated with, a suite of inherited and purpose-built infrastructure located across the park, including networks of roads, firebreaks and walking tracks, fire detection and communication installations, works depots, visitor facilities, staff and visitor accommodation, and municipal services infrastructure.

A variety of other government agencies and private organisations undertake essential operations within the park. These include the Roads and Traffic Authority, Snowy Hydro Limited, and a number of electricity transmission and communication authorities.

Infrastructure within the park that is owned or managed by organisations other than the Service includes various roads, the diverse range of installations associated with the Snowy Mountains Hydro-electric Scheme, electricity transmission lines, telephone lines and towers, and trigonometric and meteorological stations (Schedule 9). Concentrations of other facilities and services associated with snow-based recreation and tourism are located within or near the alpine resorts.

The Defence Forces, NSW Police and other emergency services organisations periodically request permission to undertake training exercises in the park.

The underlying principle governing all of these operations and the management of all of this infrastructure is the need to protect the special values of the place. Responsibility for this extends beyond the Service to include all organisations and individuals operating in the park.

The Service has a number of responsibilities under the *Environmental Planning & Assessment Act 1979* and the *National Parks and Wildlife Act 1974* in relation to environmental impact and assessment of its own proposed activities and developments and those of other organisations (this role does not extend to the assessment of developments undertaken in the alpine resorts. The assessment of these developments is described in Chapter 10). Environmental impact assessments are generally not required for:

- Authorised activities under the Snowy Management Plan;
- Maintenance activities specified under Memoranda of Understanding or other formal Service agreements; and
- Routine Service operations set out in Service guidelines.

Under the *Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, actions that are likely to have a significant impact on a matter of national environmental significance are subject to a separate referral, assessment and approval process. With respect to Kosciuszko National Park, the provisions of the EPBC Act apply to actions likely to significantly impact upon:

- The Blue Lake Ramsar Site;
- Listed threatened species and ecological communities; and
- Listed migratory species.

If, in the future, the park is added to the National Heritage List established under the EPBC Act, then proposed actions likely to significantly impact upon the national heritage values for which the park is listed will also need to be referred to the Commonwealth Department of Environment and Heritage for assessment.

## Issues and Opportunities

The concept of shared environmental stewardship should be reflected in lease and licence conditions, operating procedures and protocols, and the training provided to relevant staff.

Effective environmental management of all operations and uses within the park requires that all such activities are authorised and conducted within the context of a lease, licence or other formal agreement. It also requires:

- Adequate surveying, mapping and documentation of all infrastructure within the park;
- Monitoring of impacts associated with particular operations and infrastructure; and

- Adoption and implementation of adaptive management strategies directed at ameliorating or halting impacts.

Issues relating to the environmental assessment of new activities and developments in the park include:

- The need to identify and protect significant features in the park;
- Adequate public consultation on proposals for activities and developments within the park; and
- Sound environmental management during the construction and operation of all infrastructure.

### 12.1.1 Management Objective

*The Service, all operators and visitors demonstrate a commitment to improving environmental standards and are accountable for minimising the impact of their activities.*

### Policies and Actions

1. Ensure all operations and authorised uses in the park are consistent with the provisions of this plan of management and are undertaken through a lease, licence or other formal consent or agreement. Create and maintain a park register of all leases, licences and agreements.
2. Ensure all infrastructure located in the park is appropriately documented within the Service's geographic information system.
3. Require all lessees, licensees and other authorities operating in the park to develop and implement an environmental management system for the management of their activities and infrastructure. All environmental management systems will be required to be approved by the Service.
4. Environmental management systems will include, but not be limited to:
  - All legislative requirements, and those stipulated in all relevant codes of practice and industry standards;
  - Relevant prescriptions as set out in this plan;
  - Objectives, key performance indicators, ideal status goals and environmental targets for air, water and noise pollution;
  - Strategies and targets for water conservation, energy conservation, waste minimisation and reducing light spillage (as relevant);
  - Communication and reporting protocols;
  - Monitoring regimes to measure performance against objectives, key performance indicators and targets; and
  - Training standards and schedules for relevant personnel.
5. Establish minimum environmental performance standards with the assistance of independent scientific advice commissioned by the Service, in association with its lessees and other relevant authorities.
6. The Service and lessees/licensees will be accountable for annual environmental performance monitoring of their activities against performance standards.



7. Require all lessees and licensees to provide an annual report to the Service on their environmental performance.
8. Report annually on environmental quality based on reporting associated with all environmental management systems that apply to the park (Chapter 16). With respect to environmental quality, include in the report:
  - Water quality monitoring results;
  - Measures applied to reduce air and noise pollution and improve scenic quality;
  - Water conservation, energy conservation, waste minimisation, reduction in light spillage and scenic quality enhancement results;
  - Human waste volumes treated at each of the sewage treatment plants in the park;
  - Quantities of rubbish and recyclable material collected and its ultimate destination;
  - Remediation progress at contaminated sites; and
  - Information relating to the nature of pollution incidents, how they were managed and the corrective action taken to prevent their recurrence.
9. The management of environmental quality in relation to all sites and operations of Snowy Hydro Limited will be in accordance with the environmental management plan for the Snowy Mountains Hydro-electric Scheme (Section 12.5).
10. Establish means by which members of the community can be involved in a voluntary capacity in 'clean-up' or other environmental improvement programs in the park.

### **12.1.2 Management Objective**

*All proposals for new activities and developments are subject to appropriate environmental assessment to ensure impacts on the park's values are minimised.*

#### **Policies and Actions**

1. Conduct or require environmental impact assessments for activities and developments in accordance with the requirements of relevant Commonwealth and state legislation, state planning policy and Service policy and guidelines.
2. Assessments of the likely impact of any proposed activity or development on the values of the park will include consideration of all values identified in this plan. In determining the impact of a proposal, particular attention will be given to likely effects on those attributes listed in the Schedule of Significant Features (Schedule 1).
3. Activities and developments assessed under Part 5 of the Environmental Planning and Assessment Act and likely to have a significant impact on features listed in Schedule 1 will not be permitted.
4. Review the Schedule of Significant Features as required to incorporate updates or corrections to the status of identified features, and to make additions or deletions to the features listed.
5. Consult with all relevant stakeholders if a proposed activity or development:
  - Is likely to affect adjacent communities or park lessees;
  - Significantly impacts on visitor use or enjoyment;
  - Affects traffic volumes, flow or movement;
  - Is of a nature, scale or complexity likely to cause adverse environmental and cultural impacts;
  - Is likely to impact on a feature listed in Schedule 1; or
  - Is of particular interest to a specific user-group(s).

6. Require environmental management plans be prepared for all construction and maintenance activities requiring consent under Part 5 of the *Environmental Planning and Assessment Act 1979*.
7. All activities and developments requiring consent under Part 5 of the *Environmental Planning and Assessment Act 1979* will be required to have:
  - An audit program, the extent of which will be dependent on the nature of the activity; and
  - A compliance report submitted at the completion of the activity or development.
8. Ensure decisions relating to the establishment of new leases, licences or agreements, or renewal of any existing leases, licences or agreements are consistent with the provisions of the plan of management, and consideration is given to all of the following:
  - The consistency of the activity with the protection of the natural and cultural values of the park;
  - The ability of the activity to demonstrate environmental performance against an environmental management system;
  - The ability of the activity to facilitate appropriate use and appreciation of the park by visitors;
  - The ability of the activity to be undertaken outside the park;
  - The potential implications of the activity on park operations;
  - The potential implications of the activity on local communities adjacent to the park;
  - The financial viability and return of the activity to the Service and the ability of the investment to be amortised by the lessee over the period of the lease/licence;
  - The implications of climate change projections on the activity;
  - The removability of all infrastructure associated with the activity; and
  - Public risk associated with the activity.
9. Ensure commercial charges for the use of the park are consistent with the economic value derived from that use.

## 12.2 Service Operations

### Background

At the time of writing, more than 120 Service staff are involved in the management of Kosciuszko National Park. These include rangers and field officers, and specialist staff involved in park planning, fire management, weed and pest animal control, visitor education, ecological research and resort management. Temporary staff are employed to fill a variety of roles including seasonal interpretation rangers, walking track construction teams, and to manage specific projects.

In addition to on-the-job training and practical courses aimed at assisting staff in undertaking their day-to-day duties, specialist training is provided across a range of topics including fire protection and suppression, law enforcement, search and rescue, first aid, education and interpretation, planning and administration.

Park operations are primarily conducted from the Service's regional offices located at Tumut (South West Slopes Region) and Jindabyne (Snowy Mountains Region), and subsidiary offices at Khancoban, Sawpit Creek and Perisher Valley. A range of infrastructure has been established to support Service operations, including:

- Field depots at Waste Point, Blowering, Khancoban, Yarrangobilly and Bombala;
- Staff accommodation located at Yarrangobilly Caves, Currango Homestead, Blowering, Waste Point, Thredbo Valley and Perisher Valley;
- Compound at Thredbo Ranger Station;
- Management trails (in excess of 1300 km) located throughout the park;
- Radio communication infrastructure located at Wambook, Perisher, Youngal, Mount Selwyn, Black

- Jack, Yarrangobilly Caves, Ginnini, Bugtown Hill, Big Talbingo Mountain and Ingebyra;
- Fire towers located on Mount Youngal, Mount Blackjack, Big Talbingo Mountain and at Ingebyra;
- Snow clearing depot at Friday Flat; and
- Park entry stations located on the Alpine Way and Kosciuszko Road and seasonally on the Cabramurra Road.

## Issues and Opportunities

Issues relating to Service operations include the need for:

- Consistency in operations and the provision of visitor infrastructure between the two regional offices administering the park;
- Adoption and implementation of sound environmental practices in all management activities;
- Adequate staff and resources to effectively manage the park; and
- Adequate training of staff to enable them to effectively, efficiently and safely undertake their duties.

### 12.2.1 Management Objective

*Service operations are undertaken in ways that minimise adverse impacts upon park values.*

#### **Policies and Actions**

1. Undertake all Service operations in accordance with the plan of management and within the context of regional operational plans.
2. Incorporate actions and priorities outlined in this plan into regional operational plans. Operational plans will:
  - Seek consistency in all operations across administrative areas of the park;
  - List actions to be undertaken based on the key management directions and priorities outlined in this plan; and
  - Detail annual tasks and maintenance schedules.
3. Prepare an environmental management system (EMS) in accordance with Section 12.1 for all Service operations in the park.
4. Maintain an Asset Register for the park that will include all Service infrastructure.
5. Document all Service infrastructure within the Service's geographic information system.
6. Ensure all staff and contractors are aware of individual and corporate environmental performance responsibilities and are trained or qualified to meet these responsibilities.
7. Require all Service operations that are of a substantial scale or impact (temporal or spatial), or that will be undertaken in a sensitive area, to have an environmental management plan (EMP) in place prior to the operation being conducted (Section 12.1). The EMP should include:
  - An assessment of the known and likely environmental impacts of the project or operation; and
  - Safeguards and management options necessary to minimise or avoid negative impacts in each phase of the project.

8. Require all contractors operating in the park on behalf of the Service to undertake their tasks within the context of an EMS or EMP for all major and minor projects consistent with NSW government policy.
9. Maintain field depots at Blowering, Waste Point, Bombala, Yarrangobilly and Khancoban.
10. Maintain staff accommodation at Waste Point, Perisher Valley, Blowering Depot, Yarrangobilly Caves and Currango Homestead.
11. Subject to cultural heritage assessment, remove staff accommodation that is no longer required and where there is no appropriate alternative use.
12. Maintain an effective radio communication system within the park.
13. Prohibit the installation of permanent radio communication infrastructure in the Wilderness Zone.
14. Wherever possible, limit the installation of permanent radio communication infrastructure in the Back Country Zone to the replacement or enhancement of existing facilities.
15. Co-locate any additional permanent radio communication infrastructure with existing facilities where possible.
16. Remove all temporary communication facilities upon completion of the particular operation for which they were installed.
17. Maintain a system of trails for fire management, pest species management and other essential park or emergency operations.
18. Limit the construction of additional management trails to the following situations:
  - Re-alignment of an existing route to a more environmentally acceptable or safer location, combined with rehabilitation of the original route;
  - Where the additional trail will provide protection of specific natural and cultural heritage values;
  - Where the additional trail is essential for fire management;
  - Where vehicle access is required as part of visitor facility developments prescribed in this plan or an approved master plan for the resort areas; and
  - Temporary trails in emergency situations such as wildfire control (Section 11.5).
19. Periodically review the operational values of all management trails and close and rehabilitate those trails no longer required for management purposes.
20. Minimise non-emergency use of oversnow vehicles for Service operations. Strictly manage this use to reduce any impacts to an absolute minimum.
21. Prohibit unauthorised use of oversnow vehicles. Confine the use of authorised oversnow vehicles in marginal snow conditions to areas of substantial or complete snow cover.
22. Permit the landing of aircraft for essential management, emergency operations and approved research purposes.
23. Fly Neighbourly Agreements (Section 8.17) will apply to all aircraft used in Service operations.
24. Permit the use of horses for particular management operations, such as introduced plant and animal control programs and search and rescue operations.
25. Collect park use fees and other charges where necessary according to government policy.
26. Investigate alternative mechanisms for park use fee collection with the aim of improving traffic flows during peak periods on the Kosciuszko Road and the Alpine Way, and enhancing first impressions of the park. Any alternative option will ensure existing levels of revenue are maintained or enhanced.
27. Advise lessees, licensees and local communities of any changes to fees expeditiously to allow adequate time for marketing and promotional material to be adjusted.

28. Inform visitors and local communities of programs and operations funded by park use fees as part of the annual report (Chapter 16).

## 12.3 Roads and Traffic Authority

### Background

The Roads and Traffic Authority (RTA) manages the Snowy Mountains Highway, Yarrangobilly Main Road 324, Kosciuszko Road, Alpine Way and the Link Road (between Smiggin Holes and Guthega Road). Of these, the Snowy Mountains Highway, Kosciuszko Road and the Alpine Way are excised from the park. The road reserves for these thoroughfares are generally, though not universally, 40 m wide.

A Memorandum of Understanding has been signed between the RTA and the Service concerning the management of Kosciuszko Road and the Alpine Way. The RTA's responsibilities include:

- Undertaking road work;
- Traffic management;
- Incident management;
- Road safety;

- Control of works by other parties; and
- Managing and maintaining nominated works that assist or monitor the stability of the roads.

The Service is responsible for undertaking certain works in connection with management within, and adjacent to, the road reserves, including:

- The management of the natural environment, especially native flora and fauna, threatened species and their habitats, and endangered ecological communities;
- The management of cultural heritage;
- Approving all work, activities, developments and other matters for which approval is required under the *National Parks and Wildlife Act 1974* and the *Threatened Species Conservation Act 1995*; and
- Managing leases adjoining the road reserves.

### Issues and Opportunities

Issues relating to the management of roads by the RTA include the need to:

- Manage the roads as important and safe tourist thoroughfares in which the visual amenity of the road corridors is a key consideration (i.e. management of roadside vegetation, sites of disturbance, signs and other infrastructure);
- Retain or enhance the desired characters of individual roads and road corridors;

- Reduce wildlife road kills;
- Ensure road reserves correspond with road alignments; and
- Manage transportation for visitors to and from the alpine resorts during peak periods in an integrated way that utilises public transport options and reduces the need to continually expand car parking and road capacities.

(Refer also to Sections 8.3 and 10.2.)

### 12.3.1 Management Objective

*Adverse impact from the operations of the RTA on the values of the park and users are minimised.*

#### **Policies and Actions**

1. Liaise with the Roads and Traffic Authority (RTA) concerning the management of the roads for which it is responsible. In particular, negotiate with the RTA concerning:
  - The retention or enhancement of the identified desired future character of the roads it manages;
  - Winter closures and snow clearing;
  - Weed control within road reserves;
  - The replacement of highway-standard distance and directional signs and those at bridges in the park bearing the names of rivers and creeks with Service-standard signs, and
  - Ways of reducing animal road kills and improving visitor safety, including:
    - The possible introduction of reduced road speed zones and/or motorist advisory signs;
    - Attempts to modify animal movements through the use of barriers, crossings or reflectors;
    - The installation of educational signs along sections of roads where repeated road kills occur; and
    - The production of other awareness-raising material for motorists and motor cyclists concerning road kills and road safety.

Include volunteer wildlife welfare groups in discussions concerning strategies to reduce road kills.
2. Re-survey those sections of the road reserve along the Snowy Mountains Highway that do not correspond with the actual alignment of the road. Formally gazette and de-gazette re-surveyed sections.
3. In order to improve the scenic quality of the major road corridors, negotiate with the RTA concerning the rationalisation of its depots. As part of this process, relocate the existing RTA depots at Kiandra Courthouse and Yarrangobilly Village (both along the Snowy Mountains Highway) to alternative sites that are not visible from the highway. Upon relocation, rehabilitate former depot sites. Any new sites must be consistent with other provisions of this plan.
4. Formalise an arrangement with the RTA concerning cost-sharing of weed control works.
5. Liaise with the RTA and the Department of Planning concerning the management of RTA roads and the development and implementation of the Integrated Access Strategy for the alpine resorts (Section 10.2).

## 12.4 Other Government Authorities

### Background

A range of public authorities across the three tiers of government (Commonwealth, State, local) have legislative and operational responsibilities within the park. While recognising and facilitating the legitimate roles and

responsibilities of these organisations, the Service seeks to ensure that their operations are conducted in accordance with the requirements of the *National Parks and Wildlife Act 1974*.

## Issues and Opportunities

Close liaison between the Service and the various other government agencies with responsibilities in the park provides opportunities for:

- Joint exercises and shared infrastructure (with attendant cost savings and reductions in impacts);
- The sharing of knowledge, expertise, training and resources;
- Developing shared objectives and strategies for managing various places and values within the park; and
- Informing personnel from other agencies of their environmental responsibilities when working within

### 12.4.1 Management Objective

*Regular liaison with government authorities assists with the protection of the values of the park.*

#### **Policies and Actions**

1. Participate in government forums for agencies operating in the region.
2. Continue to play an active role in regional and local planning and administrative committees.
3. Develop and maintain a register of licences and leases and government legislative powers and functions exercised in the park.
4. Continue to work in close cooperation with Bombala, Cooma-Monaro, Snowy River, Tumbarumba and Tumut Shire Councils.
5. Formalise an arrangement with Tumut Shire Council for the maintenance of the management trail beyond Jounama Creek camping area.
6. Liaise with all government authorities (Commonwealth, State, local) that have roles and responsibilities in the park to ensure that:
  - All legislative requirements are adhered to;
  - All relevant provision of this plan are adhered to, including the need to prepare environmental managements systems for operations in the park; and
  - Opportunities are pursued for joint exercises and the sharing of infrastructure, resources, personnel, knowledge, expertise and training programs.

In particular, consult with the;

- Australian Government Department of Environment and Heritage regarding the international and national strategies associated with the protection of the values of the park and implementation of the *Environment Protection and Biodiversity Conservation Act 1999*;
- Department of Planning in relation to strategic planning and development assessments within the alpine resorts and the administration of the *Water Management Act 2000*, the *Rivers and Foreshores Act 1948* and the *Soil Conservation Act 1938*;
- NSW Police on issues such as public safety, traffic management, law enforcement, and emergency operations including search and rescue;
- Department of Emergency Services for the preparation and implementation of Local Disaster Plans under the State Disaster Plan;
- Rural Fire Service, Local Bushfire Management Committees and NSW Fire Brigades;
- The Bombala, Cooma, Gundagai and Holbrook Rural Lands Protection Boards on matters relating to the control of noxious weeds and introduced animals;

- NSW Maritime Authority (and Snowy Hydro Limited) in relation to controls for boating safety and the use of water craft on reservoirs within and adjoining the park;
- NSW State Forests in managing adjoining state forests and the park in relation to fire, pest species and the provision of recreational facilities;
- NSW Fisheries in relation to the implementation of the *Fisheries Management Act 1994* in the park;
- Department of Tourism, Sport and Recreation and the Department of Regional and State Development regarding opportunities for the development of tourism in the region and the park;
- NSW Department of Health regarding public health and water quality standards and the implementation of the *Public Health Act 1991*;
- The Snowy Scientific Committee regarding allocations of environmental flows from the Snowy Scheme (Section 6.6);
- The Geographic Names Board in relation to any proposed name changes in the park;
- The Bureau of Meteorology concerning the management of weather stations in the park; and
- The Land and Property Information Division of the Department of Lands concerning the management of trigonometric stations in the park.

7. Permit the use of oversnow vehicles for emergency operations.

8. Permit the landing of aircraft for emergency purposes and uses authorised by the Service.

## 12.5 Snowy Hydro Limited

### Background

The operation of the Snowy Mountains Hydro-electric Scheme is addressed in the Snowy Park Lease between the Minister for the Environment and Snowy Hydro Limited. The Scheme comprises an integrated network of dams and tunnels, aqueducts and power stations that collect, divert, store and release water for generating hydro-electricity. In 2002, the scheme was corporatised and the assets and liabilities were transferred to Snowy Hydro Limited. The shareholders under the *Snowy Hydro Corporatisation Act 1997* are the governments of the Commonwealth of Australia, the state of New South Wales and the State Electricity Commission of Victoria.

The rights of Snowy Hydro Limited to occupy and operate within the park are guaranteed through the Kosciuszko National Park Occupation Package which includes the:

- *Snowy Hydro Corporatisation Act 1997*;
- Snowy Park Lease;
- Roads Maintenance Agreement;
- Schedule of Existing Developments; and
- Snowy Management Plan.

The *Snowy Hydro Corporatisation Act 1997* provides for a plan of management (Snowy Management Plan) to govern the activities of Snowy Hydro Limited within the park. The Snowy Management Plan is recognised as a plan of management under the *National Parks and Wildlife Act 1974*. The purposes of the plan include:

- Recognition of the existence and operation of the Scheme within the park;
- Establishment of the relationship between the Minister in his regulatory capacity and Snowy Hydro Limited as an entity that owns and operates the Scheme; and
- The setting out of a process for Snowy Hydro Limited to obtain all necessary approvals (if any) under the *National Parks and Wildlife Act 1974* and the *Environmental Planning and Assessment Act 1979* for new activities (as defined in the Snowy Management Plan), subject to the requirements of those Acts and any other law.

The Snowy Management Plan imposes specific obligations on Snowy Hydro Limited, including the



development of an environmental management plan to be approved by the Department of Environment and Conservation.

This plan of management and the Snowy Management Plan are related documents, with the Snowy Management Plan dealing exclusively with the existence and operation

of the Snowy Mountains Hydro-electric Scheme in the park.

In 2004 Snowy Hydro Limited commenced a six year trial to evaluate the effectiveness of cloud seeding over part of the park as authorised by the *Snowy Mountains Cloud Seeding Trial Act 2004*.

## Issues and Opportunities

Close cooperation between Snowy Hydro Limited and the Service is necessary in order to achieve:

- Integrated management of the Scheme and the park, particularly in relation to weed and feral animal control, fire management, and the provision of visitor facilities and interpretation;
- The best ecological outcomes for the park from improved environmental river flows; and
- Improved visual amenity through the undergrounding, removal, rerouting or screening of installations, and the rehabilitation of disturbed sites.

### 12.5.1 Management Objective

*Snowy Hydro Limited operations are undertaken in ways that minimise adverse impacts on the values of the park and other users.*

#### **Policies and Actions**

1. All Snowy Hydro Limited operations will be consistent with the objectives, policies and actions contained in this plan. This plan includes the Snowy Management Plan as set out in Schedule 1 of the Snowy Management Plan Procedures Agreement dated 30 June 2002.
2. The development and implementation of a Snowy Environmental Management Plan for areas occupied by Snowy Hydro Limited will be in accordance with the objectives outlined in the Snowy Management Plan Procedures Agreement. (The Environmental Management Plan will fulfill the company's obligation under this plan to prepare an environmental management system.)
3. Any proposed amendments to the Snowy Management Plan or related documents will be consistent with this plan.
4. Permit the use of oversnow vehicles for essential management operations.
5. Permit the landing of aircraft for approved management purposes.

## 12.6 Electricity Transmission Authorities and Telecommunication Carriers

### Background

High voltage power lines, that transmit electricity produced by the Snowy Mountains Hydro-electric Scheme to Victoria and NSW, traverse Kosciuszko National Park. Other electricity lines supply power to various facilities and services mostly located in the Visitor Services Zone. All of these overhead lines are maintained by purpose-built vehicular trails.

Telecommunication facilities such as optical fibre cables, overhead lines, public and private telephones and mobile phone towers are sited within the park, primarily to service the alpine resorts, Cabramurra and communities neighbouring the park. Many of these facilities are also serviced by purpose-built vehicular trails.

### Issues and Opportunities

The types and levels of telecommunication services that should be available in the park is open to debate. While the construction and maintenance of telecommunication facilities assist in the provision of emergency services, visitor safety and the operations of the Service, lessees and licensees, they may also detract from some park values. Issues include:

- The visual impact of existing and proposed infrastructure;
- The loss of wilderness quality; and

- Disturbance to vegetation and soils due to site development and access.

Opportunities exist to reduce these impacts through strategies such as:

- Co-locating facilities at shared sites and rehabilitating redundant sites and access roads;
- Better managing access arrangements for maintenance; and
- Rationalisation, re-routing and undergrounding of overhead lines.

#### 12.6.1 Management Objective

*Telecommunication and electricity infrastructure are managed in ways that minimise adverse impacts on the values of the park and other users.*

#### Policies and Actions

1. Seek easement licences with owners of utility infrastructure that set prescriptions for operations and maintenance.
2. Require all utility providers operating in the park to have an accredited environmental management system and/or project-related environmental management plan.
3. All inspections and routine maintenance of TransGrid infrastructure are to be undertaken in accordance with the Memorandum of Understanding between TransGrid and the Service.
4. Together with the relevant owners and operators, undertake a review of all existing overhead lines in the park and determine future management actions to reduce the impacts associated with these lines. Wherever possible, the Service will seek agreement on:
  - The rationalising, undergrounding or rerouting of high impact lines or sections of lines; and

- The removal of all redundant infrastructure and the rehabilitation of disturbed easements and roads no longer required.
5. Together with the relevant owners and operators, undertake a review of all existing telecommunication towers and associated infrastructure in the park and determine future management actions to reduce the impacts associated with these facilities. Wherever possible, the Service will seek agreement on:
    - The co-location of facilities at shared sites; and
    - The removal of all redundant infrastructure and the rehabilitation of disturbed sites and access roads no longer required.
  6. Require all additional telecommunication and transmission lines to be located underground.
  7. Prohibit additional telecommunication structures and related access in the Wilderness and Back Country Zones with the exception of installations that are to be co-located with existing fire towers or telecommunication infrastructure.
  8. Restrict additional telecommunication structures and related access to those that service adjacent rural communities and the alpine resorts and those required for the management of the park and the Snowy Mountains Hydro-electric Scheme where there are no feasible alternative sites outside the park or alternative technology available to meet the telecommunication need. These may only be permitted in the following zones:
    - Visitor Services Zone; and
    - Major Road Corridors.
  9. Ensure additional telecommunication infrastructure and related access meets the visual quality and other requirements outlined in Section 11.6.
  10. Require telecommunication and electricity infrastructure providers to remove infrastructure that is no longer required. Where the removal of infrastructure would be unsafe or create unacceptable environmental impact, action will be taken to reduce the visual intrusiveness of redundant facilities.

## 12.7 Training Exercises

### Background

From time to time the Service receives requests from organisations to undertake training exercises in the park. Such organisations include the Defence Forces, NSW Police, fire brigades and other emergency service

authorities. The exercises undertaken typically consist of navigation, search and rescue, first aid and bush skills training.

### Issues and Opportunities

Issues relating to training exercises in the park include potential environmental impacts associated with such activities and effects on other park users. In particular, large groups on training exercises may dominate the use of popular visitor destinations, such as huts. The use of oversnow vehicles during training exercises may impact upon the recreational experiences of other people.

Opportunities exist for Service staff to undertake joint training exercises with personnel from other organisations as a means of exchanging skills and knowledge and fostering coordinated responses to emergency situations in the park.

### **12.7.1 Management Objective**

*Training exercises are undertaken in ways that minimise impacts on the values of the park and other users.*

#### **Policies and Actions**

1. Require organisations seeking permission to undertake training exercises in the park to prepare a risk and impact assessment for such activities. Such plans are required to be approved by the Service prior to the conduct of any training activity.
2. Training exercises may only be approved if they are consistent with the provisions of this plan of management and adhere to all relevant minimal impact codes of conduct. Applications to undertake training activities will be considered on a case-by-case basis following consideration of risk and impact assessments.
3. Approvals to undertake training exercises may be cancelled at any time due to operational, climatic or other environmental considerations.
4. Training exercises will not be permitted in areas of ecological or cultural sensitivity including but not limited to:
  - Critical areas of threatened species habitat;
  - Vegetation communities that are restricted in distribution, especially vulnerable to disturbance, or likely to come under increasing stress due to climate change (unless snow-covered);
  - Sites that are vulnerable to disturbance (e.g. streambanks, areas of exposed soils);
  - Places that contain culturally-sensitive Aboriginal sites or values; and
  - Cultural heritage features that are vulnerable to disturbance.
5. Strictly manage the use of oversnow vehicles to reduce any impacts on the recreational experiences of visitors to an absolute minimum.
6. Liaise with relevant organisations to promote the undertaking of joint training exercises that facilitate the exchange of skills and knowledge.
7. Minimise exclusive use of any area in the park for Defence Force training.
8. Minimise the impact of movement of vehicles involved in defence training on roads and tracks open to the public.

## **12.8 Memorials and Plaques**

### **Background**

The Service occasionally receives requests from individuals and organisations to erect plaques or other memorials within the park. These may be to honour the

memory or achievements of people associated with the area or those who have died by misadventure in the park.

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## Issues and Opportunities

Plaques or other memorials may enrich the experiences of visitors by informing them of important people or events associated with places in the park. Conversely, a plethora of plaques at popular visitor destinations may detract from

the visual appeal of an otherwise natural setting. This may also be the case in wilderness areas where people are typically seeking recreational experiences in places where human-created features are largely absent.

### 12.8 Management Objective

*The placement of plaques and other memorials is limited and adds to, rather than detracts from, the values of the park.*

#### Policies and Actions

1. Only persons, places and events of national, state or Service significance may be commemorated by a plaque or memorial in the park.
2. The placement of plaques is to be consistent with the following zoning requirements:
  - Wilderness Zone –interiors of huts only;
  - Back Country Zone, Minor Road Corridors, Major Road Corridors – interiors of buildings only; and
  - Visitor Services Zone – interiors and exteriors of buildings only, or within approved areas of the alpine resort management units.
3. Where plaques are attached to the walls of huts they should be removable without damaging the fabric.
4. As an alternative to plaques, encourage memorial services on site, the establishment of bequests or sponsorships, or other forms of recognition.





## CHAPTER 13 Communication and Cooperation

*...through interpretation, understanding; through understanding, appreciation; through appreciation, protection.*

*Freeman Tilden 1957*

### 13.1 Communication

#### Background

Communication about the park in all its forms - interpretation, education, public relations, and promotion can facilitate public appreciation and understanding of the park's values. It can also assist in engendering support for the ongoing protection of these values and promoting the broader concepts of environmental sustainability and stewardship.

The park forms a dominant part of the regional landscape, geographically, socially and economically. Many businesses and communities rely upon the demands generated by park visitors, who are important sources of local income and employment. The provision of high-quality visitor information and interpretation both on and off-park can enhance the experiences of visitors, and the role of the park as a key drawcard.

The Service uses a variety of methods to convey messages to different audiences and actively engage the public in park management. Visitor information and interpretation facilities are provided at visitor centres in Jindabyne, Khancoban, Tumut and Yarrangobilly Caves.

Information is also provided at Perisher Valley and at the vehicle entry stations on the Alpine Way, Kosciuszko Road and the Link Road near Kiandra (winter only). Interpretive displays are located across the park at popular day-use and camping areas, trackheads and other key visitor destinations. Visitor information is also conveyed through the use of directional and public safety signs, publications, the Service's website, and recorded phone messages with up-to-date road and weather conditions.

The Service also provides face-to-face educational opportunities for visitors. On-park education programs are conducted at the Kosciuszko Education Centre at Sawpit Creek and Yarrangobilly Caves, while a seasonal interpretation program of guided walks, talks and other activities is provided at various places in the park.

Visitor information programs and services supplied by the Service are complemented by those offered by lessees, licensees, Snowy Hydro Limited and the broader regional tourism industry.

#### Issues and Opportunities

The key issues and opportunities relating to communication include the need for:

- Coordination of communication programs across the park between the Service, its lessees, licensees and relevant tourism authorities;
- Assessments of the effectiveness of communication programs;
- Greater recognition of people's different information and education needs, and the need to distinguish between first-time visitors, regular visitors, local community residents and park neighbours;
- Consistency in the standard, appearance and quality of visitor interpretation, education and information facilities and services. (There is an opportunity to develop a uniform or "signature" appearance for all park communication material);
- Communication programs that focus on achieving an enduring awareness and commitment by individuals to minimal impact recreation and environmental stewardship;

- Improvements in the scope, quality and availability of communication programs, particularly those located along major road corridors, at popular visitor destinations and at key trackheads and visitor centres; and
- Expansion of face-to-face interpretation programs and the presentation of stories and experiences by people with traditional and historical links to the park.

### **13.1.1 Management Objective**

*Engender appreciation, enjoyment and understanding of the park's values and support for their ongoing protection.*

#### **Policies and Actions**

1. Prepare and implement a parkwide Communication Plan. The primary aim of the plan is to ensure that all park communication activities, facilities and material are coordinated across the park, are of consistent quality, and effectively communicate with park visitors, lessees, regional communities and other stakeholders. The plan will focus on the development of partnerships with relevant community groups, stakeholders, lessees and tourism authorities to deliver on and off-park communication programs.
2. The Communication Plan will include the following:
  - Objectives for park communication activities, facilities and material;
  - An inventory and assessment of the currency, scope, adequacy, consistency and effectiveness of existing Service publications, interpretive displays, signs (directional, orientation, interpretive) and education and public relations programs;
  - An analysis of the profile, diversity and needs of target audiences to inform the development of future communication programs;
  - Strategies for improving existing services and programs consistent with the provisions of this plan;
  - Strategies for the development of new information, interpretation, education and public relations products and programs, both on and off-park. These strategies will be based on the key themes and values of the park as outlined in this plan, including the role of the park as a biosphere reserve and an Australian Alps national park. Strategies will be directed at the following:
    - Meeting the pre-visit, visit and post-visit needs of visitors, including families, special interest groups and visitors with specific needs;
    - Providing orientation and general park information in the park and at regional centres;
    - Promoting park values in new and innovative ways e.g. theatre, music, arts, community celebrations and other forms of cultural expression;
    - Pursuing opportunities for undertaking education programs and public relations programs in the community; and
    - Promoting minimal impact recreation and environmental stewardship.
  - Opportunities for enhancing existing and developing new visitor information facilities and interpretive displays in the alpine resort management units;
  - The development of formal systems for cataloguing and storing materials used in communication programs and publications (e.g. photos, slides, brochures, artwork and maps);
  - Design guidelines for a signature appearance for all publications, interpretive displays and signs to ensure that a clear, consistent and recognisable style is used for all communication material;
  - Evaluation mechanisms to assess the effectiveness of communication programs and activities contained within the Communication Plan; and



- Strategies for improving staff training and induction to ensure staff:
    - Understand their communication roles and associated protocols;
    - Have adequate knowledge about the park and visitor information services;
    - Maintain and enhance their communication skills; and
    - Have knowledge of, and utilise, new communication techniques and technologies.
3. Ensure that the types and standards of interpretive displays provided at any particular place comply with the zoning standards described in Schedule 6.
  4. Work in partnership with all park lessees and licensees to coordinate the provision of communication programs and services across the park. Where appropriate, develop joint interpretation and education programs, services and facilities.
  5. Manage commercial filming and photography in the park in accordance with statewide Service policies.

## 13.2 Community Cooperation and Involvement

### Background

The Service works cooperatively with a broad range of stakeholders to improve the management of the park and adjoining lands. Formal and informal management arrangements exist between the Service and park neighbours, residents, lessees, licensees, community-based groups, local families and individuals, user and

interest groups and voluntary organisations. These arrangements cover matters such as fire protection and suppression, weed and feral animal control and the maintenance of infrastructure such as huts, walking tracks and vehicular trails.

### Issues and Opportunities

Opportunities exist to strengthen and expand community cooperation and involvement in park management activities. The benefits of public involvement extend well beyond better conservation outcomes. Potentially they include the breaking down of suspicions and misconceptions as people's concerns are acknowledged

and acted upon. Benefits may also include the fostering of pride in the park and custodial attitudes towards protecting it, a community sense of ownership of park management decisions, and an awareness of the magnitude and complexity of the task of managing the park.

### **13.2.1 Management Objective**

**Encourage community cooperation and involvement in the management of the park.**

#### **Policies and Actions**

1. Develop and maintain a database of park stakeholders that includes all neighbours, residents, lessees, licensees, relevant community groups, families and individuals, user and interest groups and voluntary organisations.
2. Produce a regular newsletter for park stakeholders.
3. Develop cooperative arrangements with park neighbours, residents and lessees concerning matters such as fire management and weed and feral animal control (Chapter 11). These arrangements may include:
  - Joint management operations across tenure and lease boundaries; and
  - Sharing of relevant knowledge, expertise and equipment.
4. Work with appropriate Aboriginal people on programs to facilitate their involvement in park management (Chapter 7).
5. Involve relevant communities, groups, families and individuals in the management of heritage places and structures that are of significance to them (Chapter 7).
6. Work in partnership with user and interest groups to better manage their recreational pursuits. In particular, involve such groups in:
  - Developing, reviewing and publicising codes of conduct that promote minimal impact behaviour;
  - Volunteer programs directed at managing or maintaining the infrastructure used by participants in their particular recreational activity; and
  - Planning and monitoring programs relevant to their activity.
7. Encourage the formation of a “Friends of Kosciuszko” group to serve as an umbrella organisation that coordinates the work of individual volunteers and voluntary groups in the park.
8. Prepare a schedule of prioritised projects for which voluntary assistance will be sought.
9. Explore the feasibility and desirability of using appropriately trained volunteer visitor liaison officers.
10. Support partnerships with wildlife care groups such as Looking After Our Kosciuszko Orphans (LAOKO) and Wildlife Information and Rescue Service (WIRES).
11. Support the involvement of the Kosciuszko Huts Association and other groups in managing the cultural heritage of the park (Chapter 7).
12. Recognise and promote community involvement and the work of volunteers through, for example, special acknowledgement events, awards and media publicity.

## CHAPTER 14 Boundaries and Adjacent Areas

*Nature conservation in NSW will not be achieved through the reserve system alone. It depends on sympathetic actions by the community in regard to the management of private and leasehold lands...*

*National Parks and Wildlife Service 1998*



### 14.1 Introduction

The boundaries of the national park do not incorporate all areas of high conservation value. Nor do they guarantee the protection of many of the values of the park itself, such as the future of animal species with large home ranges, the integrity of viewfields from popular vantage points or wilderness quality. Some of these issues are especially significant along those sections of the park boundary that are highly indented.

The management of areas adjoining the park is also critical in maximising the conservation roles of the reserve within the context of the greater landscape. The park forms an

important link in the chain of protected areas that exist in the Australian Alps bioregion. It also forms part of a north-south corridor of natural or near-natural areas that extends along the length of the Great Dividing Range and is a key segment of a number of secondary corridors that extend out to the east and west. These areas that are joined by a cover of native vegetation, incorporate a mosaic of differing land tenures and property scales and serve a range of existing and potential conservation functions.

### 14.2 Adjacent Areas

#### Background

The park is surrounded by a mix of freehold and Crown lands. The privately-owned and leased land is principally used for the grazing of livestock or tourism-related enterprises such as visitor accommodation. The majority of Crown land to the north and north-west is gazetted state forest primarily utilised for timber production. To the south and north-east the park adjoins other protected areas in Victoria, New South Wales and the Australian

Capital Territory. Impoundments of the Snowy Mountains Hydro-electric Scheme abut the park to the east and west.

Irrespective of land tenure, many areas adjacent or close to the park retain significant areas of native vegetation and have important natural, cultural or recreational values in their own right. The management of these places and the park is closely linked.

#### Issues and Opportunities

As far as possible, areas adjacent or close to the park should be managed in ways that are sympathetic to the management objectives for the park. Inappropriate management of such places has the potential to:

- Reduce the biodiversity values and conservation role of the park;
- Reduce the visual quality of viewfields available from vantage points in the park;
- Impair the character of park approaches and gateways;
- Reduce wilderness quality; and
- Create boundary conflicts, such as the straying of livestock into the park.

A number of opportunities exist to protect and enhance the conservation values of the park and adjacent areas. These include:

- Informing neighbours of the natural and cultural values of their land and the possible implications of their management decisions on the values of the park;
- Developing informal cooperative management arrangements with owners and managers of neighbouring lands;
- Using statewide, regional and local environmental planning instruments to prescribe sympathetic management regimes;
- Encouraging the adoption of voluntary conservation mechanisms by neighbours; and
- Purchasing lands for inclusion in the park.

### **14.2.1 Management Objective**

*As far as possible the management of adjacent areas is undertaken in ways that are sympathetic to the management objectives for the park and enhance its conservation roles.*

#### **Policies and Actions**

1. Promote the recognition and protection of natural and cultural values on land adjoining and close to the park irrespective of land tenure and use.
2. Liaise with all relevant local, regional and state authorities and all neighbours concerning:
  - The adoption, as far as possible, of complementary management provisions on lands adjoining or near the park; and
  - The protection and enhancement of native vegetation corridors and refuges that are linked or close to the park.
3. Consult with local communities and shire councils concerning the possible expansion of the current biosphere reserve listing for the park to incorporate adjacent areas. Promote the use of the biosphere reserve concept as a possible means of:
  - Establishing zones of community cooperation to achieve landscape-wide conservation outcomes across various land tenures; and
  - Strengthening social and economic linkages between the park and local communities.
4. Cooperate with any initiatives for an expanded biosphere reserve listing if there is general community support for the proposal.
5. Liaise with appropriate authorities to ensure that state environmental planning policies, regional environmental plans and local environmental planning instruments encourage the sympathetic management of areas adjoining the park.
6. Liaise with local councils, the Department of Planning and the Roads and Traffic Authority concerning the management of key gateways or approaches to the park including the Kosciuszko Road, Alpine Way, Snowy Mountains Highway, Khancoban-Cabramurra Road and Elliott Way. Promote the management of these park approaches and their visual catchments so as to retain the existing native vegetation, rural character and scenic quality of these places.
7. Work with the Australian Alps park agencies to ensure complementary reserve management across park boundaries.
8. Encourage the owners and managers of land adjoining the park to adopt voluntary conservation mechanisms for their properties such as:

- Voluntary conservation agreements;
  - Wildlife refuge status; or
  - Land for wildlife agreements.
9. Manage the construction, maintenance, and replacement of boundary fencing in accordance with statewide Servicepolicy.

## 14.3 Inholdings

### Background

Inholdings are parcels of freehold land completely or partially surrounded by the park. Within Kosciuszko National Park there are two clusters of inholdings. In the far north of the park a small number of freehold blocks are located in the Goobarragandra River valley, while in the south several parcels of private land remain in the Byadbo area and some of these blocks are regularly or occasionally used for the grazing of livestock.

Access through the park may be required to gain entry to and egress from these private enclaves for a variety of purposes. Most of the blocks are accessible by roads that are open to the general public, though under section 153B of the *National Parks and Wildlife Act 1974* the Minister may grant an easement, right-of-way or licence through the park for the purpose of providing vehicular access to inholdings.

### Issues and Opportunitites

The management goals, priorities and practices associated with inholdings may be incompatible with those of the surrounding national park. Potential management conflicts relate to:

- The straying of livestock into the park;
- Weed and feral animal control regimes;
- Fire management; and
- Access (Public vehicular access through the park

along the Goobarragandra Powerline Road is blocked where it passes through a private inholding).

Over the years, a large number of inholdings have been purchased and added to the park, significantly reducing localised management conflicts. Opportunities may occur in the future to purchase the remaining inholdings if and when they are placed on the market, or to reach conservation agreements with the owners.

#### 14.3.1 Management Objective

*The management of inholdings is undertaken in ways that minimise adverse impacts upon the values of the park.*

#### Policies and Actions

1. Pursue cooperative management arrangements with the owners and managers of inholdings in relation to weed and feral animal control programs, fire protection and suppression operations, access and boundary-related issues.

2. Encourage the owners of inholdings to enter into conservation agreements that protect the natural and cultural values of their land and those of the surrounding park.
3. Manage access to inholdings in accordance with statewide Service policy.
4. Seek to purchase the remaining inholdings if and when they are placed on the market and incorporate them into the national park.

## CHAPTER 15 Research

*Exhausted from long hours of tedious plant recordings, sunburnt and wind blown, scratched and bleeding from hours of pushing through Bossiaea shrublands, soaked to the skin by thunderstorms, chilled to the bone by strong winds but all forgotten in the pursuit of ecological understanding, made enjoyable by the aesthetic and inspirational motivation that only high mountains can engender.*

Roger Good 1994



### Background

Research provides the key to enhancing our knowledge and understanding of the diverse values of Kosciuszko National Park. It is an essential tool for identifying the processes that effect these values, documenting changes in the condition of these values over time, and informing management decision-making.

Kosciuszko National Park has held an enduring fascination for researchers, and is arguably one of the most intensively studied parks in New South Wales. Research in the Australian Alps commenced shortly after initial European exploration of the region, with detailed geological and botanical studies undertaken by von Mueller, Lhostsky, Clarke, Helms, Maiden, Andrews and others in the mid to late 1800s. Around this time, the collection of ethnographic information by pioneers such as Robinson and Howitt was also occurring in the region.

Relatively little research was undertaken between the turn of the century and the 1940s, although notable exceptions included Byles' report on forested lands and Brown's

work on the geology and geomorphology of the region. By the 1940s, concerns over the impacts of grazing prompted new research initiatives, with significant studies undertaken by Costin and the Soil Conservation Service. This work was the catalyst for a new period of research into alpine ecosystems.

In recent times, threatened species have attracted a substantial research effort in the park, with a particular emphasis on endemic alpine-dependent species. Fire ecology and climate change research have also been undertaken as have studies of geomorphical processes in the alpine and karst areas. Recent work by the Australian Alps park agencies has produced a Scientific Sites Database for the park, and identified opportunities for long-term research and monitoring. Research has also been conducted on cultural heritage places and values within the park, and more recently on tourism, recreation, and the economic benefits of the park for regional communities.

### Issues and Opportunities

A key challenge for the Service is the need to improve its knowledge on the values of the park, and ensure that research, together with systematic monitoring and evaluation, guides the development of appropriate management responses to shifting pressures on the park's values.

The Service has an opportunity to enhance research efforts within the park by:

- Developing a structured program of research on the park's values that builds upon the rich legacy of

information that already exists;

- Undertaking or encouraging research that contributes to more effective management practices and approaches;
- Recognising and incorporating the knowledge and expertise of local communities in research initiatives;
- Undertaking collaborative research projects with relevant research institutions and organisations;
- Improving the communication of natural and cultural research information to staff and relevant stakeholders, thereby ensuring that new information is

- incorporated into management approaches and practices; and
- Improving parkwide reference collections.

An opportunity exists to develop a national leadership role for the park in the conduct of alpine research.

### **15.1.1 Management Objective**

*Research contributes to the effective and strategic management of the values of the park.*

#### **Policies and Actions**

1. Implement the Register of Required Research (Schedule 10) and report on progress as part of the annual report (Chapter 16).
2. Identify research priorities for a five-year period, based on the Register of Required Research, taking into account research priorities identified in the Service's Corporate Research Framework and associated research plans and priorities developed for the Australian Alps agencies.
3. Review the content of the Register of Required Research and research priorities every five years as part of the review process for the plan of management.
4. Focus cultural heritage research in the park on:
  - Topics identified in the Register of Required Research;
  - Priority themes identified in the Service's Cultural Heritage Research Plan; and
  - Research themes identified in cultural heritage studies commissioned by the Australian Alps agencies as appropriate.
5. Focus natural heritage research on:
  - Topics identified in the Register of Required Research;
  - Priority themes identified in the Service's Natural Heritage Research Plan; and
  - Long-term research as recommended in the Australian Alps agencies' Research and Monitoring in the Australian Alps paper (1998).
6. Focus social, economic, visitor and recreational research on:
  - Topics identified in the Register of Required Research;
  - Priority themes identified through relevant Service research frameworks, in line with the Service's Corporate Research Guidelines;
  - Research priorities identified in any relevant studies commissioned by the Australian Alps agencies; and
  - Research focused on quantifying the economic impacts and values of Kosciuszko National Park to the regional and state economies.
7. Prepare a prospectus and actively promote and encourage the involvement of research institutions and individuals in identified research areas as outlined in the Register of Required Research.
8. Actively pursue opportunities for collaborative research between the Service, other organisations, cooperative research centres and the Australian Institute of Alpine Studies. Ensure that all collaborative projects are conducted in accordance with the Service's Corporate Research Framework and other relevant policies.
9. Contribute to research projects initiated through the Australian Alps agencies where these are consistent with the research aims identified for the park.
10. Encourage, and where possible, provide in-kind support for postgraduate research.



11. Support research in the park which aims to:
  - Increase knowledge of the park's values and their conservation significance;
  - Improve knowledge about natural and human-induced processes and threats;
  - Understand the nature and rate of any change in condition of park values;
  - Improve knowledge about visitor characteristics, needs, experiences, visitation patterns and visitor impacts;
  - Develop a better understanding of the recreational, social and economic benefits of the park to local communities and the broader public; and
  - Improve management practices for natural and cultural resource conservation, including the development of better techniques for identification, protection, restoration and rehabilitation.
12. Ensure all research, survey and monitoring projects are planned, reviewed, approved and implemented in accordance with the Service's Corporate Research Framework and associated research plans, including the Cultural Heritage Research Plan and the Natural Heritage Research Plan.
13. Permit research that impacts upon the park's values only where it will make a significant contribution to addressing timely and specific research questions; where it cannot be undertaken outside the park; and subject to an environmental assessment.
14. Apply appropriate conditions to all licences and approvals granted for research, survey and monitoring projects within the park to ensure that the conduct of research activities does not adversely impact on park values, park visitors or general public safety.
15. Require researchers to gain approval from the Service for the use of fixed-wing aircraft, helicopters and oversnow vehicles or access to restricted areas or management trails associated for research, monitoring or survey work.
16. Ensure that the community is appropriately involved in all cultural heritage research projects.
17. Encourage all prospective researchers to consider opportunities for active community involvement in research, monitoring and survey programs.
18. Maintain a capacity to support or implement technical and/or field-based aspects of approved research projects through the provision of appropriate equipment, personnel or facilities. This will include the ongoing provision of facilities at the Waste Point Research Centre, and maintenance of the park herbarium.
19. Ensure that the results of research conducted within or relevant to the park inform the reviews of the plan of management (Chapter 16).
20. Maintain active research links with appropriate research organisations, universities, cooperative research centres and other government agencies to remain abreast of current research initiatives and results.
21. Institute a program of training courses in field research techniques for field-based staff to actively encourage their participation in research programs in the park and facilitate skills and knowledge transfer.
22. Ensure that key research findings and the results of ongoing research programs in the park are conveyed to staff and the community on a regular basis, and that these results inform park management activities. Opportunities for this may include:
  - Seminars or workshops to convey research results to Service staff and other key stakeholders and discuss their application to current management approaches;
  - Production of an annual or biennial research report summarising current research in the park and/or the Australian Alps;
  - Contributions to publications and refereed journals; and
  - Use of the park's website and intranet.
23. Ensure that the results of ongoing research are conveyed to park visitors and the wider community on a regular basis through interpretation and education programs and products, consistent with the Communication Plan (Chapter 13).

24. Inform park visitors about important research projects which may be visible to visitors within the park through on or off-site interpretation.
25. Investigate and pursue options for establishing a national leadership role for the park in the conduct of alpine research.

### **15.1.2 Management Objective**

***Information about research, surveys and monitoring programs is current, accessible and effectively managed.***

#### ***Policies and Actions***

1. Develop and maintain the Kosciuszko Research, Survey and Planning Database - a parkwide electronic system for storing and managing information regarding research, surveys and monitoring programs relating to the park and environs. This will:
  - Build upon the *Research and Survey Database* for Southern Branch,
  - Be linked to, or incorporate the Australian Alps Scientific Sites Database which contains information on long-term monitoring sites within the park;
  - Be linked, where appropriate, to the Service's Scientific Licence Database and relevant geographic information systems data (e.g. spatial information on survey locations and monitoring sites);
  - Be readily accessible to all Service staff and, through suitable arrangements, relevant stakeholders and members of the public; and
  - Contain key information on:
    - All research, studies, surveys, monitoring programs and environmental impact assessments (past and present);
    - Relevant research or monitoring conducted by other organisations; and
    - The completion dates of research and removal of redundant research equipment.
3. Regularly update and maintain the Kosciuszko Reference Library.
4. Store, catalogue and maintain hard-copies of all relevant publications, environmental impact assessments, research and survey reports, and monitoring data in the Kosciuszko Reference Library, and link this to the Kosciuszko Research, Survey and Planning Database.
5. Require all lessees, licensees and other organisations operating within the park to provide information captured by environmental management systems or any other relevant research or monitoring programs to the Service, and incorporate this into the Kosciuszko Research, Survey and Planning Database. This may be achieved through cooperative data sharing arrangements.
6. Ensure that all relevant data produced from research, surveys and monitoring programs is used to update the Service's data information systems, including the Wildlife Atlas, Aboriginal Information Heritage Management System, and Historic Heritage Information Management System.

## CHAPTER 16 Monitoring, Evaluation and Reporting



*There's no worse job than doing transect after transect, hour after hour, day after day...with a million march flies attacking you.*

*Alec Costin 1994*

### Background

Monitoring and evaluation are recognised as essential components of park management. While research provides specific information on the park's values, monitoring is aimed at capturing baseline data, typically on the condition of these values, and charting the nature and rate of change in condition over time. When collected and analysed in a systematic way, this information can provide the basis for evaluating the effectiveness of management policies and actions in achieving stated objectives. Adjusting and refining park policies and actions on the basis of monitoring results and the outcomes of performance evaluation produces an adaptive or responsive approach to management.

Existing monitoring programs in the park are primarily directed at detecting changes in alpine and subalpine vegetation communities, populations of certain threatened animals and feral species, vegetation responses to fire, and water quality.

Reporting on the results of monitoring in the park is currently limited to that required to satisfy statewide commitments such as the State of the Environment, State of the Parks and Ecologically Sustainable Forest Management reporting.

### Issues and Opportunities

There is currently no way of knowing whether the condition of most of the diverse range of values attributed to the park is being maintained, enhanced or degraded by existing management practices. For the majority of values, management is based upon anecdotal rather than objective evidence.

The significance of many of the attributes of the park, and the increasing and often changing pressures upon them, highlight the need to establish a suite of representative indicators to track changes in the condition of various natural, cultural, recreational, social and economic values. As the condition of every value or place within the park cannot be measured, the selection of indicators needs to

be based upon priority issues and an understanding of significance, sustaining processes and key threats. The results of such monitoring need to be directly linked to evaluations that gauge the degree to which existing management regimes are protecting park values which in turn should guide the changes, if any, required in management.

A reporting framework that regularly informs the community on the condition and trends in condition of the values of the park is an important means of ensuring that the Service is publicly accountable for how it manages the park.

### **16.1.1 Management Objective**

*Monitoring and reporting against performance indicators provides information on the trend in condition of the park's values.*

#### **Policies and Actions**

1. Undertake monitoring programs as prescribed throughout this plan.
  2. Identify key performance indicators for the park. These indicators will provide the basis for monitoring, evaluation and review of the plan, and will be selected based on their ability to:
    - Measure the condition of the values of the park and the processes that maintain them;
    - Inform progress on the implementation of this plan; and
    - Build on existing monitoring and evaluation frameworks.
- Independent scientific advice will be sought in determining key performance indicators.
3. Establish and maintain a regular monitoring and data collection program to provide information on key performance indicators.
  4. Wherever appropriate, utilise existing monitoring sites established in the park.
  5. Develop monitoring partnerships and establish reciprocal data sharing agreements with lessees and other relevant organisations to obtain information that is consistent with the key performance indicators.
  6. Develop and maintain a database for key performance indicators which will:
    - Store all historical information relating to the key performance indicators;
    - Store baseline data for each indicator; and
    - Enable easy access to information for preparation of annual reports and five-yearly assessments and reviews.
  7. Establish and maintain a coordinated reporting structure for all environmental management systems and environmental management plans (Section 12.1) that can contribute information relevant to the key performance indicators.
  8. Utilise existing, and investigate the establishment of further, benchmarking areas or sites that can be used to monitor long-term environmental change within the region. Consideration should be given to establishing areas across a range of representative ecosystems within the park.
  9. Prepare an annual report that charts the trend in condition of the park's values and progress of plan implementation. The annual report will be publicly available and address:
    - Monitoring results for each performance indicator;
    - Management actions in progress or completed;
    - Research conducted in the park during the reporting period;
    - Relevant environmental management system and environmental management plan information and results;
    - Major planning processes, activities or developments in the park; and
    - Any other relevant information.

### **16.1.2 Management Objective**

*The effectiveness of management policies and actions in protecting the park's values is regularly evaluated, reviewed and reported on, and management is adjusted accordingly.*

#### **Policies and Actions**

1. Introduce an integrated evaluation system that measures management progress in achieving the key desired outcomes for the park as listed in Section 4.3. This evaluation system will include assessments of:
  - Condition and trends in condition of the values of the park;
  - Progress in implementing plan actions (including the key milestones listed in Section 4.4); and
  - The management capacity of the Service (e.g funding allocations, assets, staffing, training).
2. As part of the integrated evaluation system, prepare assessments on the condition of the values of the park and the degree to which management policies and actions are achieving stated objectives every five years. These assessments will form the basis of the five-yearly reviews of the plan of management (Section 3.7) and will:
  - Analyse the condition and trends in condition of the values of the park primarily based upon the monitoring results of key performance indicators;
  - Evaluate the effectiveness of management policies and actions in achieving stated objectives based upon condition assessments;
  - Identify changes required to management policies and actions in order to improve effectiveness;
  - Recommend required changes to monitoring programs, key performance indicators and environmental management system targets;
  - Consider the implications of the findings of relevant new research, management strategies and techniques;
  - Review the progress of the Service, lessees, licensees and other organisations in implementing the plan of management; and
  - Define operational priorities for the next five-year period.

Independent scientific advice will be sought and incorporated into each five-yearly assessment.
3. Prepare a publicly-available report on each five-yearly assessment.
4. Commission an independent scientific review of the condition and trends in condition of the values of the park on a ten-yearly basis. This publicly-available review will be informed by the results of the annual monitoring and reporting program and five-yearly assessments, and will assist with the full review of the plan of management.



## CHAPTER 17 Plan Implementation



*Standing on Kosciusko's highest peak, often I have looked out over range on range towards the distant plains. I thought, the wide land is ours - it is in our care.*

*Sam Clayton no date*

The implementation of this plan of management will be undertaken within the annual works programs and regional operational plans of the Snowy Mountains and South West Slopes Regions and Resorts Section of the National Parks and Wildlife Service. The Service will prepare a comprehensive plan implementation program that will identify estimated costs and funding sources, area(s) of responsibility and projected completion dates for each action.

The environmental impact of all development proposals and significant activities will be determined in accordance

with established environmental assessment procedures (Section 12.1).

In accordance with section 81 of the *National Parks and Wildlife Act 1974*, this plan will be carried out and given effect to, and no operation shall be undertaken in relation to the park, unless those operations are in accordance with this plan. If after adequate investigation operations not included in this plan are found to be justified, this plan may be amended in accordance with section 73B of the Act.

Implementation priorities will be subject to the availability of necessary staff and funding and any specific requirements of the Director General or the Minister for the Environment. As a guide to the implementation of this plan, each individual action has been assigned a relative priority (as listed in Schedule 11) using the following categories:

- High:** Imperative to achieve the plan's stated management objectives and if deferred, would result in unacceptable loss of natural and/or cultural values.
- Medium:** Important to achieve the plan's stated management objectives, but can be deferred without unacceptable loss of natural and/or cultural values.
- Low:** Actions that can be undertaken after high and moderate priority actions have been completed.
- Ongoing:** Actions that are undertaken as required.

Section 4.4 lists sets of actions, described as key milestones, that must be implemented within two and five years of the approval of this plan. These actions provide a framework for the implementation of a large number of related actions and serve as foundations for the orderly and strategic achievement of key management objectives and outcomes.

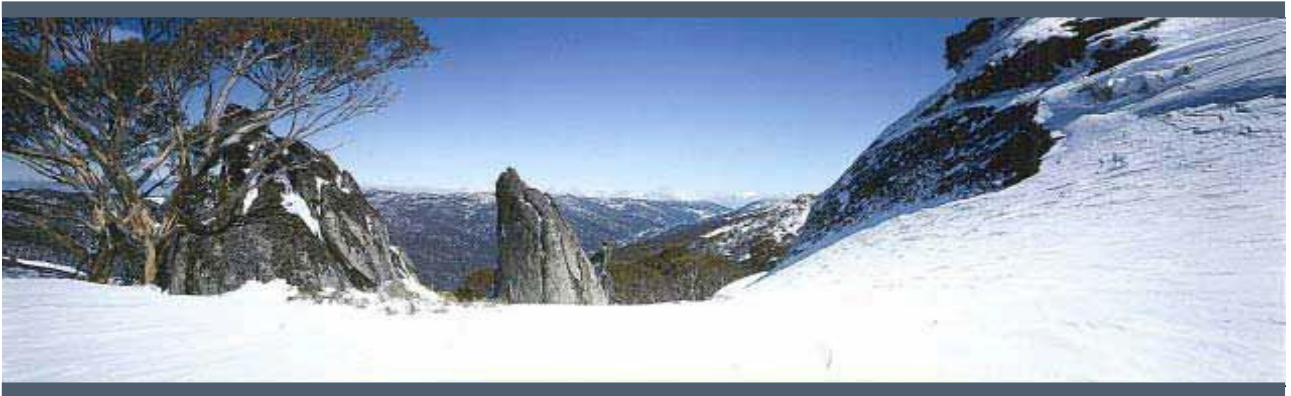
The Service will report on progress in implementing the provisions of this plan on an annual basis (Chapter 16).

These reports will identify actions that have been implemented during the previous year, those that are ongoing, and priorities for the following financial year(s). This reporting will be timed to permit due consideration of plan implementation progress prior to the annual budget allocation process. This will facilitate appropriate resourcing of incomplete and new actions scheduled for implementation in subsequent years.





## Part C Schedules





## Schedule 1 Significant Natural and Cultural Features

### Summary

- All mammal, fish, amphibian, reptile and bird species listed as either: Vulnerable or Endangered under the *Threatened Species Conservation Act 1995*, *Environment Protection and Biodiversity Conservation Act 1999* or *Fisheries Management Act 1994*; having a restricted distribution outside the park; or, the subject of an international treaty (Tables S1.1-S1.5).
- Invertebrate species that are Kosciuszko National Park endemic, Snowy Mountains endemic or have an otherwise restricted distribution (Table S1.6).
- Plant species listed as either: Vulnerable or Endangered under the *Threatened Species Conservation Act 1995* and/or *Environment Protection and Biodiversity Conservation Act 1999*; species that are poorly known and possibly threatened; or species where less than six populations have been recorded in the park (Table S1.7).
- Plant communities that are alpine endemic, have limited local distribution or have high conservation status (Table S1.8).
- Significant rocks and landforms according to the Kosciuszko Independent Scientific Committee Report (Table S1.9).
- Significant karst areas and features according to the Kosciuszko Independent Scientific Committee Report (Table S1.10).
- Significant soils features according to the Kosciuszko Independent Scientific Committee Report (Table S1.11).
- Significant lakes, wetlands and rivers according to the Directory of Important Wetlands and/or the Kosciuszko Independent Scientific Committee Report (Table S1.12).
- Significant cultural heritage places and objects identified in the Kosciuszko Independent Scientific Committee Report, State Heritage Register and/or Register of the National Estate (Table S1.13).
- The context of features in this schedule (Table S1.14).

#### Legend for Schedule 1 (Tables S1.1 –S1.14):

**a** = poorly known and possibly threatened

**b** = less than six populations recorded

**CAMBA** = China-Australia Migratory Bird Agreement

**E** = endangered

**EPBC** = *Environment Protection and Biodiversity Conservation Act 1999*

**FMA** = *Fisheries Management Act 1994*

**IUCN** = International Union for Conservation of Nature and Natural Resources

**JAMBA** = Japan-Australia Migratory Bird Agreement

**TSC** = *Threatened Species Conservation Act 1995*

**V** = vulnerable

## Schedule 1 Significant Natural and Cultural Features

**Table S1.1 Mammal species**

Scientific Name	Common Name	Rating		Additional Criteria
		TSC	EPBC	
<i>Burramys parvus</i>	mountain pygmy-possum	E	E	restricted distribution
<i>Cercartetus nanus</i>	eastern pygmy-possum	V		
<i>Dasyurus maculatus</i>	spotted-tailed quoll	V	E	
<i>Falsistrellustasmaniensis</i>	great pipistrelle	V		
<i>Mastacomys fuscus</i>	broad-toothed rat	V		
<i>Miniopterus schreibersii oceanensis</i>	eastern bent-wing bat	V		
<i>Nyctophilus timoriensis</i>	eastern long-eared bat	V	V	
<i>Petaurus australis</i>	yellow-bellied glider	V	V	
<i>Petrogalepenicillata</i>	brush-tailed rock wallaby	E	V	
<i>Phascogale tapoatafa</i>	brush-tailed phascogale	V		
<i>Phascolarctos cinereus</i>	koala	V		
<i>Pseudomys fumeus</i>	smoky mouse	E	E	

**Table S1.2 Amphibian species**

Scientific Name	Common Name	Rating		Additional Criteria
		TSC	EPBC	
<i>Litoria booroolongensis</i>	booroolong frog	E		
<i>Litoria spenceri</i>	spotted tree frog	E	E	
<i>Littoria verreauxii alpina</i>	alpine tree frog	E	V	
<i>Pseudophryne corroboree</i>	southern corroboree frog	E	E	restricted distribution
<i>Pseudophryne pengilleyi</i>	northern corroboree frog	V	V	restricted distribution

**Table S1.3 Reptile species**

Scientific Name	Common Name	Rating		Additional Criteria
		TSC	EPBC	
<i>Cyclodomorphus praealtus</i>	alpine oak skink			restricted distribution
<i>Egernia guthega</i>	Snowy Mountains rock skink			limited distribution
<i>Egernia montanum</i>	tan-backed rock skink			limited distribution
<i>Eulamprus kosciuskoi</i>	alpine water skink			restricted distribution

## Schedule 1 Significant Natural and Cultural Features

**Table S1.4 Fish species**

Scientific Name	Common Name	Rating FMA	Additional Criteria
<i>Galaxias olidus</i>	mountain galaxias		limited occurrence
<i>Maccullochellamacquariensis</i>	trout cod	E	
<i>Macquaria australasica</i>	Macquarie perch	V	

**Table S1.5 Bird species**

Scientific Name	Common Name	Rating TSC EPBC	Additional Criteria
<i>Cacatua leadbeateri</i>	Major Mitchell's cockatoo	V	
<i>Calyptorhynchus banksii</i>	red-tailed black cockatoo	V E	
<i>Calyptorhynchus lathami</i>	glossy black cockatoo	V	
<i>Climacteris picummus victoriae</i>	brown treecreeper (eastern subsp.)	V	
<i>Falco hypoleucus</i>	grey falcon	V	
<i>Gallinago hardwickii</i>	Latham's snipe		protected migratory species - JAMBA & CAMBA
<i>Lophoictinia isura</i>	square-tailed kite	V	
<i>Melanodryas cucullata cacullata</i>	hooded robin (south-eastern form)	V	
<i>Neophema pulchella</i>	turquoise parrot	V	
<i>Ninox connivens</i>	barking owl	V	
<i>Ninox strenua</i>	powerful owl	V	
<i>Pachycephala olivacea</i>	olive whistler	V	
<i>Petroica rodinogaster</i>	pink robin	V	
<i>Rostratula benghalensis</i>	painted snipe	V	
<i>Tyto novaehollandiae</i>	masked owl	V	
<i>Tyto tenebricosa</i>	sooty owl	V	

## Schedule 1 Significant Natural and Cultural Features

Table S1.6 Invertebrate species

Scientific Name	Common Name	Significance
<i>Austrocerella hynesi</i>	stonefly	KNP endemic
<i>Austrocerella verna</i>	stonefly	KNP endemic
<i>Austropsyche bifurcata</i>	caddisfly	KNP endemic
<i>Chimarra monticola</i>	caddisfly	KNP endemic
<i>Coloburiscoides munionga</i>	mayfly	KNP endemic
<i>Eusthenia venosa</i>	reduced-wing stonefly	Snowy Mountains endemic
<i>Graphiophilus monikosciuskoi</i>	mountain earthworm	KNP endemic
<i>Graphiophilus woodi</i>	mountain earthworm	KNP endemic
<i>Hadronyche</i> sp.	Kosciusko funnel web spider	KNP endemic
<i>Helicopsyche tillyardi</i>	caddisfly	KNP endemic
<i>Icona</i> sp.	Yarrangobilly cave spider	KNP endemic
<i>Leptoperla cacuminis</i>	stonefly	KNP endemic; listed as vulnerable by IUCN
<i>Leptoperla rieki</i>	stonefly	KNP endemic
<i>Leptoperla</i> sp. nr. <i>Tasmanica</i>	stonefly	KNP endemic
<i>Lycosa kosciuskoensis</i>	wolf spider	KNP endemic
<i>Lycosa musgravei</i>	wolf spider	KNP endemic
<i>Lycosa summa</i>	wolf spider	KNP endemic
<i>Notonomus carteri</i>	ground beetle	KNP endemic
<i>Notonomus kosciuskianus</i>	ground beetle	KNP endemic
<i>Oenochroma alpina</i>	moth	KNP endemic
<i>Polyplectropus lacusalbinae</i>	caddisfly	KNP endemic
<i>Polyzosteria viridissima</i>	metallic cockroach	Snowy Mountains endemic
<i>Psammaspides</i> sp. Nov.	Cooleman syncarid	KNP endemic
<i>Scopodes splendens</i>	ground beetle	KNP endemic
<i>Synemon</i> sp.	moth	KNP endemic
<i>Tasimia atra</i>	caddisfly	KNP endemic
<i>Tasmanophlebialacuscoerulei</i>	mayfly	KNP endemic
<i>Tasmanophlebia nigrescens</i>	mayfly	KNP endemic
<i>Teraphis cavicola</i>	cave beetle	KNP endemic
<i>Teraphis crenulata</i>	ground beetle	KNP endemic
<i>Textricella</i> sp. Indet.	Cooleman cave spider	KNP endemic
<i>Agrotis infusa</i>	bogong moth	annual alpine migrant
<i>Ameletoides lacusalbinae</i>	alpine mayfly	alpine endemic
<i>Candalides heathi alpinus</i>	rayed blue butterfly	alpine endemic
<i>Kosciuscola tristis tristis</i>	Kosciusko mountain grasshopper	KNP endemic
<i>Tettigarcta crinita</i>	alpine hairy cicada	high altitudes in mainland Australia only; sole living representative of this family in mainland Australia

## Schedule 1 Significant Natural and Cultural Features

Table S1.7 Plant species

Scientific Name	Common Name	Rating		Additional Criteria
		TSC	EPBC	
<i>Acacia dallachiana</i>	catkin wattle			a
<i>Agrostis joyceae</i>	bent grass			a
<i>Astrotricha</i> sp. 4 ( <i>sensu</i> Fl. Vict.)	thick-leaf star-hair			b
<i>Baeckea denticulata</i>	thyme heath myrtle			a
<i>Bossiaea</i> sp. aff. <i>riparia</i> (NGW 5530)	prostrate bossiaea			b
<i>Calotis glandulosa</i>	gland burr daisy	V	V	
<i>Calotis pubescens</i>	Mueller's burr-daisy	E		
<i>Cardamine</i> sp. A2	bitter-cress			a
<i>Carex archeri</i>	Archer's sedge	E		
<i>Carex raleighii</i>	raleigh sedge	E		
<i>Chiloglottis cornuta</i>	green bird orchid			a
<i>Chiloglottis turfosa</i>	bog bird orchid			a
<i>Derwentia nivea</i>	mountain speedwell			a
<i>Dillwynia palustris</i>	swamp parrot-pea			b
<i>Discaria nitida</i>	leafy anchor plant	V		
<i>Eucalyptus chapmaniana</i>	bogong gum			a
<i>Eucalyptus saxatilis</i>	Suggan Buggan mallee	E		
<i>Euchiton nitidulus</i>	cushion cudweed, shining cudweed	V	V	a
<i>Euphrasia scabra</i>	rough eyebright	E		
<i>Euphrasia</i> sp. 3	eyebright (Ramshead Range)			b
<i>Galium roddii</i>	small bedstraw			b
<i>Genoplesium turfosum</i>	bog midge orchid			b
<i>Haloragis exalata</i> subsp. <i>Exalata</i>	wingless raspwort, square raspwort	V	V	
<i>Hierochloa submutica</i>	spreading holy grass			a
<i>Irenepharsus magicus</i>	elusive cress	E		
<i>Muehlenbeckia diclina</i> subsp. <i>Stenophylla</i>	weeping lignum			a
<i>Olearia aglossa</i>	alpine daisy bush			b
<i>Olearia lasiophylla</i>	woolly daisy bush			b
<i>Olearia rhizomatica</i>	prostrate daisy-bush			b
<i>Olearia stenophylla</i>	Happy Jacks daisy-bush			b
<i>Pelargonium helmsii</i>	stork's-bill			a
<i>Pomaderris cotoneaster</i>	cotoneaster pomaderris	E	E	
<i>Pomaderris pallida</i>	pale pomaderris	V	V	
<i>Prasophyllum montanum</i>	mountain leek orchid			a
<i>Prasophyllum retroflexum</i>	Kiandra leek orchid	V	V	
<i>Prostanthera monticola</i>	monkey mint bush			a
<i>Ranunculus anemoneus</i>	anemone buttercup	V	V	
<i>Ranunculus clivicola</i>	hill buttercup			a

## Schedule 1 Significant Natural and Cultural Features

**Table S1.7** Plant species continued

Scientific Name	Common Name	Rating		Additional Criteria
		TSC	EPBC	
<i>Ranunculus productus</i>	rare buttercup			a
<i>Rutidosia leiolepis</i>	Monaro golden daisy	V	V	
<i>Rytidosperma pumilum</i>	feldmark grass	V	V	a
<i>Taraxacum aristum</i>	austral dandelion			b
<i>Thesium australe</i>	austral toadflax	V	V	
<i>Wahlenbergia densifolia</i>	fairy bluebell			b
<i>Xerochrysum palustre</i>	bog everlasting		V	

**Table S1.8** Plant communities

Community	Significance
<i>Eucalyptus lacrimans</i> (spider gum) stands	several communities of limited distribution
Fens and <i>Sphagnum</i> bogs	severely depleted (and rare) in NSW; habitat of southern and northern corroboree frogs
Grasslands associated with limestone outcrops	distinct communities apparently restricted to small areas of limestone outcrops
Old-aged forest communities or isolated individuals	high conservation status due to age
<i>Podocarpus lawrencei</i> (mountain plum pine) shrubland	alpine/sub-alpine endemic; habitat of mountain pygmy-possum; only representative of Podocarpaceae in the park; very slow-growing and long-lived; limited distribution in the park
Rainforest remnant vegetation (e.g. <i>Atherosperma moschatum</i> )	very limited local distribution; unique vegetation type in the area
Short alpine herbfield	alpine endemic
Snowpatch feldmark ( <i>Coprosma</i> – <i>Colobanthus</i> )	alpine endemic
Windswept feldmark ( <i>Epacris</i> – <i>Chionohebe</i> )	alpine endemic



## Schedule 1 Significant Natural and Cultural Features

**Table S1.9 Rocks and landforms**

Features
<ul style="list-style-type: none"> <li>• Glacial and periglacial features including: cirques, moraines, lakes, erratics and ice-scratched surfaces; moraine dumps (kettle lakes), glacial striation on rocks, solifluction terraces, scree slopes, nivation hollows, blockstreams and boulderfields (block glacis), non-sorted steps, roche moutonnée and contour trenches (string bogs; contour banks).</li> </ul>
<ul style="list-style-type: none"> <li>• Ordovician to Lower Devonian rocks that form part of the Lachlan Fold Belt including:               <ul style="list-style-type: none"> <li>- Metamorphic rocks with abundant garnets, staurolite and amphibolite (Geehi Valley);</li> <li>- Devonian shallow-water sediments (Ravine Basin);</li> <li>- Crackenback Fault (Thredbo Valley);</li> <li>- Devonian lava flows forming cliffs (Mount Talbingo);</li> <li>- Serpentinite along major faults with nickel and chromium (Cabramurra);</li> <li>- Skarn rock with garnets and occurrence of babingtonite (Black Perry Mountain).</li> <li>- Graptolite fossils (Tumut Ponds, Tantangara, Kiandra, Byadbo areas);</li> <li>- Ordovician hard, green platy quartzite (The Pilot and Byadbo areas);</li> <li>- Silurian limestones, fossils, shales and tuffs (Yarrangobilly);</li> <li>- Devonian rhyolites and breccias (Pilot Ridge and Cowombat Flat);</li> <li>- Granitoid rocks (Main Range);</li> <li>- Folding of Bowning tectonic episode (Nungar);</li> <li>- Limestones and tuffs (Marble Creek and Pilot Creek);</li> <li>- Silurian limestone and chert (Cooleman Plain); and</li> <li>- Slump bed folding (Cooleman Plain).</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• Tertiary geological features:               <ul style="list-style-type: none"> <li>- Tertiary basalt flows (Round Mountain);</li> <li>- Columnar basalt pinnacles (Kiandra, Cabramurra and Yarrangobilly); and</li> <li>- Tertiary sediments (New Chum Hill and Golden Crown Diggings).</li> </ul> </li> </ul>

## Schedule 1 Significant Natural and Cultural Features

**Table S1.10 Karst**

Features
<ul style="list-style-type: none"> <li>• Karst areas, particularly Cooleman Plain and Yarrangobilly karsts (geological, geomorphological, hydrological, zoological values).</li> <li>• Cave-dependent species.</li> <li>• Karst landscape features including 'A-tents', caves, rillenkaren, solution ripples.</li> <li>• Tufa deposits and fossil sequence at Ravine.</li> <li>• Scientific research sites at Cooleman Plain and Yarrangobilly.</li> <li>• Aesthetic values of Cooleman Plain and Yarrangobilly areas.</li> <li>• Recreational values of Yarrangobilly area.</li> </ul>

**Table S1.11 Soils**

Features
<ul style="list-style-type: none"> <li>• Mountain soils, snow patch soils, alpine humus soils, bog and fen peats, silty bog soils of the alpine and subalpine areas.</li> <li>• Fossil soils and remnants of fossil soils.</li> <li>• Stratified deposits, especially peat deposits and former lake deposits.</li> <li>• Scientific value of the Great Soil Groups present.</li> </ul>

**Table S1.12 Rivers, lakes and wetlands**

Features
<ul style="list-style-type: none"> <li>• Blue Lake Ramsar site.</li> <li>• Albina, Club and Cootapatamba Lakes.</li> <li>• The wetlands located at Rennix Gap.</li> <li>• All alpine fens and bogs.</li> <li>• Undiverted river sections of upper Murray River, Thredbo River, Goodradigbee River, Goobarragandra River and Yarrangobilly River.</li> <li>• Unmodified rivers and streams above 900m in altitude.</li> <li>• Aesthetic appeal of river valleys such as those of Snowy, upper Murray and Geehi Rivers.</li> </ul>

## Schedule 1 Significant Natural and Cultural Features

**Table S1.13 Cultural heritage**

Features
<ul style="list-style-type: none"> <li>• All items and places in the park listed on the Register of the National Estate. At the time of writing, these were:           <ul style="list-style-type: none"> <li>- Cascade Hut;</li> <li>- Cooinbil Hut;</li> <li>- Coolamine Homestead and associated structures;</li> <li>- Cootapatamba Hut;</li> <li>- Currango Homestead Group;</li> <li>- Daveys Hut;</li> <li>- Four Mile Hut;</li> <li>- Grey Mare Hut and Mining Precinct;</li> <li>- Illawong Lodge;</li> <li>- Kellys Providence Sawmill;</li> <li>- Kiandra Courthouse/Chalet</li> <li>- Kiandra Mining Area;</li> <li>- Lobs Hole Copper Mine;</li> <li>- Old Currango Homestead;</li> <li>- Scotchies Yards;</li> <li>- Seamans Hut;</li> <li>- Wheelers Hut; and</li> <li>- Yarrangobilly Caves House Precinct.</li> </ul> </li> <li>• All items in the park listed on the State Heritage Register. At the time of writing, these were:           <ul style="list-style-type: none"> <li>- Currango Homestead;</li> <li>- Kiandra Courthouse/Chalet; and</li> <li>- Matthews Cottage.</li> </ul> </li> <li>• All Aboriginal heritage places and objects.</li> <li>• Kosciuszko homestead complexes, huts, ruins and hut sites.</li> <li>• Physical items that remain as evidence of the pastoral era including mustering yards, shearing sheds, yards, dips, salt troughs, brumby traps.</li> <li>• Mining sites and objects including:           <ul style="list-style-type: none"> <li>- Remains of mining fields such as surface diggings, ground and hydraulic sluice workings, adits, shafts, mullock heaps, water races and dams, abandoned machinery and equipment, relic machinery sites and dredge tailings;</li> <li>- Remains of the associated settlements such as buildings, the sites of public buildings and houses, street layouts, exotic plantings and associated artefacts; and</li> <li>- A range of localities scattered throughout the park that exhibit some of the above features including Bogong Diggings, Tin Mine and Elaine Mine.</li> </ul> </li> </ul>

## Schedule 1 Significant Natural and Cultural Features

**Table S1.13 Cultural heritage** continued

Features
<ul style="list-style-type: none"> <li>• Manifestations of logging, timber product extraction and silviculture in the park including:               <ul style="list-style-type: none"> <li>- Kalkite, Alpine Creek, upper Alpine Creek and Alpine Hill mill sites; and</li> <li>- Items at these sites such as water races, steam engines, remains of dams and graves.</li> </ul> </li> <li>• Former Snowy Mountains Hydro-electric Scheme sites, especially old township sites.</li> <li>• Manifestations of scientific research and park management including:               <ul style="list-style-type: none"> <li>- Experimental and monitoring sites of historic importance in the history of research in the park; and</li> <li>- Experimental and monitoring sites of current importance for ongoing research and monitoring in the park.</li> </ul> </li> <li>• Border markers delineating the boundaries of NSW, Victoria and the ACT including the Black and Allen border line.</li> <li>• Early tourism developments such as:               <ul style="list-style-type: none"> <li>- Caves House (Yarrangobilly);</li> <li>- Sponars Chalet (Diggers Creek); and</li> <li>- Kosciusko Chalet (Charlotte Pass).</li> </ul> </li> </ul>

**Note:** This table is not an exhaustive list of heritage features in the park. For more comprehensive lists of heritage items and places, the Service maintains an Historic Heritage Information Management System and an Aboriginal Heritage Information Management System.

**Table S1.14 Other**

Features
<ul style="list-style-type: none"> <li>• All habitats or contexts of significant features listed in this schedule.</li> <li>• All roosting/nesting/breeding/hibernacula sites used by threatened/KNP endemic or treaty-protected fauna.</li> <li>• Wilderness areas declared under the <i>Wilderness Act 1987</i>.</li> </ul>

## Schedule 2 Blue Lake Ramsar Site Information

This schedule consists of the most recently available Information Sheet for the Blue Lake Ramsar site. Standardised information sheets are required to be prepared by the appropriate contracting party to the Ramsar Convention for each listed site.

(Note: Under the Convention, *Ecological Character* is defined as the sum of the individual biological, physical and chemical components of the wetland ecosystem, and their interactions, which maintain the wetland and its products, functions and attributes.)

1. **Form compiled by:** NSW National Parks and Wildlife Service
  2. **Sheet last modified:** January 1998.
  3. **Country:** Australia
  4. **Name of Ramsar site:** Blue Lake
  5. **Map of site included?** a) hard copy: b) digital (electronic) format:
  6. **Geographical coordinates:** Latitude: 36 degrees 24'S Longitude: 148 degrees 19'E.
  7. **General Location:** Approximately 28 km west of Jindabyne and 3.5 km north of Charlotte Pass in the Snowy Mountains of south-eastern New South Wales, Australia.
  8. **Elevation:** 1900 metres above mean sea level.
  9. **Area:** 320 hectares.
  10. **Overview:** Blue Lake (BL) is one of only four cirque lakes found on the mainland of Australia. These four together with another glacial lake, Hedley Tarn, make up the alpine lakes, which are the highest lakes on the mainland. BL is surrounded by alpine herb fields, heaths, fens and bogs and together with the lake it supports a variety of native plants and animals, including rare and endangered species, as well as a small number of invertebrate species which are restricted to the alpine zone.
  11. **Ramsar Criteria:** 1a, 1d, 2b, 2d, (formerly 1a, 1d, 2b, 2d)
  12. **Justification of criteria under point 11:** Blue Lake is found within Kosciuszko National Park which has been protected for its conservation values for over 50 years. The impacts on Blue Lake prior and after its protection have been minimal, consequently the lake remains in a near natural state. Moreover, Blue Lake is one of only four cirque lakes found on the Australian mainland. Blue Lake and its catchment also provides habitat for a number of vulnerable species of plants and animals.
- 13a. Biogeographic region:**
- 13b. Biogeographic regionalisation scheme:** Environment Australia 2000. Revision of the Interim Biogeographic Regionalisation of Australia (IBRA) and the Development of Version 5.1. - Summary Report. Department of Environment and Heritage, Canberra.
- 14. Physical Features:** The Ramsar site includes BL, Hedley Tarn and the majority of their catchments. The Ramsar site is located on the Great Diving Range and contained within Kosciuszko National Park. BL is a cirque lake formed by glacial gouging of the granite bedrock. The lake margins are made up of moraine, talus, small pockets of alluvium deposits and granite. The bed of BL is primarily muddy with small areas of rock and sand particularly near the margins (Raine 1982). Soils in the BL area are alpine humus which are dark and friable and rich in organic matter. Kosciuszko National Park contains the only four cirque lakes on the Australian mainland. The other three lakes, Cootapatamba, Albina, and Club are shallower than BL and are held entirely by terminal moraines. These four with another glacial lake, Hedley Tarn, make up the alpine

## Schedule 2 Blue Lake Ramsar Site Information

lakes, which are the highest lakes on the Australian mainland, being at elevations between 1890 and 2070 m (Cullen and Norris 1988). BL receives water from Blue Lake Creek originating from Mount Twynam. Blue Lake Creek flows from BL into Hedley Tarn (an alpine lake) then into the Snowy River. The surface of BL is frozen for approximately 4 months of the year, it overflows in spring with the snow thaw, and during the remainder of the year the lake level remains stable. BL has a maximum depth of 28 metres, the maximum depth of Hedley Tarn is 5m. The alpine lakes contain the freshest waters in Australia, with a salt level of 2.4 - 3.0 gm-3 (Cullen and Norris 1988). The waters are clear with Secchi depths of about 6m and turbidity below 20 NTU (Cullen and Norris 1988). BL has a pH value of approximately 6 and water temperatures reach between 10 and 12 degrees C in the summer months. Timms (1980) suggested that BL was dimictic and as such would be the only known example of this type on mainland Australia. The climate within the catchment of BL is typically alpine. Average annual rainfall at Charlotte Pass (nearest gauging station) is 2305 mm which mainly falls as snow. Average minimum winter air temperature is - 5.1 degrees C, with an absolute minimum recorded at - 23 degrees C, average summer maximum is 16.8 degrees C (Bureau of Meteorology 1993). Wind speeds of up to 160 km/h and persistent at 75 km/h are not uncommon. Prevailing winds are south-west to north-west.

### 15. Catchment Area:

**16. Hydrological Values:** The alpine area of Kosciusko National Park has the ability to store water within the catchment since the majority of rainfall falls as snow. Throughout the months of spring and early summer the ice and snow in the catchment melts and flows into surrounding rivers and streams. BL together with the 4 other alpine lakes are the freshest water bodies on mainland Australia and serve as baselines for monitoring impacts on their own and other aquatic ecosystems (Good 1992). The alpine lakes are the only natural wetlands on the Australian mainland with an ice sheet over the lake surface throughout winter, and BL is probably the only dimictic lake on mainland Australia.

### 17. Wetland Type: Vt

**18. Ecological Features:** BL does not have any macrophytes growing in the littoral area. Consequently the lake consists of entirely open water. Boulders reach the lake margin in the east and northeast and support boulder communities dominated by *Brachycome nivalis* var. *nivalis*, *Danthonia alpicola*, *Alchemilla xanthochlora*, *Blechnum pennamarina*, and *Polystichum proliferum*. Tall alpine herbfield communities surround the northeastern margin with *Celmisia* sp., *Poa* spp., *Leucochrysum albicans* subsp. *alpinum*, *Chionochoa frigida*, *Aciphylla glacialis*, *Craspedia* spp., and *Euphrasia collina* subsp. *diversicolor* being common. The remaining shores are pebbly with wet heaths and grasses abutting the shoreline (*Epacris glacialis*, *E. microphylla*, *Richea continentis*, *Poa costiniana*, *Oxylobium ellipticum*, *Podocarpus lawrencei*, *Kunzea muelleri*, *Phebalium ovatifolium*, and *Prostanthera cuneata*). The margins of Hedley Tarn consists of heaths, fens (*Carex gaudichaudiana*, *C. hypandra*, and *Danthonia nudiflora*) and bogs (*Sphagnum cristatum*, *Carex gaudichaudiana*, *Epacris paludosa*, *Richea continentis*, and *Astelia* spp.). The remaining land within the Ramsar site consists of tall alpine herbfield and dry heath.

**19. Noteworthy Flora:** The catchment of BL provides habitat for tall alpine herbfields, wet and dry heaths, fen, and bogs. A number of vulnerable plants are also found within the catchment and include *Oreomyrrhis brevipes*, *Oschatzia cuneifolia*, *Abrotanella nivigena*, *Brachycome stolonifera*, *Craspedia leucantha*, *Erigerin setosus*, *Parantennaria uniceps*, *Colobanthus nivicola*, *C. pulvinatus*, *Carex cephalotes*, *Astelia psychrocharis*, *Agrostis meionectes*, *Deyeuxia affinis*, *Ranunculus anemoneus*, and *R. niphophilus*.

**20. Noteworthy Fauna:** The catchment of BL supports vulnerable species including the Mountain Pigmy Possum (*Burrhamys parvus*), and the Broad Tooth Rat (*Mastacomys fuscus*). BL supports a number of invertebrate species including *Antipodrilus davidis*, *Procladius* sp., *Polypedilum* sp., *Chironomus*

## Schedule 2 Blue Lake Ramsar Site Information

*oppositus*, *Ramrheithrus* sp., and *Glacipisium kosciuszko*. Another four species have been recorded in BL and they are restricted to alpine areas and include *Metaphreataoicus australis*, *Tasmanophebia nigrescens*, *Glacidorbis hedleyi*, and *Leptoperla cacuminis* (Timms 1980, Campbell et al. 1986).

21. **Social and Cultural Values:** Kosciuszko National Park has very high social and cultural value. Kosciuszko National Park is the most visited National Park in NSW receiving approximately 1 million visitors annually. BL is also very popular as it is one of the few areas in NSW where people can ice-climb. Aborigines did not live permanently in the alpine area but probably visited in summer. It is also probable that groups of Aborigines would have camped in the area surrounding BL to perform ceremonies and to collect Bogong Moths (*Agrotis infusa*) for food. The first official European exploration of the region was undertaken by the Polish explorer, Paul Edmund Strezelecki, who climbed and named Mt Kosciusko (the highest mountain in Australia) in 1840. However it is very likely that stockmen in search of pastures were there before him. Before the park was dedicated the majority of the area was used for grazing domestic stock. In 1974 all agricultural practices were prohibited within the park which ended 150 years of grazing in this area of NSW. It is very likely that BL would have served as a camping ground for stockman working on the surrounding high country.
22. **Land tenure/ownership:** (a) The Ramsar site is within a National Park of 673 542 ha that is dedicated under the *National Parks and Wildlife Act 1974*.
23. **Current land use:** The lands within the Ramsar site and 673 542 ha surrounding the Ramsar site are permanently designated as a National Park and used as a nature conservation area. Lands beyond the National Park are Freehold and used for grazing domestic stock. The population of the area outside the Ramsar site is approximately 3 500 and the majority live in surrounding local towns. BL is a popular tourist attraction therefore the area has a large temporary population.
24. **Factors adversely affecting ecological character (past, present, potential):** Past/present: Prior to Kosciuszko being dedicated as a National Park the area was grazed by domestic stock. This has resulted in erosion and siltation of the Kosciuszko area including BL. In 1950, areas under threat from erosion were identified and works (primarily rock groynes) were put into place, and revegetation programs were undertaken, to rectify the problem. NSW National Parks have up-graded some of the works over recent years. Currently erosion and siltation are considered a minor threat to BL and its catchment. BL is a popular tourist attraction within Kosciuszko National Park and tourists are considered a medium threat. Tourists cause two common problems, trampling of vegetation and contamination of the lake from human wastes. Potential: No information
25. **Conservation measures taken:** Kosciuszko State Park was gazetted in 1944 and was formerly used for grazing domestic stock. All agricultural practices were phased out soon after the park was gazetted. In 1967 the park's name was changed to Kosciuszko National Park, and the newly formed NSW National Parks and Wildlife Service (NPWS) became the management authority for the area (in 1997 the spelling of Kosciuszko was changed to Kosciuszko). The NPWS has a Plan of Management for Kosciuszko National Park. Within the plan is a number of conservation and management initiatives to preserve and enhance the area for nature conservation. Initiatives include the control of introduced plants and animals, banning of fires, prohibiting camping within the catchment of BL, and restricting access to BL to foot and skis. Visitors are also encouraged to stay on the tracks provided to decrease the risk of trampling of sensitive vegetation, and to dispose of human wastes in an environmental sensitive way.
26. **Conservation measures proposed:** Although there is a Plan of Management for Kosciuszko National Park, NSW National Parks and Wildlife Service has recognised the need to develop a plan that addresses

## Schedule 2 Blue Lake Ramsar Site Information

recreation management in a more detailed manner. To initiate this process a recreation management strategy was completed in June 1993. In October, 1995 a Summit Forum was established to develop this strategy further.

- 27. Current scientific research and facilities:** Currently there is no research being undertaken within the catchment of BL. However BL and the Kosciuszko region have been the topic of much investigation. Examples of research work undertaken in the catchment of BL include: Costin (1952) undertook hydrological studies in the upper snowy catchment, Timms (1979) investigated the benthos environment of BL, Raine (1982) studied the bathymetry and thermal stratification of BL, and Bayly (1970) has reported on the zooplankton of the Kosciuszko region. There are no research facilities available at BL.
- 28. Current conservation education:** NSW National Parks and Wildlife Service runs a Discovery Ranger Program throughout Kosciuszko National Park, which includes walks to BL. These programs involve guided walks and talks to community members by rangers, normally throughout school holiday periods. BL is utilised for educational visits by nearby schools, universities and camping organisations. Interpretative signs are located at the top of the track that leads down to BL.
- 29. Current recreation and tourism:** Kosciuszko National Park receives approximately 1 million visitors a year, more or less evenly split between winter (ski season) and summer. About two-thirds of the winter visitors come for alpine skiing, in the only ski fields in New South Wales. The rest come to cross-country ski, or to enjoy other forms of snow recreation. BL and its immediate surrounds make it an ideal location for many recreational activities including bushwalking, ice climbing, ski touring, and rock climbing. During 1994, BL had approximately 15 000 visitors. Camping is no longer permitted in the catchment of BL, however, the fringes of its catchment are still frequently used as camping grounds. Consequently, BL remains a popular alpine tourist attraction.
- 30. Jurisdiction**
- 31. Management authority:** Jurisdiction: Territorial: Government of New South Wales, Functional: New South Wales National Parks and Wildlife Service. Management: New South Wales National Parks & Wildlife Service. Address: Regional Manager, Snowy Mountains Region, PO Box 2228, Jindabyne NSW 2627, Phone: 02 6450 5555, Fax: 02 6456 2291.
- 32. Bibliographical references:** Bureau of Meteorology (1993). *CDCD (Climate Data Compact Disc)*, Space-Time Research Pty. Ltd., Melbourne.

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## Schedule 2 Blue Lake Ramsar Site Information

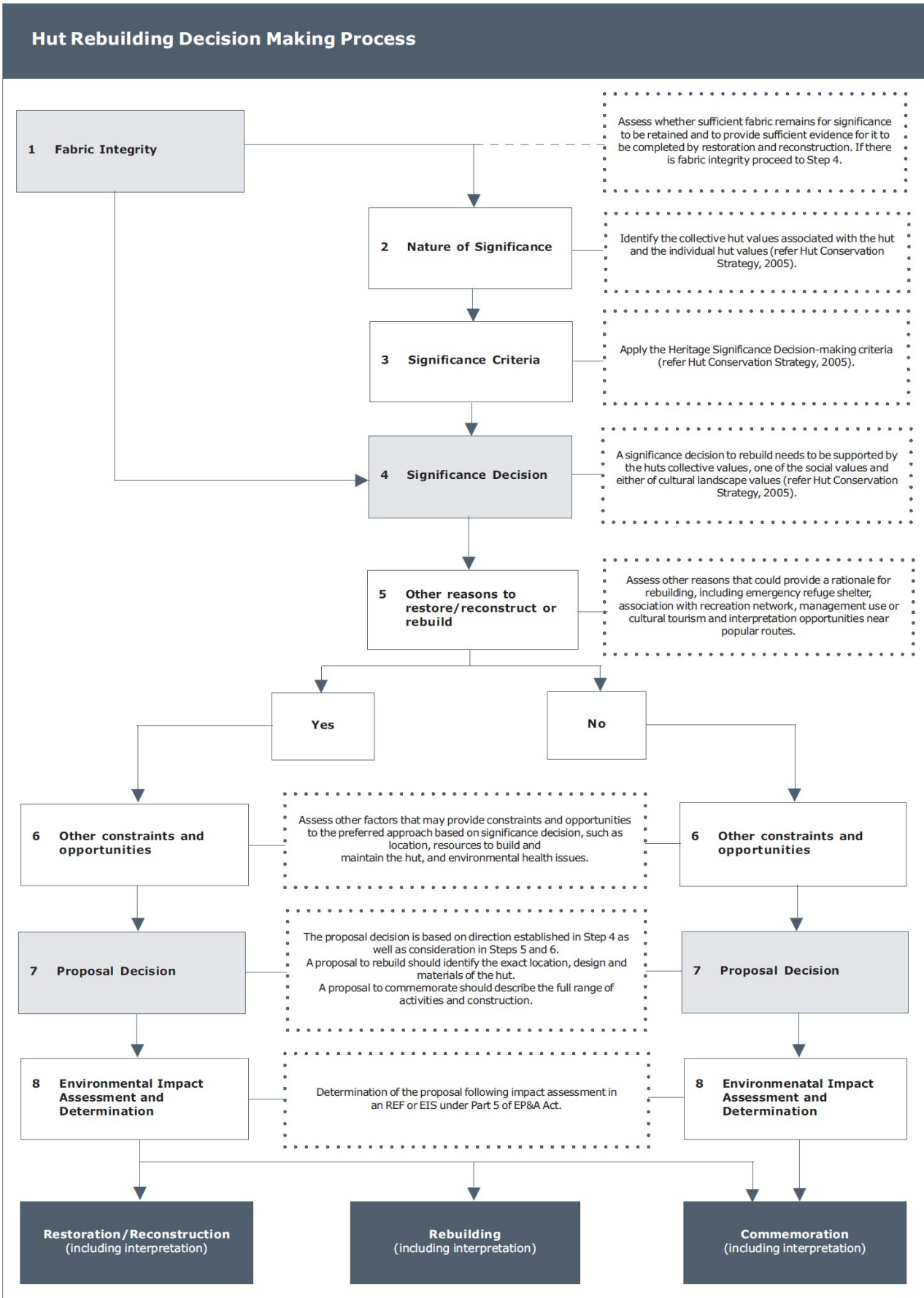
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### Schedule 3 Hut Rebuilding Guidelines



## Schedule 4 Appropriate Recreational Activities

### Table S4.1 Non-commercial activities

ZONE	Wilderness	Back Country	Minor Road Corridors	Major Road Corridors	Visitor Services
Accommodation	no	no	yes <sup>1</sup>	no	yes <sup>1</sup>
Boating (motorised) and water skiing including personal water craft	no	designated impoundments only <sup>2</sup>	designated impoundments only <sup>2</sup>	designated impoundments only <sup>2</sup>	no
Canoeing/kayaking/rafting	yes	yes	yes	yes	yes
Caving	with consent <sup>3</sup>	with consent <sup>3</sup>	with consent <sup>3</sup>	with consent <sup>3</sup>	with consent <sup>3</sup>
Cycling	designated management trails only <sup>4</sup>	management trails, purpose-built cycling tracks, shared-use tracks and multiple-use trails only, subsequent to, and consistent with the KNP Cycling Strategy	roads, management trails, purpose-built cycling tracks, shared-use tracks and multiple-use trails only	roads, management trails, purpose-built cycling tracks, shared-use tracks and multiple-use trails only	roads, management trails, purpose-built cycling tracks, shared-use tracks and multiple-use trails only
Fishing	yes	yes	yes	yes	yes
Horse riding	Yes (only on trails described in 8.7.1(2))	yes <sup>5</sup>	yes <sup>5</sup>	yes <sup>5</sup>	no
Ice climbing	yes	yes	no	no	no
Nature study or cultural awareness	yes	yes	yes	yes	yes
Non-powered flight: hang-gliding, hot air ballooning, paragliding	with consent	with consent	with consent	with consent	with consent
Picnicking	yes	yes	yes	yes	yes
Powered flight (landings and take-offs)	no	no	no	no	no
Resort-style activities	no	no	no	no	yes
Rock climbing and abseiling	yes <sup>6</sup>	yes <sup>6</sup>	yes <sup>6</sup>	yes <sup>6</sup>	yes <sup>6</sup>
Scenic driving, four wheel driving & motor bike riding (on public access roads only)	no <sup>7</sup>	no <sup>7</sup>	yes	yes	yes
Snow camping	yes <sup>8</sup>	yes <sup>8</sup>	yes <sup>8</sup>	yes <sup>8</sup>	no
Snow play	yes	yes	yes	yes	yes
Snow shoeing	yes	yes	yes	yes	yes
Snow sports (lift assisted)	no	no	no	no <sup>9</sup>	yes
Snow sports (not lift assisted)	yes	yes	yes	yes	yes
Swimming	yes	yes	yes	yes	yes
Special Events	no	with consent <sup>10</sup>	with consent <sup>10</sup>	with consent <sup>10</sup>	with consent <sup>10</sup>
Tobogganing	no	no	no	no	yes
Vehicle-based camping (within designated camping areas)	no	no	yes	yes	Kosciuszko Mountain Retreat, Thredbo Ranger Station and Yarrangobilly Caves Preinct only
Vehicle-based camping with horses	no	no	yes <sup>11</sup>	yes <sup>11</sup>	no

Walk-in camping (outside designated camping areas)	yes <sup>8</sup>	yes <sup>8</sup>	yes <sup>8</sup>	yes <sup>8</sup>	no
Walking	yes	yes	yes	yes	yes

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For footnotes see page 261

**Schedule 4      Appropriate Recreational Activities**  
**Table S4.2      Commercial or large group (>20 people) activities**

ZONE	Wilderness	Back Country	Minor Road Corridors	Major Road Corridors	Visitor Services
Accommodation	no	no	yes <sup>1</sup>	no	yes <sup>1</sup>
Boating (motorised) and waterskiing including personal water craft	no	designated impoundments only with consent <sup>2</sup>	designated impoundments only with consent <sup>2</sup>	designated impoundments only with consent <sup>2</sup>	no
Camping	group activities with consent <sup>12</sup>	with consent	with consent	with consent	Kosciuszko Mountain Retreat and Thredbo Ranger Station only
Canoeing/kayaking/rafting	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
Caving	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
Coach/bus touring	no	no	with consent	yes	yes
Cross-country running	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
Cycling	group activities with consent on designated management trails only <sup>4, 12</sup>	with consent on management trails, purpose-built cycling tracks, shared-use tracks and multiple-use trails only, subsequent to, and consistent with the KNP Cycling Strategy	with consent on roads, management trails, purpose-built cycling tracks, shared-use tracks and multiple-use trails only	with consent on roads, management trails, purpose-built cycling tracks, shared-use tracks and multiple-use trails only	with consent on roads, management trails, purpose-built cycling tracks, shared-use tracks and multiple-use trails only
Fishing	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
Horse riding	with consent <sup>12a</sup>	with consent	with consent	with consent	no <sup>13</sup>
Ice climbing	group activities with consent <sup>12</sup>	with consent	no	no	no
Nature study or cultural awareness	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
<sup>And</sup> Non-powered flight	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
Orienteering/rogaining	no	with consent	with consent	with consent	with consent
Picnicking	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
Powered flight (landings and take-offs)	no	no	no	no	no
Resort-style activities	no	no	no	no	with consent
Rock climbing and abseiling	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
Scenic driving, four wheel driving and motor bike riding	no	no	with consent	with consent	with consent
Snow play	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
Snow shoeing	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
Snow sports (lift assisted)	no	no	no	no <sup>9</sup>	with consent <sup>14</sup>
Snow sports (not lift assisted)	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
Special events	no	with consent <sup>10</sup>	with consent <sup>10</sup>	with consent <sup>10</sup>	with consent <sup>10</sup>

## Schedule 4 Appropriate Recreational Activities

Table S4.2 Commercial or large group (> 20 people) activities continued

ZONE	Wilderness	Back Country	Minor Road Corridors	Major Road Corridors	Visitor Services
Swimming	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent
Tobogganing	group activities with consent <sup>12</sup>	no	no	no	yes
Walking	group activities with consent <sup>12</sup>	with consent	with consent	with consent	with consent

### Legend for Schedule 4:

**yes** = activity may be permitted without a permit.

**no** = activity is prohibited.

**with consent** = a permit, licence or other written authority must be obtained from the Service for the activity to occur. Often the requirement for consent will be stipulated in the National Parks & Wildlife Act (Regulations) or Service policy. Approval will be dependent upon current levels of use, environmental considerations, experience of, and safety considerations for the applicant. Fees may be payable for the right to undertake the activity.

**commercial activity** = a commercial activity is an organised activity within the park operated by a business or organisation to generate income or profit.

**group activity** = a group activity is any activity involving more than 20 people. These activities will require consent.

- Accommodation only permitted at those sites listed in Section 8.19 and Chapter 10.
- See Section 8.15 for impoundments where motorised boating and water skiing is permitted. Consent required from NSW Maritime Authority.
- Visiting unrestricted access caves at Cooleman Plain (Barbers, Murrays, Cooleman and Right Cooleman Caves) does not require the written consent of the Service.
- See Section 8.11 for a list of management trails in the Wilderness Zone where cycling is permitted.
- With the exception of those areas listed in Section 8.7.
- With the exception of those exclusion zones listed in Section 8.12.
- No public access roads occur in the Wilderness or Back Country Zones.
- With the exception of those areas listed in Sections 9.2 and 9.4.
- Lift across Kosciuszko Road at Charlotte Pass only.
- Permitted special events include public gatherings such as weddings, repatriations, ceremonies, concerts, re-unions and commemorative events as well as organised recreation activities such as orienteering, rogaining, triathlon, biathlon, ski racing, ski marathons, cycling, walking, motorbike riding and running events. See Section 8.20 for the assessment process for permitted events.
- See Section 8.7 for a list of locations where vehicle-based camping with horses is permitted.
- No commercial activities are permitted in the Wilderness Zone, except horse riding with consent on trails described in 8.7.1(2).
- Horse riding will only be permitted within the Thredbo alpine resort lease area under current lease conditions.
- Lift-assisted snow-sports only within alpine resort management units, Cabramurra and Sponars Chalet.

### Notes

- For new activities not listed in this schedule, refer to the assessment process outlined in Section 8.21.
- Off-road vehicle use is prohibited.
- Some roads are closed to the public during the winter season.
- For additional resort-based activities refer Section 8.8.
- Schedule 1 does not restrict the operation of current services provided by Snowy Hydro Limited under the terms of the Snowy Park Lease.

## Schedule 5 Existing Visitor Facilities

Table S5.1 NPWS camping and day use areas

Place	Zone	Description
Artists Bend	Major Road Corridor	Trackhead for Tongaroo Walking Track to Jacobs River Camping Area
Behrs Flat	Minor Road Corridor	Camping Area (C2), Day Use Area (D2), toilet(s), camping with horses permitted, 4WD access only
Black Perry Rest Area	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), table(s),
Blowering Cliffs	Major Road Corridor	Day Use Area (D1), trackhead for Blowering Cliffs Walk, fireplace(s), tables
Blue Waterholes	Minor Road Corridor	Camping Area (C2), Day Use Area (D2), trackhead for Nicole Gorge Walk and Clarke Gorge Walk, toilet(s), fireplaces(s)
Bradleys/O'Briens Hut	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), table(s), toilet(s)
Bradneys Gap	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), toilet(s)
Broken Cart	Minor Road Corridor	Camping is permitted, no facilities currently provided
Buddong Falls	Minor Road Corridor	Camping Area (C2), Day Use Area (D2), trackhead for Buddong Falls Track, fireplace(s), table(s), toilet(s)
Bullocks Hill	Major Road Corridor	Camping Area (C2), Day Use Area (D2), toilet(s), camping with horses permitted
Bullocks Hut	Back Country Zone	Day Use Area (D2), toilet(s)
Cascades	Major Road Corridor	Trackhead for Cascades Fire Trail and Thredbo River Walk
Charlotte Pass	Visitor Services Zone	Day Use Area (D3), lookout, trackhead for Main Range access, disabled toilet
Clover Flat	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table, toilet(s)
Cooinbil Hut	Minor Road Corridor	Camping Area (C2), Day Use Area (D2), toilet(s), camping with horses permitted
Coolamine Homestead	Minor Road Corridor	Day Use Area (D2), toilet(s)
Cooleman Mountain	Minor Road Corridor	Camping Area (C2), Day Use Area (D3), fireplace(s), picnic table(s), toilet(s)
Coonara Point	Back Country Zone	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Creel Bay	Major Road Corridor	Day use area (D2), toilet(s), boat ramp
Currango Homestead	Minor Road Corridor	Accommodation, Day Use Area (D2), toilet(s)
Delaneys Hut Rest Area	Major Road Corridor	Day Use Area (D2), toilet(s)
Denison	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s) provided by Snowy Hydro Limited
Diggers Creek (Sponars Chalet)	Major Road Corridor	Day Use Area (D1), picnic table(s)
Dry Dam Shelter	Major Road Corridor	Day Use Area (D3), toilet(s)
Dubbo Flats	Minor Road Corridor	Camping is permitted, no facilities currently provided
Eucumbene River	Minor Road Corridor	Camping is permitted, no facilities currently provided (Four Mile Trail)
Eucumbene River (Snowy Mountains Highway)	Major Road Corridor	Camping is permitted, no facilities currently provided
Geehi Dam	Minor Road Corridor	Camping Area (C2), Day Use Area (D2), toilet(s)
Geehi Flats Rest Area	Major Road Corridor	Camping Area (C3), Day Use Area (D3), trackhead for Hannells Spur, fireplace(s), picnic table(s), toilet(s), wheelchair facilities
Ghost Gully	Minor Road Corridor	Camping Area (C2), Day Use Area (D2), toilet(s), camping with horses permitted

## Schedule 5 Existing Visitor Facilities

**Table S5.1 NPWS camping and day use areas** continued

Place	Zone	Description
Goldseekers	Major Road Corridor	Trackhead for Goldseekers Track, toilet(s)
Grassy Flat	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), toilet(s)
Gungarlin Bridge	Minor Road Corridor	Camping Area (C1), trackhead for management trails
Gurrangorambla Gate	Minor Road Corridor	Trackhead for access to Oldfields Hut, Mt Bimberi and Seventeen Flat
Guthega Power Station	Major Road Corridor	Trackhead for access to Jagungal Wilderness and Whites River corridor, toilet(s) provided by Snowy Hydro Limited
Guthega Village	Visitor Services Zone	Trackhead for access to Main Range
Halfway Flat	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Humes Crossing	Major Road Corridor	Camping Area (C3), Day Use Area (D3), fireplace(s), picnic table(s), toilet(s)
Island Bend	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Jacks Lookout	Major Road Corridor	Day Use Area (D2), fireplace(s), picnic table(s), lookout
Jacobs Bridge	Major Road Corridor	Day Use Area (D1), picnic table(s)
Jacobs River	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Jounama Creek (campsite 1)	Major Road Corridor	Camping Area (C3), Day Use Area (D3), fireplace(s), picnic table(s), toilet(s)
Jounama Creek (campsite 2)	Minor Road Corridor	Camping is permitted, no facilities currently provided
Kiandra	Major Road Corridor	Day Use Area (D3), trackhead for Kiandra Heritage Track, toilet(s)
Leatherbarrel Creek	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Log Bridge Creek	Major Road Corridor	Camping Area (C3), Day Use Area (D3), fireplace(s), picnic table(s), toilet(s), boat ramp
Long Plain Hut	Minor Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s) toilet(s), camping with horses permitted
Mining display (Kiandra)	Major Road Corridor	Day Use Area (D2), fireplace(s), picnic table(s)
Murray Gates	Minor Road Corridor	Camping Area (D2), Day Use Area (D2), toilet(s)
Ngarigo	Major Road Corridor	Camping Area (C3), Day Use Area (D3), fireplace(s), picnic table(s), toilet(s)
No Name	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s)
O'Hares Rest Area	Major Road Corridor	Camping Area (C3), Day Use area (D3), fireplace(s), picnic table(s), toilet(s)
Ogilvies Creek	Major Road Corridor	Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Old Geehi/YHA Hut	Minor Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), toilet(s)
Old Snowy Camp	Minor Road Corridor	Camping Area (C2), Day Use Area (D2), toilet(s), camping with horses permitted
Olsens Lookout	Minor Road Corridor	Day Use Area (D2), fireplace(s), picnic table(s), toilet(s), lookout
Perkins Flat	Minor Road Corridor	Camping is permitted, no facilities currently provided
Pinch River	Major Road Corridor	Camping Area (C3), Day Use area (D3), fireplace(s), picnic table(s), toilet(s), camping with horses permitted
Rainbow Lake	Major Road Corridor	Trackhead for Rainbow Lake Trail
Ravine	Minor Road Corridor	Camping is permitted, no facilities currently provided
Rennix Gap	Major Road Corridor	Day Use Area (D1), trackhead for Rennix Track, picnic table(s)



## Schedule 5 Existing Visitor Facilities

**Table S5.1 NPWS camping and day use areas** continued

Place	Zone	Description
Rock Flat	Minor Road Corridor	Camping Area (C3), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Rocky Plain	Major Road Corridor	Camping Area (C3), Day Use Area (D2), toilet(s), camping with horses permitted
Round Mountain	Major Road Corridor	Trackhead for access to Jagungal Wilderness, toilet(s)
Running Waters	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Sawpit Creek	Visitor Services Zone	Day Use Area (D3), trackhead for Palliabo Track, Waterfall Track and Sawpit Track, fireplace(s), picnic table(s), toilet(s)
Sawpit Creek Education Centre)	Visitor Services Zone	Day Use Area (D4), education centre - open for bookings only outside peak holiday periods, toilet(s),
Sawyers Hut	Major Road Corridor	Day Use Area (D2), picnic table(s), toilet(s)
Scammels Ridge Lookout	Major Road Corridor	Day Use Area (D2), lookout, toilet(s)
Scotchies Yards	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s)
Snowy River (adit site)/ Burrungubuggee	Minor Road Corridor	Trackhead for walk to Burrungubuggee Valley
Spencers Creek	Major Road Corridor	Day Use Area (D1), picnic table(s)
The Pines	Major Road Corridor	Camping Area (C3), Day Use Area (D3), fireplace(s), picnic table(s), toilet(s), boat ramp
Thredbo Diggings	Major Road Corridor	Camping Area (C3), Day Use Area (D3), trackhead for Bullocks Nature Trail, fireplace(s), picnic table(s), toilet(s)
Thredbo Ranger Station <sup>1</sup>	Visitor Services Zone	Access to Thredbo Valley Track, Camping areas (C4), Day Use Area (D?), fireplace(s), barbecue(s), picnic table(s), toilet(s)
Thredbo River	Major Road Corridor	Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Three Mile Dam East	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Three Mile Dam West	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Tom Groggin	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s), wheelchair facilities, camping with horses permitted
Tooma Dam	Major Road Corridor	Trackhead for management trails, toilet(s)
Tumut Ponds	Minor Road Corridor	Camping Area (C2), Day Use Area (D1), boat ramp
Twin Valley	Major Road Corridor	Day Use Area (D1), picnic table(s)
Wallace Craigie Lookout	Major Road Corridor	Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Wares Yards	Minor Road Corridor	Camping Area (C2), Day Use Area (D2), toilet(s), camping with horses permitted
Willis	Major Road Corridor	Camping Area (C2), Day Use Area (D2), fireplace(s), picnic table(s), toilet(s)
Yachting Point	Major Road Corridor	Camping Area (C3), Day Use Area (D3), fireplace(s), picnic table(s), toilet(s)
Yarrangobilly Caves	Visitor Services Zone	Day Use Area (D4), Lookout, Trackhead for Castle, River, Glory Farm and Lookout Walks, show caves, information centre, fireplace(s), gas barbecue(s), picnic table(s), toilet(s), wheelchair facilities, thermal pool, C4 camping area <sup>1</sup>
Yarrangobilly Village	Major Road Corridor	Camping Area (C3), Day Use Area (D3), barbecue, fireplace(s), picnic table(s), toilet(s)
Yolde	Major Road Corridor	Camping Area (C3), Day Use Area (D3), fireplace(s), picnic table(s), toilet(s)

<sup>1</sup>Proposed

## Schedule 5 Existing Visitor Facilities

### Table S5.2 Walking tracks

Walking Track	Current Class <sup>1</sup>	Wilderness Zone	BackCountry Zone	Minor Road Corridor	Major Road Corridor	Visitor Services Zone
Australian Alps Walking Track	5	✓	✓	✓	✓	✓
Bicentennial National Trail <sup>2</sup>	MT		✓			
Blowering Cliffs Walk	4		✓			
Bluff Walk	4					✓
Bobs Ridge Walk	MT	✓	✓			
Bridle Trail Loop	3					✓
Buddong Falls Track	3		✓			
Bullocks Track/Muzzlewood Path	3		✓			✓
Canyon Falls Track	3		✓			
Castle Walk	3					✓
Charlotte Pass to Blue Lake Lookout	2		✓			✓
Charlotte Pass to Guthega Village	3		✓			
Charlotte Pass to Porcupine Rocks via Rams Head Range	3		✓			
Clarke Gorge Track	4	✓				
Cowombat/Cascades	MT	✓	✓			
Dead Horse Gap – South Ramshead	6		✓			
Dead Horse Gap Track	3		✓			✓
Dicky Cooper	6		✓			
Four Mile Hut Walk	MT & 4		✓	✓		
Geehi Flat Camping and Day Use Area	1				✓	
Glory Farm Walk	3					✓
Goldseekers Track	3		✓	✓		
Gooandra Walk	4		✓			
Grey Mare Trail	MT	✓				
Gungartan	6	✓				
Guthega Village-Guthega Trig-Consett Stephen Pass	5		✓			✓
Guthega Village to Porcupine Rocks and surrounds	3		✓			
Guthega Village-Mt Twynam	5		✓			✓
Hannels Spur	6	✓	✓			
Hume & Hovell Walking Track	5	✓				
Jagungal Summit (multiple routes)	6	✓				
Jounama Creek Walk	3		✓			
Kiandra Heritage Track	2				✓	
Kosciuszko Walk	2		✓			✓
Landers Creek Track	4		✓			
Main Range Walk (Blue Lake – Rawson Pass)	3		✓			

## Schedule 5 Existing Visitor Facilities

### Table S5.2 Walking tracks continued

Walking Track	Current Class <sup>1</sup>	Wilderness Zone	Back Country Zone	Minor Road Corridor	Major Road Corridor	Visitor Services Zone
Meritts Nature Track	3					✓
Meritts Traverse	3		✓			✓
Mill Creek Falls Track	4		✓			
Mt Bimberi	5	✓	✓			
Mt Kosciuszko-Mueller Peak saddle - Mt Townsend	6		✓			
Mt Morgan	6		✓			
Mt Stillwell	5		✓			
Mueller Pass–Lake Albina (numerous)	6		✓			
Nicole Gorge Track	4	✓				
Old Mountain Road Walk	4		✓	✓	✓	
Pallaibo Track	3		✓	✓		
Perisher Valley to Bullocks Flat	3		✓			
Pipeline Path	3					✓
Porcupine Track	3		✓			✓
Rainbow Lake Walk	MT		✓			
Ramshead-South Ramshead	6		✓		✓	
Remains of the 'Southern Cloud'	3		✓		✓	
Rennix Walk	4		✓			
Rileys Flat	6		✓			
River Walk	3					✓
Riverside (Golf Course) Walk	3				✓	✓
Round Mountain Trail	MT	✓				
Sawpit Track	3		✓			✓
Schlink Pass Road	MT		✓			
Snow Gums Walk	2					✓
Summit Walk	2		✓			
Tabletop Mountain Walk	MT		✓			
The Pilot	6	✓				
Thermal Pool	3					✓
Thredbo River Track	3				✓	✓
Thredbo Valley Track - Cascade Trail to Thredbo River Picnic Area <sup>4</sup>	S U				✓	✓
Tongaroo Walking Track	4				✓	
Waragong Sugarloaf Walk	4	✓	✓			
Waterfall Track	3		✓			

#### Legend for Table S5.2:

- Classes 1-6 (Table S6.5), MT = management trail
- Multi-purpose trail
- Proposed tracks
- Shared-use track

#### Note

Management trails in Kosciuszko National Park are commonly used for walking. While some popular walks on management trails have been listed in this table, not all management trails that are used for walking have been included.

**Schedule 5 Existing Visitor Facilities**  
**Table S5.3 Cross-country skiing facilities**

Trail	Function	Facilities
<b>Perisher/Smiggins</b>		
Betts Link (1.5 km)	Intermediate touring	Marked trail
Chalet Loop (5 km)	Beginner/Intermediate touring	Marked trail
Kosciuszko Rd Trail (8 km)	Beginner/Intermediate touring	Marked trail
Mt Piper Trail (2.9 km)	Advanced touring	Marked trail
Paddys Link (0.7 km)	Intermediate touring	Marked trail
Perisher Loops (2.5 km, 5 km, 7.5 km, 10 km)	Beginner/Intermediate touring and racing	Day use public shelters (2) and marked ski trails
Porcupine Link (1.7 km)	Intermediate touring	Marked trail
Porcupine Trail to Betts Creek (10km)	Intermediate touring	Marked trail
Prussian Plain Link (1.5 km)		Marked trail
Smiggin Holes Loops (2 km, 4 km)	Beginner/Intermediate touring and racing	Marked trail
Stilwell Trail (6.2 km)	Advanced touring	Marked trail
Technical Aid (0.5 km)	Disabled	
Trapyard Link (3 km)	Intermediate touring	Marked trail
Wheatley Link (2 km)	Advanced touring	Marked trail
<b>Cabramurra/Selwyn</b>		
Dry Dam loops (5, 10, 15, 20 km loops)	Intermediate touring	Shelter and marked loop network
Goldseeker Trail	Intermediate touring	Marked trail
Link Trail to 3-Mile Dam, Kings Cross Rd	Intermediate touring	No ski poles to mark routes, trail along edge of road
Selwyn/Tabletop	Advanced touring	Management trail - no facilities
<b>Other</b>		
Kosciuszko Walk (Thredbo Top Station to Rawson Pass)	Advanced touring	Marked trail

## Schedule 5 Existing Visitor Facilities

Table S5.4 Camping facilities operated under concession

Facility	Description
Camp Hudson	Camp facilities: <ul style="list-style-type: none"> <li>• Communal kitchen/dining building;</li> <li>• Communal dormitory building;</li> <li>• Hall; and Toilet block.</li> </ul>
Kosciuszko Mountain Retreat (Sawpit Creek)	Picnic and camping area and associated facilities: <ul style="list-style-type: none"> <li>• Camping area: unpowered camping sites with fireplaces, garbage bins, shelter, toilet and shower facilities;</li> <li>• Caravan area: powered caravan sites with fireplaces and garbage bins;</li> <li>• Small group camping area: group sites with fireplaces and garbage bins;</li> <li>• Large group camping area: group sites with fireplaces and garbage bins;</li> <li>• Cabins: self-contained cabins available for rental;</li> <li>• Picnic facilities: picnic tables, fireplaces, gas/electric barbecues;</li> <li>• Sewage treatment plant;</li> <li>• Water supply dam: dam on Bald Mountain Creek, pump shed, oil storage tank; and</li> <li>• Water supply tanks.</li> </ul>
Thredbo Ranger Station	Camp Facilities: <ul style="list-style-type: none"> <li>• camping area: levelled powered and unpowered camping sites with fireplaces, seating, garbage bins, shelters, camp kitchen, toilets and shower facilities</li> <li>• caravan area: powered caravan sites with fireplaces and garbage bins</li> <li>• small and large group camping areas: group sites with fireplaces and garbage bins</li> <li>• hard-roofed accommodation</li> <li>• picnic facilities: picnic tables, fireplaces, gas/electric barbecues</li> <li>• sewage treatment system</li> <li>• water supply tanks</li> <li>• internal roads and parking.</li> </ul>

## Schedule 6 Standard of Visitor Facilities

Table S6.1 Camping area classification

CLASSIFICATION	Remote camping area (C1)	Basic camping area (C2)	Camping area (C3)	Camping ground (C4)
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### Zone Permitted

Zone	Wilderness Back Country	Minor Road Major Road	Major Road	Visitor Services
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### Facility

Barbecues – gas or electric	no	optional in Major Road Corridor Zone only	optional	optional
Built accommodation (cabins and on-site tents)	no	no	no	Kosciuszko Mountain Retreat and Thredbo Ranger Station only
Fireplaces	no	optional	optional	optional
Garbage collection	no	optional <sup>1</sup>	optional <sup>1</sup>	optional <sup>1</sup>
Information shelter/display	no	optional	optional	yes
Kiosk	no	no	no	optional
Powered sites	no	no	no	optional
Resident manager	no	no	no	optional
Shelter/covered area	no	no	optional	optional
Showers	no	no	no	yes
Tables	no	optional	optional	yes
Toilets – pump-out or composting	optional	yes	yes	no
Toilets – sewer or treatment plant	no	no	no	yes
Vehicle access to site	no	optional	yes	yes
Visitor centre	no	no	no	optional
Water - reticulated	no	no	no	optional
Water – tank	optional	optional	optional	optional

#### Legend for Table S6.1:

**yes** = facility or service should be provided

**no** = facility or service will not be provided

**optional** = facility or service may be provided

1. Existing collection will continue in the short-term with a view to phasing out.



**Schedule 6 Standard of Visitor Facilities**  
**Table S6.2 Day use area classification**

CLASSIFICATION	Basic day use area (D1)	Medium day use area (D2)	Major day use area (D3)	Major facility area (D4)	Lookout	Track/Trail head
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**Zone Permitted**

Zone	Wilderness Back Country	Minor Road Major Road Visitor Services	Major Road Visitor Services	Visitor Services	All zones except Wilderness	All zones except Wilderness and Back Country
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**Facility**

Barbecues – gas or electric	no	optional in Major Road Corridor and Visitor Services Zones only	optional	optional	no	no
Fireplaces	no	optional	optional	optional	no	no
Garbage collection	no	optional <sup>1</sup>	optional <sup>1</sup>	optional <sup>1</sup>	no	no
Information display	no	optional	optional	yes	optional	optional
Shelter/covered area	no	no	optional	yes	no	no
Tables	no	optional	optional	yes	optional	no
Toilets – pump-out or composting	optional	optional	yes	no	optional	optional
Toilets – sewer or treatment plant	no	no	no	yes	no	no
Vehicle access	no	yes	yes	yes	optional	yes
Visitor centre	no	no	no	optional	no	no
Water available (incl. stream)	optional	optional	optional	yes	optional	optional

**Legend for Table S6.2:**

**yes** = facility or service should be provided

**no** = facility or service will not be provided

**optional** = facility or service may be provided

- Existing collection will continue in the short-term with a view to phasing out.



## Schedule 6 Standard of Visitor Facilities

Table S6.3 Vehicular road and trail classification

ROAD OR TRAIL CLASSIFICATION	Dormant - 4WD	Trail - dry weather 4WD	Trail - all weather 4WD	Road - dry weather 2WD	Road - all weather 2WD
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### Zone Permitted

Zone	Wilderness Back Country Minor Road	Wilderness Back Country Minor Road	Wilderness Back Country Minor Road	Minor Road	All zones except Wilderness and Back Country
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### Use/standard

Bus & coach access	no	no	no	optional	yes
Caravan access	no	no	no	optional	yes
Public vehicular use	no	Minor Road Corridors only	Minor Road Corridors only	yes	yes
Surface material	ground cover	gravel or earth	gravel or earth	gravel or earth	sealed or gravel

### Legend for Table S6.3:

**yes** = access is suitable for type of vehicle specified  
**no** = access is not suitable for type of vehicle specified  
**optional** = access may be provided

### Notes

- Management trails may occur in Wilderness and Back Country Zones but are not available for public vehicular use.
- Management trails in the Back Country Zone are for management, emergency and other authorised vehicles only but may be available to the public for walking, cycling and horse riding.
- Management trails in the Wilderness Zone are for management, emergency and other authorised vehicles only but may be available to the public for walking and, in some instances, cycling, and horse riding as described in 8.7.1(2)).
- Dormant roads will be maintained by slashing and general maintenance only and are for fire management purposes.
- Some public use roads are closed to the public for the winter season.
- Management of roads included in the Road Maintenance Agreement between the Service and Snowy Hydro Limited must comply with the provisions of that agreement.

## Schedule 6 Standard of Visitor Facilities

Table S6.4 Walking track classification<sup>1</sup>

ZONE	Wilderness	Back Country	Minor Road Corridor	Major Road Corridor	Visitor Services
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### Walking Track Classification<sup>1</sup>

All access path (Class 1)	no	no	yes	yes	yes
Graded path (Class 2)	no	yes	yes	yes	yes
Walking track (Class 3)	no	yes	yes	yes	yes
Hiking track (Class 4)	no	yes	no	no	no
Marked route (Class 5)	no <sup>2</sup>	yes	no <sup>2</sup>	no <sup>2</sup>	no <sup>2</sup>
Unmarked route (Class 6)	yes	yes	no	no	no

#### Legend for Table S6.4:






1. A description of walking track classifications and key track characteristics is provided in Table S6.5.
2. With the exception of the two long-distance walking tracks (Australian Alps Walking Track and Hume and Hovell Track) and the multi-purpose trail (Bicentennial National Trail) that cross the park.

#### Note

- Walking tracks that commence in a developed zone and continue on into a less-developed zone may be of a standard considered appropriate for the less-developed zone along their entire lengths.

## Schedule 6 Standard of Visitor Facilities

Table S6.5 Walking track description

	General description	Key track characteristics
 <p><b>All access path (Class 1)</b></p>	<p>Opportunity for large numbers of visitors, including those with reduced mobility, to undertake walks which are provided with a high level of interpretation and facilities. Users can expect abundant opportunities to learn about the natural environment through interpretive signs or brochures. Users can expect frequent encounters with others.</p>	<p>Generally a broad, hard surfaced track suitable for wheelchair use. Steps allowed only with alternate ramp access. Width: 1200 mm or more. Well maintained with minimal intrusions. Facilities along the track may include lookout platforms, seats and barrier rails. Users need no previous experience and are expected to exercise normal care regarding their personal safety.</p>
 <p><b>Graded path (Class 2)</b></p>	<p>Opportunity for moderate numbers of visitors to walk easily in natural environments which are provided with a moderate to high level of interpretation and facilities. Users can expect to learn about the natural environment with moderate to abundant opportunities to learn through interpretive signs or brochures. Users can expect frequent encounters with others.</p>	<p>Generally a modified or hardened surface. Width: 900 mm or more. Well maintained with minimal intrusions. Facilities along the track may include lookout platforms, seats and barrier rails. Users need no previous experience and are expected to exercise normal care regarding their personal safety.</p>
 <p><b>Walking track (Class 3)</b></p>	<p>Opportunity for visitors to walk in slightly modified natural environments requiring a moderate level of fitness and where the provision of interpretation and facilities is not common. Users can expect opportunities to observe and appreciate the natural environment with limited provision of interpretive signage. Users can expect occasional encounters with others.</p>	<p>Generally a modified surface, sections may be hardened. Width: variable and generally less than 1200 mm. Kept mostly clear of intrusions and obstacles. Facilities generally not provided except for specific safety and environmental considerations. Users need no bushwalking experience and a minimum level of specialised skills. Users may encounter natural hazards such as steep slopes, unstable surfaces and minor water crossings. They are responsible for their own safety.</p>
 <p><b>Hiking track (Class 4)</b></p>	<p>Opportunity for visitors to explore and discover relatively undisturbed natural environments along defined and distinct tracks with minimal (if any) facilities. Users can expect opportunities to observe and appreciate the natural environment without provision of interpretive signage. Users can expect opportunities for solitude with few encounters with others.</p>	<p>Generally distinct without major modification to the ground. Encounters with fallen debris and other obstacles are likely. Facilities generally not provided except for specific safety and environmental considerations. Users require a moderate level of specialised skills such as navigation skills. Users may require maps and navigation equipment to successfully complete the track. Users need to be self-reliant, particularly in regard to emergency first aid and possible weather hazards.</p>
 <p><b>Marked route (Class 5)</b></p>	<p>Opportunity for visitors with advanced outdoor knowledge and skills to find their own way along often indistinct tracks in remote locations. Users can expect frequent opportunities for solitude with few encounters with others.</p>	<p>Limited modification to natural surfaces and track alignment may be indistinct in places. Minimal cleaning and debris along the track. May include steep sections of unmodified surfaces. Facilities generally not provided except for specific safety and environmental considerations. Users require a high degree of specialised skills such as navigation skills. Users need to be self-reliant, particularly in regard to emergency first aid and possible weather hazards.</p>
 <p><b>Unmarked route (Class 6)</b></p>	<p>Opportunity for highly experienced walkers to explore remote and challenging natural areas without reliance on managed tracks. Users can expect extended periods of solitude with few encounters with others.</p>	<p>No modification of the natural environment. May include steep sections of unmodified surfaces. Facilities generally not provided. Users require previous experience in the outdoors and a high level of specialised skills such as navigation skills. Users need to be self-reliant, particularly in regard to emergency first aid and possible weather hazards.</p>

### Note

- The Australian Standard for walking tracks (AS2156.1-2001) has been used as the basis for the tracks classification system. Refer to this Standard for complete details on each class of track. The names and symbols given to each class of track have been applied for ease of use and comprehension and are not derived from the Standard.

## Schedule 7 Kosciuszko Alpine Resorts

### A Context for the Future Development of NSW Alpine Resorts

The New South Wales Government recognises the vital importance of the Alpine Resorts, which occupy less than one percent of Kosciuszko National Park, to the State and to the Alpine Region within which they are located.

Each year, these resorts provide enjoyment for over one million visitors and make a significant contribution to the economy of the Alpine Region and the State of New South Wales. It is important that this contribution is acknowledged and the success of the State's only Alpine Resorts fostered.

The New South Wales Government is committed to fostering sustainable and prosperous Alpine Resorts. Future planning of the resorts will uphold the Government's longstanding commitment to protection of the natural and cultural values of Kosciuszko National Park and ensure development is carried out in an ecologically sustainable manner.

This commitment will also ensure the Alpine Resorts are developed and operated in a manner that protects the exceptional natural and cultural values of the Kosciuszko National Park and, in particular, the alpine and subalpine areas within which the resorts are located.

The principles of Ecologically Sustainable Development will underpin decision-making. This commitment will be supported by rigorous assessment processes, environmental management systems and state of the environment reporting.

The New South Wales Government will work with resort operators to showcase sound environmental practice and sustainable design that respects the unique features of the area so that they are enjoyed and protected for present and future generations.

The New South Wales Government will have two interlinked plans to manage the Alpine Resorts. Together, the two plans provide an integrated planning system for the Alpine Resorts within the Kosciuszko National Park.

The plans are based on a vision that seeks to develop viable, high quality resorts; provide opportunities and benefits for the regional community; and ensure that all visitors have the opportunity to enjoy a range of recreational activities in the unique alpine environment, while acquiring a memorable experience and understanding of the significance of the Kosciuszko National Park.

The Department of Environment and Conservation has prepared a new Plan of Management for the Kosciuszko National Park. This plan provides for the management of the whole of the Park.

The Department of Planning has prepared a plan for the Alpine Resorts. This plan will govern the management of land use and development within Kosciuszko National Park's alpine resorts.

In summary, the new planning framework for the Kosciuszko National Park will balance the need to conserve the exceptional natural and cultural values of the Park with the need to foster a robust tourism industry that benefits the region and the State of New South Wales.

## Schedule 8 Accommodation Numbers in Alpine Resorts

[This schedule](#), which is updated periodically, is a separate document located on the NPWS website.

## Schedule 9 Facilities Operated by Other Organisations

No.	Place	Operating Organisation	Description
1.	Perisher Valley	Bureau of Meteorology	Meteorological station
2.	Thredbo Village	Bureau of Meteorology Bureau of Meteorology	Meteorological station Meteorological station
3.	Charlotte Pass	Bureau of Meteorology	Meteorological station
4.	Providence Portal substation	Country Energy	Substation
5.	Providence Portal substation to Cabramurra 1	Country Energy	33 kV transmission line
6.	Mount Selwyn	Country Energy	33kV spur and substations
7.	Snowy Adit substation to Jindabyne pumping station	Country Energy	66 kV transmission line
8.	Guthega Village	Country Energy	Numerous substations and underground reticulation
9.	Guthega Power Station to Smiggin Holes	Country Energy	2 x 33kV underground transmission lines
10.	Smiggin Holes to Perisher Valley	Country Energy	2 x 33kV underground transmission lines
11.	Smiggin Holes	Country Energy	Numerous substations and underground reticulation
12.	Perisher to Mount Blue Cow tunnel	Country Energy	11 kV transmission line
13.	Perisher to Bullocks Portal tunnel	Country Energy	11 kV transmission line
14.	Bullocks Portal	Country Energy	Country Energy
15.	Bullocks Portal to Bullocks Flat	Country Energy	33 kV overhead transmission lines 11 kV overhead transmission lines
16.	Skitube terminal Bullocks Flat	Country Energy	Substation and overhead transmission line
17.	Bullocks Flat to Thredbo (Alpine Way)	Country Energy	2 x 33 kV overhead transmission lines
18.	Perisher Valley - above Skitube	Country Energy	Zone substation
19.	Perisher Valley	Country Energy	Numerous substations and underground reticulation
20.	Perisher Valley to Charlotte Pass	Country Energy	2 x underground 11kV transmission line
21.	Smiggin Holes to Guthega Link Road	Country Energy	11 kV underground transmission line
22.	Mount Blue Cow to Guthega	Country Energy	11 kV underground transmission line
23.	Mount Blue Cow	Country Energy	Numerous substations and underground reticulation
24.	Thredbo Village - Friday Flat	Country Energy	Zone substation

## Schedule 9 Facilities Operated by Other Organisations

No.	Place	Operating Organisation	Description
25.	Thredbo Village and ski slopes	Country Energy	Numerous substations and underground reticulation
26.	Jindabyne to Waste Point and Sawpit Creek	Country Energy	11 kV transmission line
27.	Jindabyne to Smiggin Holes	Country Energy Country Energy Country Energy	33 kV electricity transmission line Branch line to Wilson Valley Branch line to Sponars Chalet
28.	Charlotte Pass	Country Energy	Numerous substations and underground reticulation
29.	Perisher Valley to Charlotte Pass Village	Country Energy	11 kV electricity cable (underground) and substations
30.	Perisher Valley	Elgas Elgas Elgas Elgas Elgas	LPG storage tanks Underground pipes Numerous gas meters and associated fixtures and fittings Cylinders
31.	Smiggin Holes	Elgas Elgas Elgas  Elgas	LPG storage tanks Underground pipelines Numerous gas meters and associated fixtures and fittings Cylinders
32.	Sponars Chalet	Elgas	LPG storage tank
33.	Ski Rider	Elgas	LPG storage tank
34.	Wilson's Valley	Elgas	Cylinder at ex-police barracks
35.	Kosciuszko Mountain Retreat (Sawpit Creek)	Elgas	Cylinders
36.	Sawpit Creek	Elgas	Cylinder
37.	Waste Point	Elgas	Cylinders
38.	Charlotte Pass	Elgas Elgas Elgas Elgas Elgas	LPG storage tanks Underground pipelines Numerous gas meters and associated fixtures and fittings Cylinders
39.	Guthega	Elgas	Small number of underground pipelines Gas meters and associated fixtures and fittings
40.	Kiandra (RTA depot)	Elgas	LPG storage tank
41.	Yarrangobilly Caves	Elgas	LPG storage tank
42.	Thredbo Village	Elgas Elgas Elgas Elgas  Elgas	LPG storage tank Adjacent shed housing a hot water boiler Adjacent compound with tank filling facilities Numerous gas meters and associated fixtures and fittings Small number of cylinders

## Schedule 9 Facilities Operated by Other Organisations

No.	Place	Operating Organisation	Description
43.	Merrits Kiosk	Elgas Elgas Elgas	2 LPG storage tanks Gas meter and associated fixtures and fittings Small number of cylinders
44.	Thredbo Ranger Station	Elgas	Cylinder
45.	Cabramurra/Mount Selwyn	Kleenheat	LPG bulk storage tank
46.	Thredbo	Kleenheat	LPG bulk storage tank
47.	Thredbo Village	Kleenheat	LPG bulk storage tank
48.	Perisher Valley	NSW Police	Shopfront
49.	Thredbo Village	NSW Police	Shopfront
50.	Guthega - Nordic Centre	Optus	Lattice tower and shelter
51.	Thredbo – Crackenback Chairlift	Optus	Equipment shelter
52.	Perisher - Prussian Flat Perisher - Prussian Flat	Optus & Crown Castle Int. Optus & Crown Castle Int.	Tower (shared) Shelter (Optus only)
53.	Thredbo - Crackenback Chairlift	Optus & Crown Castle Int.	5 metre monopole (shared)
54.	Perisher Valley - behind Valhalla Lodge	Optus, Vodafone & Crown Castle Int.	Base station on communications tower (shared)
55.	Thredbo - Eagles Nest	Vodafone & Crown Castle Radio Room	Base station in Thredbo Communications Tower (shared)
56.	Blue Cow - Skitube terminal	Vodafone, Telstra, Optus & Crown Castle Int.	Base station in communications room (shared)
57.	Yarrangobilly Village	RTA RTA	Garages (two buildings) Water storage tanks
58.	Kiandra depot	RTA RTA RTA RTA RTA	Office and workmen's quarters Garage buildings (x3) Petrol bowser Public telephone and toilets Water supply tank
59.	Wilson's Valley	RTA RTA RTA RTA	Workmen's barracks and car-park Plant garage and compound Water supply Oil and lubricant shed
60.	Various areas of Kosciuszko National Park	Snowy Hydro Limited	See Snowy Park Lease Annexures 2 & 3 and the associated Schedule of Existing Developments
61.	Yarrangobilly Caves  Powerhouse to radio shed  Radio shed to Snowy Mountains Highway via caves access road	Telstra Telstra Telstra Telstra Telstra	Subscriber telephone facilities Radio telephone shed Telephone cable (underground) Power supply cable for radio shed Telephone cable (underground)



## Schedule 9 Facilities Operated by Other Organisations

No.	Place	Operating Organisation	Description
62.	Currango	Telstra Telstra	Radio telephone aerial Underground cable from aerial to Currango Homestead
63.	Cabramurra	Telstra Telstra Telstra	Microwave Subscriber telephone facilities and public telephone Telephone exchange
64.	Mount Selwyn	Telstra Telstra Telstra Telstra Telstra	Microwave tower Mobile antennae on tower Multiplex equipment Cables in conduit Subscriber telephone facilities
65.	Kiandra	Telstra	Radio (pole mounted) and public telephone cabinet
66.	Adaminaby to Kiandra	Telstra	Telephone pole route
67.	Perisher Valley to Bullocks Hut	Telstra	Optical fibre telephone cable in Skitube
68.	Perisher Valley	Telstra Telstra Telstra	Telephone exchange Mobile antennae on pole Subscriber telephone facilities
69.	Perisher Valley to Smiggin Holes	Telstra Telstra	Optical fibre telephone cable Telephone cable (suspended)
70.	Smiggin Holes	Telstra Telstra Telstra Telstra Telstra Telstra	Passive repeater Telephone exchange Microwave tower Mobile antennae on tower Telephone cables (suspended and underground) Subscriber telephone facilities
71.	Perisher Valley to Blue Cow	Telstra	Optical fibre telephone cable in Skitube
72.	Blue Cow	Telstra	Subscriber telephone facilities
73.	Blue Cow to Guthega Village	Telstra	Optical fibre (in conduit)
74.	Guthega Village	Telstra	Subscriber telephone facilities
75.	Perisher Valley to Charlotte Pass Village	Telstra	Optical fibre telephone cable (in conduit)
76.	Charlotte Pass Village	Telstra	Subscriber telephone facilities
77.	Tumut to Talbingo	Telstra	Telephone cable
78.	Blowering	Telstra	Subscriber telephone facilities
79.	Thredbo  Thredbo Village Eagles Nest	Telstra Telstra Telstra Telstra Telstra Telstra	Telephone exchange Microwave tower Microwave reflector Mobile antennae on pole Subscriber telephone facilities Subscriber telephone facilities and mobile antennae on tower

## Schedule 9 Facilities Operated by Other Organisations

No.	Place	Operating Organisation	Description
80.	Thredbo to Bullocks Hut	Telstra	Optical fibre in conduit and aerial on shared electricity poles
81.	Jindabyne to Waste Point	Telstra	Optical fibre telephone cable (in conduit) and buried copper cable
	Waste Point	Telstra	Subscriber telephone facilities
	Waste Point to Sawpit Creek	Telstra	Optical fibre telephone cable (in conduit) and buried copper cable
	Sawpit Creek	Telstra	Subscriber telephone facilities
	Sawpit Creek to Wilsons Valley	Telstra	Optical fibre telephone cable (in conduit) and aerial cable
	Wilsons Valley	Telstra	Above-ground housing subscriber telephone facilities
82.	Wilsons Valley to Smiggin Holes	Telstra	Telephone cable (suspended) and associated facilities
	Wilsons Valley Depot	Telstra	Branch telephone cable
		Telstra	Subscriber telephone facilities
	Ski Rider Hotel	Telstra	Subscriber telephone facilities
	Wilsons Barracks	Telstra	Subscriber telephone facilities
	Sponars Chalet	Telstra	Subscriber telephone facilities
83.	Resort areas of Perisher Valley, Smiggin Holes, Guthega, Thredbo, Charlotte Pass, and Mount Selwyn	Telstra	Reticulated network of cabling both overhead and underground servicing the developed village areas. Includes both copper and fibre optic cabling and associated structures (e.g. exchanges/towers)
84.	Murray Switching Station to Lower Tumut Switching Station	Transgrid	330 kV transmission line
85.	Upper Tumut Switching Station to Lower Tumut Switching Station	Transgrid	330 kV transmission line
86.	Upper Tumut Switching Station (UTSS)	Transgrid	Cableyard
		Transgrid	Auxiliary plant house
		Transgrid	Substation
	Tumut 1 Power Station to UTSS	Transgrid	330 kV transmission line
		Transgrid	Tumut 1 Power Station cableyard to UTSS generator 1-2
		Transgrid	Tumut 1 Power Station cableyard to UTSS generator 3-4
	Tumut 2 Power Station to UTSS	Transgrid	Tumut 2 Power Station cableyard to UTSS generator 5-6
		Transgrid	Tumut 2 Power Station cableyard to UTSS generator 7-8
87.	Murray Switching Station to Upper Tumut Switching Station	Transgrid	330 kV transmission line
88.	Murray 1 Power Station to Murray Switching Station	Transgrid	5 x 330 kV transmission line
89.	Guthega switchyard to Khancoban substation	Transgrid	132 kV transmission line
90.	Guthega Power Station	Transgrid	Switchyard

## Schedule 9 Facilities Operated by Other Organisations

No.	Place	Operating Organisation	Description
91.	Guthega Power Station switchyard to Snowy Adit substation	Transgrid	132 kV transmission line
92.	Lower Tumut Switching Station to Canberra via Tumut	Transgrid	330 kV transmission line
93.	Upper Tumut Switching Station to Yass via the Goobarragandra Valley	Transgrid	330 kV transmission line
94.	Upper Tumut Switching Station to Canberra via Long Plain	Transgrid	330 kV transmission lines
95.	Snowy Adit substation to Cooma via Gungahlin	Transgrid	132 kV transmission line

## Schedule 10 Register of Required Research

Subject Area	Research Requirements
<b>Climate</b>	<ul style="list-style-type: none"> <li>• Research the implications of climate change for the values of the park, including natural, cultural, recreational, utilitarian, economic and employment values.</li> <li>• Research the implications of climate change on the incidence and severity of wildfires and appropriate management responses.</li> <li>• Participate in international climate change initiatives such as the Global Observation Research Initiative in Alpine Environments (GLORIA) and the worldwide climate change monitoring trial being developed by UNESCO as an extension to the GLORIA project.</li> <li>• Study the environmental effects and possible benefits associated with artificial snow making and other climate manipulation strategies.</li> </ul>
<b>Rocks and Landforms</b>	<ul style="list-style-type: none"> <li>• Map the geodiversity values of the park.</li> <li>• Investigate the cultural significance of geodiversity features.</li> <li>• Determine sensitivity ratings and disturbance thresholds for earth science features and processes.</li> </ul>
<b>Karst</b>	<ul style="list-style-type: none"> <li>• Determine the significance and condition of natural and cultural values of karst areas.</li> <li>• Investigate the impact of recreational activities, fire and climate change on karst values.</li> <li>• Study hydrological relationships and landscape evolution in karst catchments.</li> <li>• Undertake visitor research (quantitative and qualitative) at Yarrangobilly and Cooleman Plain karst areas to inform visitor management decision-making and establish acceptable limits of disturbance.</li> </ul>
<b>Soils</b>	<ul style="list-style-type: none"> <li>• Map known high-risk soils and sites in popular parts of the park.</li> <li>• Investigate the relationships between soils, vegetation and groundcover at different altitudes and aspects in relation to erosion potential.</li> <li>• Investigate the responses of particular soil types and processes to different types and levels of disturbance.</li> </ul>
<b>Rivers and Lakes</b>	<ul style="list-style-type: none"> <li>• Investigate the natural and cultural values of the rivers, streams and lakes in the park.</li> <li>• Investigate the environmental health of watercourses and waterbodies and tolerance of stream life to disturbance including sewage effluent.</li> </ul>
<b>Native Plants</b>	<ul style="list-style-type: none"> <li>• Map the composition and distribution of plant communities in the park.</li> <li>• Improve the knowledge base of the non-vascular plant species (lichens, mosses, fungi, liverworts) of the park.</li> <li>• Undertake surveys for rare and threatened plant species not recently located that may regenerate after fire.</li> <li>• Investigate the cultural values of native plant species and communities in the park.</li> </ul>

## Schedule 10 Register of Required Research continued

Subject Area	Research Requirements
<b>Native Animals</b>	<ul style="list-style-type: none"> <li>• Study the current predator dynamics in the park and how they can be manipulated to benefit nature conservation and the interests of adjoining landowners.</li> <li>• Investigate the current condition of native animal habitats in the park against surmised pre-European conditions.</li> <li>• Investigate the feasibility of reintroducing locally extinct native animal species.</li> <li>• Investigate the cultural values of the native animals of the park.</li> <li>• Identify habitat links in areas adjoining the park.</li> <li>• Study the role of the park as a refuge and recruitment area for places outside the park.</li> <li>• Undertake genetic studies into threatened species and candidate species for reintroduction.</li> <li>• Investigate the types, distributions and ecological functions of invertebrates, especially in the alpine zone.</li> </ul>
<b>Cultural Heritage</b>	<ul style="list-style-type: none"> <li>• Undertake targeted heritage surveys and significance assessments.</li> <li>• Investigate the intangible cultural values of the park, including the undertaking of the “Memories” and “Traditional Knowledge” projects and investigations into the inspirational qualities of places and built structures.</li> <li>• Investigate and map links between heritage landscapes and places in the park and nearby areas.</li> <li>• Identify key historical travel routes in the park.</li> <li>• Identify areas containing concentrations of cultural heritage items as cultural heritage precincts.</li> <li>• Investigate the cultural values of exotic plant species found in the park.</li> <li>• Undertake the “Naming Project” to determine and record Aboriginal and non-Aboriginal names for landscape features, flora and fauna.</li> <li>• Undertake research that improves conservation management practices.</li> <li>• Investigate the following research themes:             <ul style="list-style-type: none"> <li>- Traditional Aboriginal lifestyle and its continuity and post-contact Aboriginal history;</li> <li>- Oral histories and knowledge (where appropriate) of members of the Aboriginal and non-Aboriginal communities;</li> <li>- The history of scientific investigations;</li> <li>- The history of the eucalyptus distilling industry;</li> <li>- The contribution of women to the history of the park;</li> <li>- The traditional pastoral lifestyle and its contribution to the Australian ethos and its manifestation today;</li> <li>- The role which efforts to protect the values of the area played in the development of a conservation ethic in Australia;</li> <li>- The history of recreation in the park; and</li> <li>- The history of park management.</li> </ul> </li> </ul>

## Schedule 10 Register of Required Research continued

Subject Area	Research Requirements
<b>Recreation</b>	<ul style="list-style-type: none"> <li>• Undertake research to establish and refine acceptable limits of disturbance for different environments and activities.</li> <li>• Collect and analyse visitor information including numbers of visitors to particular places and undertaking specific activities, visitor profiles, patterns, attitudes and expectations.</li> </ul>
<b>Soil Conservation and Rehabilitation</b>	<ul style="list-style-type: none"> <li>• Identify and record all sites of human-created disturbance in the park.</li> <li>• Identify sites of human-created disturbance with important cultural values.</li> </ul>
<b>Introduced Plants</b>	<ul style="list-style-type: none"> <li>• Identify and map all known weed species and populations in the park.</li> <li>• Investigate the attributes and impacts of weed species found in the park, with particular emphasis on the alpine and subalpine areas.</li> </ul>
<b>Introduced Animals</b>	<ul style="list-style-type: none"> <li>• Identify and map all known introduced animal species and populations.</li> <li>• Investigate the attributes and impacts of introduced animal species on-park and off-park and the most effective control methods for these animals.</li> <li>• Determine the distribution of introduced fish species and their impacts on native biota.</li> <li>• Research the effects of introduced grazers including relationships between these species and predator management, the ecological changes initiated by these species, and control strategies to reduce the ranges of these species.</li> </ul>
<b>Fire</b>	<ul style="list-style-type: none"> <li>• Study the ecological impacts associated with the 2002-2003 fires.</li> <li>• Investigate the most appropriate fire regimes for particular vegetation communities and individual plant and animal species.</li> <li>• Investigate the role that fire can play in managing weed and feral animal species.</li> <li>• Undertake research into the effects of various fire management regimes and practices on soils, landforms and catchment hydrology and stability.</li> <li>• Study the effects of various fire management regimes and fuel reduction treatments on fuel loads and structures.</li> <li>• Undertake fire behaviour prediction modelling.</li> <li>• Investigate the environmental effects of chemical retardants.</li> <li>• Investigate the most effective strategic fire protection measures and the levels of effectiveness of the various fire suppression strategies employed in the park.</li> <li>• Investigate the contribution of prescribed burns in the park to greenhouse gas emissions.</li> </ul>

**Note:** This schedule is not intended to be an exhaustive list of all research projects prescribed in this plan. For a full account of each research project refer to the relevant section(s) of the plan. This schedule does not include the monitoring and evaluation requirements of the plan of management.

## Schedule 11 Plan Implementation Priorities

Number	Actions	Priority
6.2.1.2	Nominate the park for inclusion in the worldwide climate change monitoring program currently being developed by the United Nations Educational Scientific and Cultural Organization (UNESCO).	High
6.2.1.3	Develop a climate research program directed at measuring and understanding the implications of climate change on the values of the park in addition to research directly associated with the GLORIA project.	High
6.2.3.1	Establish a coordinated research program directed at determining the environmental impacts and possible benefits associated with artificial snow-making and other climate manipulation strategies.	High
6.2.4.1	Establish and maintain a 'Climate Care' Program aimed at minimising the production of greenhouse gas emissions associated with Service operations and those of all lessees and licensees operating within the park.	High
6.2.5.2	Publicise climate change research concerning the park and any management decisions made as a result of that research in accordance with the provisions of Chapter 15.	Medium
6.2.5.3	Liaise with organisations such as the Australian Greenhouse Office in the development of interpretive material that describes how visitors can act to reduce greenhouse gas emissions.	Medium
6.3.1.4	Prepare a Geodiversity Conservation Strategy for all significant geological and geomorphological features.	High
6.3.2.3	Undertake the rehabilitation of disturbed sites in accordance with Section 11.2.	Ongoing
6.3.3.1	Assess the cultural significance of rocks and landforms threatened by disturbance.	Ongoing
6.3.4.1	Develop a strategic geodiversity research program as a component of the Register of Required Research (Schedule 10).	High
6.3.5.3	Prepare and promote codes of behaviour for participants in individual recreational activities that include information designed to minimise impacts upon the geodiversity values of the park.	Medium
6.4.1.5	Undertake weed and feral animal control programs within karst areas within the context of the Park Restoration Plan (Sections 11.3 and 11.4).	High
6.4.1.10	Establish a Karst Management Committee.	Medium
6.4.1.11	Develop an overarching Karst Management Strategy for the park in close liaison with the Karst Management Committee.	High
6.4.1.12	Establish a system of baseline monitoring sites in the karst areas of the park against which all human-induced disturbance of karst features and processes can be gauged.	High
6.4.2.4	Repair damaged features as far as is practicable while recognising the non-renewable nature of many karst features, particularly within caves.	Ongoing
6.4.2.7	Establish monitoring programs for all caves susceptible to disturbance from visitation, in accordance with Section 8.13.	High
6.4.2.9	Undertake quantitative and qualitative visitor research at Yarrangobilly and Cooleman Plain karst areas to inform visitor management (Sections 9.3 and 9.4).	Medium
6.4.2.10	Record visitor numbers (in the context of the Visitor Data System, Section 8.1) to all caves in the park so they can be correlated against disturbance levels.	High
6.4.3.1	Formulate a karst research program as a component of the Register of Required Research (Schedule 10).	Medium
6.4.4.1	Involve members of caving clubs and other user groups in a voluntary capacity in cave maintenance, monitoring and survey programs.	Ongoing
6.4.4.3	Prepare and promote codes of behaviour for participants in individual recreational activities that include information designed to minimise impacts upon the karst values of the park.	Medium
6.5.1.4	Link the Geodiversity Conservation Strategy to the Park Restoration Plan. (Section 11.1).	Medium
6.5.1.12	Ensure ongoing protection of soil features and processes through the adoption and implementation of environmental management systems prepared for all operations (Section 12.1).	Medium
6.5.2.1	Undertake research relevant to the development of the Geodiversity Conservation Strategy.	Medium

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
6.5.3.2	Prepare and promote codes of behaviour for participants in individual recreational activities that include information designed to minimise impacts upon the soil values of the park.	Medium
6.6.1.2	Develop and implement an integrated monitoring program aimed at measuring changes in the condition of key attributes of the ecological character of the Blue Lake Ramsar site. Formulate impact thresholds for the ecological character of the site and manage threatening processes to maintain disturbance levels within these limits (refer also to Section 9.2).	Medium
6.6.1.3	Investigate and, as appropriate, pursue an expanded Ramsar listing that includes all of the alpine lakes on the Main Range.	Medium
6.6.1.4	Evaluate rivers or sections of rivers, including those listed in provision 6.6.1.1, for declaration as Wild Rivers under the <i>National Parks and Wildlife Act 1974</i> .	Medium
6.6.1.5	Develop and implement a program to improve the condition of degraded waterbodies and watercourses in the park.	High
6.6.2.1	Undertake a review of the known natural and cultural values of the rivers, streams and lakes in the park and identify knowledge gaps.	Medium
6.6.2.2	Monitor the environmental benefits of restoration works including, as appropriate, the benefits of environmental flows into the Snowy River and other montane streams in conjunction with other relevant authorities.	Ongoing
6.6.2.3	Identify and conserve the Aboriginal and non-Aboriginal cultural heritage associations with watercourses and waterbodies (Chapter 7).	Low
6.6.3.1	Interpret the values of the rivers, streams and lakes of the park within the context of the Communication Plan (Chapter 13).	Medium
6.6.3.2	Prepare and promote codes of behaviour for participants in individual recreational activities that include information designed to minimise impacts upon the aquatic values of the park.	Medium
6.7.1.2	Implement recovery actions for plant species listed in Schedule 1 as threatened under the <i>Threatened Species Conservation Act 1995</i> and <i>Environment Protection and Biodiversity Conservation Act 1999</i> .	High
6.7.1.3	Prepare and implement management regimes for all other significant plant species and communities as listed in Schedule 1.	High
6.7.1.7	Establish monitoring regimes for key plant species and vegetation communities regarded as threatened or otherwise significant to measure the success of management practices in maintaining or improving the conservation status of these species and communities.	High
6.7.2.1	Identify, document and interpret as appropriate the traditional, historical and contemporary cultural values of the plants of the park to Aboriginal and non-Aboriginal people. The management of these values will primarily be based upon assessments of their cultural significance (Chapter 7).	Low
6.7.3.1	Investigate and map the composition and distribution of plant communities within the park.	Medium
6.7.3.2	Develop a strategic native vegetation research program as a component of the Register of Required Research (Chapter 15).	Medium
6.7.3.3	Formulate and implement a research program to measure and understand the implications of climate change on the plant species and communities of the park (Section 6.2).	Medium
6.7.3.4	Facilitate research that improves the knowledge base of the non-vascular plant species (lichens, mosses, fungi, liverworts) of the park.	Low
6.7.4.1	Promote public understanding and appreciation of the native plants of the park within the context of the Communication Plan (Chapter 13).	Medium
6.8.1.2	Implement recovery actions for animal species listed as endangered or vulnerable under the <i>Threatened Species Conservation Act 1995</i> and <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Schedule 1).	Medium
6.8.1.3	Prepare and implement management regimes for all other significant animal species as listed in Schedule 1.	Medium
6.8.1.6	Consider a long-term strategy for the reinstatement of the natural (pre-European) high order predator hierarchy.	Medium



## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
6.8.1.7	Systematically evaluate the condition of native animal habitats of the park based upon a scientifically valid methodology.	Low
6.8.1.9	Develop and implement programs to enhance the habitats of significant species where past or ongoing developments or uses have resulted in habitat degradation or fragmentation.	High
6.8.1.11	Utilise the existing Atlas of NSW Wildlife framework for the systematic recording of wildlife in the park.	Ongoing
6.8.1.12	Investigate any unusual changes in wildlife populations that may be associated with exotic diseases and pathogens and keep abreast of research.	Ongoing
6.8.1.14	Establish monitoring regimes for key animal species regarded as endangered, vulnerable or otherwise significant to measure the success of management practices in maintaining or improving the conservation status of these species.	Medium
6.8.2.1	Undertake research to determine the desirability and feasibility of reintroducing locally extinct native animal species.	Medium
6.8.3.1	Identify, document and interpret the traditional, historical and contemporary cultural values of the animals of the park to Aboriginal and non-Aboriginal people.	Medium
6.8.4.1	Develop a strategic native animals research program as a component of the Register of Required Research (Chapter 15).	Medium
6.8.6.1	Promote public understanding and appreciation of the native animals of the park within the context of the Communication Plan (Chapter 13).	Medium
6.8.7.1	Promote species recovery programs within the park to further community understanding and support for wildlife conservation.	Ongoing
6.8.7.2	Collaborate with existing wildlife protection groups, such as Looking After Our Kosciusko Orphans (LAOKO) and the NSW Wildlife Information and Rescue Service (WIRES).	Ongoing
6.8.7.3	Investigate and develop additional ways for local communities and businesses to be involved in wildlife conservation both on and off the park.	Low
7.0.1.7	Update the existing information held by the Service on known Aboriginal and non-Aboriginal cultural landscapes, places and objects, including those that are extant and destroyed, within the Service's Aboriginal Heritage Information Management System (AHIMS) and/or Historic Heritage Information Management System (HHIMS).	High
7.0.1.8	Develop and implement a targeted heritage survey program for the park to identify new Aboriginal and non-Aboriginal heritage landscapes, places and objects.	Medium
7.0.1.9	Assess the individual and collective significance of landscapes, places and objects in the park that are considered to have cultural value and are under threat.	High
7.0.1.11	Prior to undertaking any ground disturbance, investigate any potential historic features, archaeological deposits or other cultural values and ensure appropriate measures are taken to ensure that any such places are recorded or protected. This does not apply to ground disturbance required for emergency purposes authorised by the Service.	Ongoing
7.0.1.12	Assess and consider the park, and individual places within it, for nomination to the National Heritage List as defined by the Environment Protection and Biodiversity Conservation Act 1999.	High
7.0.1.14	Develop and implement an Historic Places Maintenance Program.	Medium
7.0.1.15	Develop and implement an Aboriginal Cultural Places Maintenance Program.	Medium
7.0.1.17	Identify and manage exotic plant species of cultural significance in accordance with site-specific conservation measures.	Ongoing
7.0.1.18	Confine, remove or replace any culturally significant plantings that are invasive with non-invasive similar species.	Ongoing
7.0.1.19	Undertake significance assessments of all individual buildings and groups of related buildings that are more than 25 years old.	Ongoing
7.0.1.22	Manage buildings retained for their cultural values, wherever possible, as living structures. Investigate appropriate adaptive reuse options for all such buildings that do not currently serve a recreational or operational use.	Ongoing

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
7.0.1.24	Include a dedicated building maintenance component in the Historic Places Maintenance Program.	Medium
7.0.1.26	Illawong, Wolgal and Pattinsons will be retained primarily for their cultural values and managed for public access. Public access management models for these three buildings will be developed by the Service in consultation with all relevant stakeholders. (The public access management model for Illawong will take effect upon expiry of the current five year licence with Illawong Ski Tourers Incorporated.)	High
7.0.1.33	Prepare and implement conservation management plans, heritage action statements or related documents for all huts and their associated elements.	Ongoing
7.0.1.34	Together with the Kosciuszko Huts Association and other interested parties, create and implement cyclic maintenance programs for individual huts that includes fabric condition audits and fabric replacement and repair schedules.	Ongoing
7.0.1.36	Assess internal fire risks and environmental impacts associated with the use of hut fireplaces at all huts.	High
7.0.1.41	Promote, and regularly review, the hut use code of conduct in conjunction with the Australian Alps Liaison Committee, the Kosciuszko Huts Association and other interested parties.	Ongoing
7.0.1.42	Prepare and implement site plans for vehicle-accessible huts that protect the huts and hut settings.	Ongoing
7.0.1.43	Continue to supply hut log books and store completed log books in relevant regional files for reference, research and planning purposes.	Ongoing
7.0.1.44	Assess the environmental impact, if any, associated with the presence and visitor use of all huts. Prepare and implement environmental management strategies for particular huts and their settings, as required, that are designed to minimise degradation and manage impacts within threshold limits.	Medium
7.0.1.45	Investigate the need for toilets at all huts and provide toilets as necessary in accordance with Section 11.6 and Schedule 6. Site toilets so as to minimise environmental and visual impacts.	Medium
7.0.1.46	As part of the Park Communication Plan, prepare and implement an integrated hut interpretation strategy.	Medium
7.0.1.47	Prepare a formal agreement between the Service and the Kosciuszko Huts Association (KHA).	High
7.0.1.48	Seek the ongoing involvement of communities, groups, families and individuals with connections to particular huts in hut management.	Ongoing
7.0.1.49	Assess the cultural significance and conservation requirements of moveable heritage objects, as part of conservation plans where appropriate.	Ongoing
7.0.1.50	Establish central repositories and public display facilities to store all non-Aboriginal moveable heritage objects associated with the park no longer located in situ. All such objects will be professionally catalogued and recorded.	Medium
7.0.1.52	Identify and document the intangible cultural values of the park, for Aboriginal and non-Aboriginal people alike, within AHIMS and HHIMS.	Ongoing
7.0.1.53	Undertake a Memories Project to seek out and document the memories, associations and attachments of Aboriginal and non-Aboriginal communities, families and individuals with particular places and events.	Medium
7.0.1.54	Undertake a Traditional Knowledge Project that utilises audio and video recordings and documentary evidence to capture surviving traditions, knowledge, skills, customs, practices and beliefs of Aboriginal and non-Aboriginal people associated with the mountains.	High
7.0.1.55	Investigate the views of relevant Aboriginal and non-Aboriginal communities concerning the creation of a program of teaching traditional skills to community members so that these skills will not be lost. Support such a program if it is desired by communities.	Medium

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
7.0.156	Seek community input concerning which landscapes, places and built structures in the park possess inspirational qualities. Based upon this work, create a register of inspirational landscapes and places in the park and formulate management prescriptions for each of these places which protect or enhance their inspirational qualities.	Medium
7.0.157	Recognise and publicise the intangible values of the park through on-site and off-site interpretation as described in the Communication Plan. Relevant communities, families and individuals will guide the interpretation of their own stories and values.	Ongoing
7.0.2.1	Collect, store, disseminate and use all cultural information, including traditional ecological knowledge, in accordance with the Service's Cultural Heritage Information Policy.	Ongoing
7.0.2.2	Explore innovative and culturally appropriate ways of sharing heritage information with particular communities and the broader public.	Ongoing
7.0.3.2	Identify the linkages between heritage landscapes and places through examination of the available documentary evidence and information collected through strategies contained in this plan. Mapped representations of linked landscapes and places will be stored in AHIMS and HHIMS.	Ongoing
7.0.3.3	Identify and manage key historical travel routes as Heritage Corridors in which the protection of cultural values and the development and promotion of heritage-based recreation and interpretation opportunities will receive high priority.	Medium
7.0.3.5	Liaise with the Roads and Traffic Authority to manage the following roads as Medium Heritage Corridors: Snowy Mountains Highway; Alpine Way; and Kosciuszko Road (to Charlotte Pass).	
7.0.3.6	Consult with relevant stakeholders and undertake research that identifies additional historical travel routes in the park that should also be recognised and managed as Heritage Corridors.	Medium
7.0.3.7	Plan and manage heritage-based recreation and interpretation in Heritage Corridors within the context of the Communication Plan (Chapter 13).	Ongoing
7.0.3.8	Identify, delineate and manage those parts of the park containing concentrations of cultural heritage items as discrete Heritage Precincts in which the protection of historic features and landscapes will receive high priority.	Medium
7.0.3.9	Consult with relevant stakeholders and undertake research that identifies additional areas of the park associated with one or more of the various identified historical themes that should also be recognised and managed as Heritage Precincts.	Low
7.0.3.10	Prepare Heritage Precinct Plans where none currently exist for all identified heritage precincts in consultation with relevant stakeholders. Interpretation at these places will be in accordance with the provisions of the Communication Plan (Chapter 13).	Ongoing
7.0.3.11	Investigate options in the Heritage Precinct Plan for the greater Kiandra goldfields area for developing and promoting: Short-duration, linked walking tracks based upon the cultural values of the Kiandra, New Chum Hill Mine and Three Mile Dam areas; and Part-day, day and overnight walks within the area utilising historic roads and tracks to link places of former mining activity.	Medium
7.0.3.12	In accordance with the provisions of the Kiandra Precinct Heritage Plan and related documents: Restore the Kiandra Courthouse. The building will ideally be developed as a heritage interpretation site and focal point for the Kiandra Heritage Precinct and Snowy Mountains Highway Heritage Corridor; and Restore the curtilage of the Courthouse through the removal of the RTA depot, the re-siting of the existing toilet block and telephone booth, and appropriate landscaping.	Medium

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
7.0.3.16	Work with the owners and managers of land adjoining the park and elsewhere with the aim of identifying linked places and encouraging appropriate management.	Ongoing
7.0.3.17	Contribute to projects and initiatives concerning the management of cultural heritage values across the Australian Alps.	Low
7.0.3.18	Develop and maintain regular communication links with heritage practitioners and managers in agencies with land management responsibilities within the Australian Alps region with the aim of sharing relevant information, training, research and management opportunities.	Ongoing
7.0.3.19	Include AHIMS and HHIMS entries for landscapes and places outside the park that are linked with particular places, stories, events, people and themes inside the park.	Ongoing
7.0.4.1	Create heritage management partnerships with communities located within and adjacent to the park and those with traditional links to its history.	High
7.0.4.3	Undertake a Naming Project in cooperation with relevant organisations.	High
7.0.4.4	Invite Aboriginal and non-Aboriginal community members to participate in public education and interpretation of the cultural values of the park.	Ongoing
7.0.4.6	Develop a program of community commemorative events to acknowledge and celebrate the rich diversity of cultural values ascribed to the various parts of the park, and as a means of providing economic and social benefits to local communities.	Medium
7.0.4.11	Actively engage with all relevant Aboriginal organisations, families and individuals, including Monaro Ngarigo, Wiradjuri, Wolgalu and Ngunnawal people, in protecting, managing and interpreting Aboriginal heritage in the park.	Ongoing
7.0.4.12	Explore and develop cooperative management agreements or similar protocols where supported by appropriate Aboriginal groups.	High
7.0.4.13	Establish a permanent heritage partnership with Aboriginal people for the entire park.	High
7.0.4.15	Develop and implement a park employment and training program for Aboriginal people associated with the mountains, consistent with the Service's Aboriginal Employment and Development Strategy and other relevant policies.	High
7.0.4.17	Develop and implement mechanisms to facilitate the ongoing participation of Aboriginal people in park management activities and their early involvement in the planning process for proposed activities and works.	High
7.0.4.18	As a symbolic means of recognising Aboriginal people's traditional connections to the area, support the dual naming of the park with an appropriate Aboriginal name.	High
7.0.4.19	Ensure new Aboriginal place names are submitted for approval to the Geographical Names Board of New South Wales for inclusion on the Geographical Names Register. Where such landscape features are already named, dual naming will be sought.	Ongoing
7.0.4.20	Ensure that the names collected and their origins, sources and meanings (if appropriate) are stored in AHIMS and HHIMS.	Ongoing
7.0.4.21	Develop protocols and procedures for the involvement of Aboriginal people in welcoming ceremonies and other roles for events and activities held in or near the park in association with relevant organisations.	High
7.0.4.22	Prepare and implement a "Welcome to Country" program in association with relevant organisations.	High
7.0.4.23	Permit Aboriginal culture camps. Determine the site(s) for such camp(s) and operational protocols with appropriate Aboriginal communities.	Medium
7.0.4.24	Pursue the establishment of an Aboriginal cultural and teaching centre within or near the park.	Medium
7.0.4.25	Permit hunting and gathering for cultural or ceremonial purposes by Aboriginal people with a cultural association with the park according to the Service's policy. Determine the provision and protocols relating to these activities through discussions between the Service and appropriate Aboriginal people.	Medium
7.0.4.27	Undertake a review of existing information about the gender status of Aboriginal places within the park in association with appropriate Aboriginal people and develop access protocols.	Medium

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
7.0.5.1	Develop a framework for cultural tourism management within which individual heritage corridors, precincts and places will be developed and promoted.	Medium
7.0.5.2	Develop and implement protocols and guidelines for cultural heritage-based tourism operators in the park (Section 8.18).	Medium
7.0.5.6	Monitor and manage impacts associated with tourism and recreation on heritage places within the bounds of acceptable change (Chapters 8 and 16).	Ongoing
7.0.6.2	Undertake regular cross-cultural awareness training programs for staff and encourage tourist and resort operators to conduct similar programs for their employees.	
7.0.6.4	Continue to provide interpretive material in the interiors of huts that provides information on the cultural values of each hut and on minimal impact hut use.	Ongoing
7.0.6.5	Develop a cultural heritage education program within the context of the Communication Plan.	Medium
7.0.7.1	Undertake research aimed at improving conservation management practices in the park.	Medium
7.0.7.3	Develop a strategic cultural heritage research program as a component of the Register of Required Research (Chapter 15).	Medium
7.0.7.4	Ensure the recording of the oral histories and knowledge (where appropriate) of members of Aboriginal and non-Aboriginal communities receives high priority, especially where important cultural knowledge is likely to be held by only a small number of individuals.	Ongoing
8.1.1.1	Permit, manage and promote recreational activities in accordance with the natural and cultural attributes of the park, the purpose and scope of this plan, and the zoning/recreational activity scheme provided in Schedule 4.	Ongoing
8.1.1.4	Determine impact limits for particular recreational activities and settings and manage activities to ensure that these thresholds are not exceeded.	High
8.1.1.5	Determine the types of recreational experiences that should be provided by particular areas, sites, tracks and roads and manage all environmental and social variables to ensure that individual places continue to serve these particular recreational roles in the long-term.	High
8.1.1.8	Establish monitoring programs for particular activities, set impact thresholds and determine appropriate responses to manage: Impacts associated with particular recreational activities and developments; Conflicts between participants in different recreational activities; and The types and quality of visitor experiences being provided.	High
8.1.1.9	Undertake research to establish and/or refine acceptable limits of disturbance for different environments and activities.	High
8.1.1.11	Introduce booking systems for particular recreational activities and places based upon known impact levels and the results of directed monitoring programs.	High
8.1.1.12	In consultation with user groups and regional advisory committees, review, promote, distribute and, where necessary prepare minimal impact codes of behaviour for all recreational activities undertaken in the park.	Ongoing
8.1.1.13	Establish an integrated parkwide Visitor Data System for the ongoing collection, storage and analysis of visitor use data.	High
8.1.2.1	Collaborate with tourism authorities in the implementation and periodic review of tourism plans for the state and region.	Ongoing
8.1.2.2	Maintain formal participation on local tourism association boards and/or relevant committees.	Ongoing
8.1.2.5	Continue to work within the recreational and promotional strategies of the Australian Alps program.	Ongoing
8.1.2.6	Liaise with local tourism associations, other government agencies and tourism operators to ensure that all relevant promotional material provides accurate information concerning the recreational opportunities available in the park.	Ongoing
8.1.2.7	Build data collection and monitoring partnerships and reciprocal data sharing agreements for appropriate visitor information for inclusion in the Visitor Data System.	Medium
8.2.1.3	Create a “signature” appearance for the park that is reflected in shared design or construction elements across all forms of Service-provided visitor infrastructure and encouraged across other infrastructure provided by lessees.	High

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
8.2.1.5	Prepare a Disabled Access and Facilities Strategy for the park to guide the provision of a range of recreational opportunities and facilities for visitors with disabilities in the Major Road Corridors and Visitor Services Zone.	High
8.2.1.6	Review the design, appearance, construction and siting of all existing Service-provided visitor facilities in the park and progressively upgrade or modify infrastructure.	Medium
8.2.1.10	Upgrade and maintain the Assets Register for all Service-provided visitor infrastructure in the park (Section 12.2).	High
8.2.1.11	Establish and implement maintenance schedules for all Service-provided visitor facilities, as part of operational planning (Section 12.2).	Medium
8.2.1.12	Establish monitoring programs to measure the environmental and social impacts related to visitor facilities and their use, and determine impact thresholds and associated management responses.	High
8.2.1.13	Liaise with lessees concerning the management of visitor infrastructure provided by them and the possible provision of additional facilities.	Ongoing
8.3.1.4	Identify the desired future character of each road, or section of road, included in the Minor and Major Road Corridors and manage accordingly.	Medium
8.3.1.6	Subject to cultural heritage assessments, reduce the extent of past 'ribbon development' along the Major Road Corridors and improve the visual amenity by the removal and rehabilitation of: and The former Sawpit Creek service station and environs (Sawpit Creek, Kosciuszko Road); The former winter transport interchange building (not including the RTA depot) (Wilsons Valley, Kosciuszko Road);	Medium
8.3.1.7	Regularly liaise with Snowy Hydro Limited concerning the management of those roads listed in the Roads Maintenance Agreement between the Service and Snowy Hydro Limited.	Ongoing
8.3.1.8	Formalise road management and maintenance arrangements with Transgrid and other relevant organisations.	High
8.3.1.9	Identify a number of existing strategically located quarries, borrow pits and road maintenance bays across the network of roads and trails included in the Minor and Major Road Corridors.	Medium
8.3.1.10	Close and rehabilitate all non-designated quarries, borrow pits and road maintenance bays.	Medium
8.3.1.12	Undertake periodic risk assessments of all roads open to public vehicular access. Continued public access along individual roads will be subject to the outcomes of these assessments (Section 8.22).	Ongoing
8.3.1.20	Liaise with lessees concerning the replacement of their roadside signs within the Visitor Services Zone with signs that are consistent with the design and construction elements outlined in Section 8.2.	Ongoing
8.4.1.4	Monitor impacts associated with firewood collection at day use areas within the Major and Minor Road Corridors and Visitor Services Zone where campfires are popular. Provide firewood or remove fireplaces and prohibit campfires at day use areas where monitoring indicates that the collection of firewood is unsustainable. Gas or electric barbecues may be provided in the Major Road Corridors and Visitor Services Zone.	Ongoing
8.4.1.5	Remove fireplaces and prohibit campfires at day use areas within the Alpine Resort Management Units. Gas or electric barbecues may be provided in these areas.	High
8.4.1.6	Review all existing Service-provided picnic areas in the park.	High
8.4.1.7	Upon completion of this review, modify or close existing day use areas as necessary in order to meet the requirements listed above.	Medium
8.4.1.8	In keeping with the requirements listed above, develop or improve day use areas.	Medium
8.4.1.9	Redevelop the Blue Waterholes day use/camping area in order to reduce environmental degradation and improve the quality and sustainability of the recreational experiences available (Section 9.4).	High

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
8.4.1.11	Periodically monitor the environmental condition and social issues at popular day use areas and set impact thresholds. If monitoring indicates a need to control use, instigate appropriate management responses.	Ongoing
8.5.1.5	Review all existing camping areas in the park in accordance with criteria.	Medium
8.5.1.6	Upon completion of this review, progressively upgrade, modify or close existing camping areas as necessary in order to meet the requirements listed above.	Medium
8.5.1.7	In keeping with the requirements listed above, develop or improve camping areas in the Major and Minor Road Corridors (Map 7).	Medium
8.5.1.8	Redevelop the Blue Waterholes day use/camping area in order to reduce environmental degradation and improve the quality and sustainability of the recreational experiences available (Section 9.4).	High
8.5.1.11	Actively encourage all visitors to Wilderness and Back Country Zones to use fuel stoves rather than campfires.	Ongoing
8.5.1.12	Monitor impacts associated with firewood collection at camping areas within the Minor and Major Road Corridors and the Visitor Services Zone where campfires are popular. Permit campfires in designated constructed fireplaces only. Supply firewood or remove fireplaces and prohibit campfires at camping areas where monitoring indicates that the collection of firewood is unsustainable. Gas or electric barbecues may be provided in Major Road Corridor and Visitor Services Zone sites where campfires are prohibited.	Ongoing
8.5.1.13	Periodically monitor the environmental condition and social issues at popular camping areas and set impact thresholds. If monitoring indicates a need to control use, instigate appropriate management responses.	Ongoing
8.5.1.14	Introduce a voluntary registration system for campers in the Main Range Management Unit as a means of collecting relevant visitor data. If monitoring indicates that unacceptable environmental or social impacts are occurring, or are likely to occur, initiate management responses, which may include, but not be limited to the introduction of a booking system (Section 9.2).	Medium
8.6.1.5	Prepare a Walking Track Management Strategy for the entire park, or a series of strategies for precincts within the park, that is/are made available for public comment before finalisation..	High
8.6.1.7	Investigate and instigate measures designed to reduce crowding problems along the Kosciuszko Walk and on the summit of Mount Kosciuszko during peak visitation periods according to Section 9.2.	Medium
8.6.1.10	Continue to liaise with staff of the Department of Planning on the management of the Hume and Hovell Walking Track and the Bicentennial National Trail.	Ongoing
8.6.1.12	Encourage walkers to adopt minimal impact bushwalking behaviour.	Ongoing
8.7.1.6	Re-route those sections of the Bicentennial National Trail that consist of roads used by public vehicles (Alpine Way, Tantangara Road) so as to avoid the need for riders and motorists to share thoroughfares.	Medium
8.7.1.9	Vehicle and horse float parking will be provided where horse camping is permitted to assist in ensuring that parking does not occur within 50m of huts and waterways.	Medium
8.7.1.12	Prepare park-specific minimal impact horse riding information that includes the identification of those areas that should be avoided by horse riders.	Medium
8.7.1.13	In consultation with user groups and other stakeholders, introduce a booking system for horse riding in the park, covering overnight trips and extended trips, pack-saddle camping and vehicle-based camping with horses.	High
8.7.1.14	Monitor the environmental and social impacts at popular horse riding areas and all vehicle-based camping areas where horses are permitted and set impact thresholds. If monitoring indicates that unacceptable environmental or social impacts are occurring, or are likely to occur, initiate management responses.	High
8.9.1.4	[repealed]	

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
8.9.1.5	Periodically monitor the environmental condition of all campsites and huts that are popular with ski tourers. If monitoring indicates a need to control use, instigate appropriate management responses.	Medium
8.9.1.6	Prepare and distribute minimal impact codes of conduct and safety information for cross-country skiers.	Ongoing
8.9.1.9	Provide cross-country skiing trailhead information, such as signs describing ski trail lengths, conditions, grades, available facilities and services, and safety advice.	Ongoing
8.9.1.10	Provide cross-country skiing information, including minimal impact skiing and safety advice for back country travel.	Ongoing
8.9.1.12	Continue to work collaboratively with the Cross-country Skiing Consultative Committee on matters relating to cross-country skiing in the alpine resorts and adjacent areas.	Ongoing
8.9.1.13	In consultation with the Cross-country Skiing Consultative Committee: Monitor the snow conditions and use of the marked ski trails at Dry Dam. Consider removing cross-country ski facilities from this area if the use of these trails and snow conditions continue to decline; Downgrade, relocate or remove cross-country skiing trailhead information and associated facilities at other sites if warranted because of a lack of skiable snow due to a long-term rise in the snowline; Develop and review a cross-country skiing plan for the Perisher-Smiggin Holes Cross-country Skiing Area. This plan will address management of the ski trails and all associated infrastructure; and Pursue the establishment of a licence, lease and/or partnership arrangement for the management of cross-country ski activities in the Perisher-Smiggin Holes Cross-country Skiing Area.	Medium
8.9.1.14	Liaise with the Roads and Traffic Authority concerning the winter management of the Kosciuszko Road (beyond Perisher Valley and/or Spencers Creek) as a shared cross-country ski trail and oversnow vehicle road.	Ongoing
8.10.1.1	Provide opportunities for safe snow play within the Major Road Corridors and the Visitor Services Zone.	Medium
8.10.1.2	Provide opportunities for tobogganing and snow tubing in designated areas within the Visitor Services Zone where it can be demonstrated that these activities can be managed safely.	Ongoing
8.10.1.4	Promote snow tubing as an alternative to tobogganing if it can be demonstrated that the activity can be managed with minimum risk to visitors.	Medium
8.10.1.5	Separate snow play, tobogganing and snow tubing areas from those places used for other snow activities.	Ongoing
8.10.1.6	Promote awareness of the inherent risks associated with tobogganing and promote the safe use of toboggans.	Ongoing
8.10.1.9	Investigate the possible development of groomed snow-shoeing trails within the Perisher-Smiggin Holes Cross-country Skiing area.	Medium
8.11.1.2	Work with the Roads and Traffic Authority and cycling organisations.	Medium
8.11.1.10	Introduce a booking system for cyclists using the trails in the Wilderness Zone during peak holiday periods as necessary. Extend the system to other trails if and when necessary.	Medium
8.11.1.11	Permit downhill mountain bike riding on approved existing management trails only within the alpine resort areas. Monitor the environmental impact of this activity and manage it within the bounds of threshold limits.	Ongoing
8.11.1.12	Prepare a cycling strategy for the park and surrounding areas that identifies appropriate trail networks, and their management and promotional requirements.	Medium
8.11.1.13	Work with Snowy Hydro Limited and cycling organisations on the development of cycling opportunities on management trails.	Medium
8.11.1.14	Work with all relevant organisations to publicise the range of cycling opportunities available throughout the region.	Low



## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
8.11.1.15	Prepare and distribute a code of conduct for cycling in the park that includes information on trail protocols, measures designed to minimise any adverse impacts due to cycling, and cycling restrictions in adjoining parks in the ACT and Victoria.	Medium
8.12.1.3	Undertake an assessment of environmental impacts associated with rock climbing and abseiling at Blue Lake.	Medium
8.12.1.4	Undertake environmental assessments of all popular rock climbing and abseiling sites and establish site-specific monitoring systems and disturbance thresholds. If required, determine site-specific management regimes which may include restrictions on party size and frequency of use or the establishment of exclusion areas or site closures.	Medium
8.12.1.5	Record all, and if necessary remove, existing rock bolts, artificial anchor points, climb labels and other permanent fixtures.	Medium
8.12.1.8	In consultation with climbing groups, formulate and distribute general and site-specific climbing and abseiling codes of conduct.	Medium
8.12.1.9	Work collaboratively with climbers to promote safe and environmentally responsible climbing and abseiling and peer enforcement of the codes of conduct.	Medium
8.13.1.1	As part of the Karst Management Strategy (Section 6.4) prepare visitor management regimes for all caves in the park based upon their physical, biological and cultural attributes, extent of past damage, resilience to human visitation, use patterns and remoteness.	High
8.13.1.3	Manage access to Restricted Access Caves through a permit system.	High
8.13.1.7	Establish monitoring programs for all caves susceptible to disturbance from visitation.	Medium
8.13.1.8	Periodically review cave management regimes to take into account the results of monitoring and any new pertinent information.	Ongoing
8.13.1.12	In consultation with the Karst Management Committee (Section 6.4) develop codes of conduct specific to particular caves or karst areas.	Medium
8.14.1.2	Periodically inspect all popular canoeing and rafting river access and egress points to determine the environmental condition of each site. Where necessary, stabilise riverbanks and provide appropriate low-key infrastructure.	Medium
8.14.1.3	Periodically monitor the environmental condition of all popular campsites along the upper Murray and lower Snowy Rivers and elsewhere as necessary.	Medium
8.14.1.4	Prepare and distribute general and river-specific minimal impact codes of conduct for canoeists and rafters.	Low
8.15.1.6	Collaborate with the NSW Maritime Authority and other relevant organisations in the provision and management of adequate boat ramp and camping facilities in and adjacent to the park.	Low
8.15.1.7	In conjunction with relevant organisations, review fuel spill response procedures for all waterbodies in the park used for motorised boating activities.	Medium
8.15.1.8	Work collaboratively with relevant stakeholders to identify and minimise impacts associated with the recreational use of Blowering foreshores.	Ongoing
8.15.1.9	Work collaboratively with the NSW Maritime Authority and boating groups on issues associated with boating in the park. In particular, prepare and distribute a minimal impact code of practice for boat users specific to the park.	Medium
8.16.1.2	Support and, where appropriate, implement recreational or riparian management strategies identified in the Snowy River Fish Recovery Strategy prepared by NSW Fisheries.	Medium
8.16.1.4	Periodically monitor the environmental condition of all river reaches and lakeshore locations that are popular with anglers.	Medium
8.16.1.5	Work with NSW Fisheries and angling organisations to prepare and distribute a minimal impact code of conduct for anglers in the park.	Medium
8.17.1.1	Formulate Fly Neighbourly Advice (FNA) agreements for the Wilderness Zone and the Main Range Management Unit between the Service, locally-based scenic flight and charter operators, and relevant government agencies.	Medium
8.17.1.2	Periodically review FNA agreements to ensure that impacts associated with recreational flying are minimised. Regularly monitor the compliance of scenic flight operators with FNA agreements.	Ongoing

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
8.18.1.9	Work with licensed commercial tour operators to develop protocols and guidelines for cultural heritage-based tourism operations in the park (Chapter 7).	Medium
8.18.1.10	Hold annual workshops for commercial tour operators for minimal impact awareness training and information exchange.	Ongoing
8.19.1.6	Renew the lease for Ski Rider Motel until 2025. This renewal is conditional upon the motel being relocated during the term of the lease or removed on expiry of the lease in order to reduce the extent of ribbon development and improve visual amenity. The site will then be rehabilitated and rezoned from Visitor Services Zone to Major Road Corridor.	High
8.20.1.6	Create a register of the types of events for which a blanket or periodic consent may be granted in the Visitor Services Zone.	High
8.22.1.2	Prepare and maintain a Risk Register for the park.	Ongoing
8.22.1.3	Prepare and implement a Risk Treatment Plan for each risk rated as extreme or high (as per the Risk Management Strategic Plan). Risk Treatment Plans will be required for moderate risks if existing management controls are considered insufficient.	High
8.22.1.5	Ensure up-to-date weather information is available and publicised at visitor centres and other visitor information nodes.	Ongoing
8.22.1.6	Review, and if necessary, improve the content and distribution of visitor safety information in the context of the Communication Plan (Chapter 13).	High
8.22.1.9	Prepare an Incident Action Plan on an annual basis.	Ongoing
9.2.1.9	Undertake viewfield mapping from the crest of the Main Range and popular subsidiary peaks (Section 11.6). The integrity of these views will be enhanced through the modification, screening or removal of structures that unduly impact upon scenic amenity.	Medium
9.2.1.10	Work with alpine resort lessees, in particular those of Perisher Range, Charlotte Pass and Thredbo management units, on ways of minimising light spillage and noise pollution that is visible and audible by visitors to the Main Range Management Unit.	High
9.2.1.17	Prepare site plans for the Charlotte Pass and Crackenback Chairlift visitor nodes in conjunction with resort lessees.	High
9.2.1.18	Investigate options for relocating the visitor node at Guthega Power Station to an alternative site nearby.	Medium
9.2.1.19	Prepare and implement a human waste management strategy for the Main Range Management Unit.	High
9.2.1.20	Work in partnership with the Thredbo Resort lessee concerning construction of a toilet/park information building(s) at the start of the Thredbo - Mount Kosciuszko walk, adjacent to the Crackenback Chairlift top station.	High
9.2.1.23	Introduce a voluntary self-administered registration system for campers in the Main Range Management Unit.	Medium
9.2.1.24	Establish an integrated system of overnight camping registers and track counters to measure the use of individual tracks and areas.	Medium
9.2.1.29	Prepare a walking track management plan for all of the above tracks as a component of the Walking Track Management Strategy (Section 8.6).	High
9.2.1.30	Introduce measures to reduce the concentration of walkers on the Kosciuszko Walk and at the Mount Kosciuszko summit during peak visitation periods.	Medium
9.2.1.31	Progressively remove and replace existing track pavers with a more appropriate track surfacing material.	Low
9.2.1.37	Introduce a monitoring system to estimate the limits of acceptable change of walking tracks (including unmarked routes), untracked areas and key visitor nodes in the unit. As necessary, tracks, routes or untracked areas may be temporarily closed or limits placed upon their use.	High
9.2.1.43	Undertake an assessment of environmental impacts associated with rock climbing and abseiling at Blue Lake.	Medium
9.2.1.44	Formulate Fly Neighbourly Advice (FNA) agreements for the management unit. (Section 8.17)	Medium

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
9.2.1.46	Provide interpretive facilities in the Main Range Management Unit within the context of the Communication Plan (Chapter 13).	Medium
9.2.1.49	Provide minimal interpretive facilities on Class 3 and 4 walking tracks and ensure all such facilities are located at ground level or close to ground level to protect scenic quality.	Ongoing
9.2.1.50	Relocate the existing sign on the summit of Mount Kosciuszko to a location back along the walking track to a site where it is not visible from the summit to reinstate a special sense of place to the highest place on the continent.	Medium
9.2.1.54	Information on weather conditions, safety, recommended equipment and clothing, minimal impact behaviour, and other visitor-use conditions will be widely publicised, including at trackheads, visitor centres, in the media and in visitor publications (Chapter 13). Minimal impact provisions, including the camping restrictions and the prohibition on campfires, will be publicised in display material provided in the key trackheads. This material will include specific conditions for people visiting the Blue Lake Ramsar site.	Ongoing
9.3.1.1	Establish monitoring programs for specific caves, as required, to collect information directed at improving the management of karst environments and processes (Section 6.4).	High
9.3.1.5	Continue harvesting and rehabilitating the Jounama Pine Plantation (Section 11.3).	Ongoing
9.3.1.6	Clear-fell the remaining stands of pine in the Jounama Plantation in coupes designed for ease of revegetation and catchment protection.	Ongoing
9.3.1.7	Establish research and monitoring programs, if deemed necessary, to measure the degree of success in rehabilitating the area (including the incidence of wildling establishment). Ongoing management of the plantation area and environs will be guided by the results of this research and monitoring.	Ongoing
9.3.1.8	Prepare an environmental management system (EMS) for the Yarrangobilly Show Caves Precinct within the context of the parkwide EMS for all Service operations (Section 12.2). The EMS will aim to ensure the adoption of best available practices and technologies with regards to managing visitation in environmentally sustainable ways.	High
9.3.1.9	Prepare cave management regimes for the show caves at Yarrangobilly within the context of the Karst Management Strategy (Section 6.4).	Medium
9.3.1.15	Liaise with the Roads and Traffic Authority (RTA) concerning the management of the Snowy Mountains Highway and Yarrangobilly access roads.	Medium
9.3.1.16	Permit vehicle-based camping near Cotterills Cottage at Yarrangobilly Village. Investigate options for a new vehicle-based camping area on the northern side of the Snowy Mountains Highway near Yarrangobilly Village and develop the preferred site following detailed site design, environmental impact assessment, exhibition and the finalisation of a Yarrangobilly Caves precinct plan.	Medium
9.3.1.18	Develop short-duration walking tracks in the Yarrangobilly Village area consistent with the Heritage Precinct Plan to be prepared for the site (Chapter 7).	Medium
9.3.1.19	Investigate options for the provision of visitor accommodation at Caves House in the Yarrangobilly Show Caves Precinct (Section 8.19) including leasing for commercial purposes.	Medium
9.4.1.1	Establish monitoring programs for the four unrestricted access caves in the unit (Barbers, Murrays, Cooleman and Right Cooleman Caves) within the context of the Karst Management Strategy (Section 6.4). Control access to these caves, or parts of them, if unacceptable damage is occurring or is deemed likely to occur.	Medium
9.4.1.6	Open the Coolamine Homestead complex to the public at all times except when it is closed for maintenance works.	Ongoing
9.4.1.15	Redevelop the Blue Waterholes camping/day use area to reduce environmental degradation and improve the quality and sustainability of the recreational experiences available.	High
9.4.1.16	Introduce a campsite booking system for Blue Waterholes for peak visitation periods if necessary.	Medium

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
9.4.1.19	Introduce a monitoring program to measure environmental degradation associated with visitor activities at the Blue Waterholes camping/day use area, the Coleman Mountain camping area and the Nicoles Gorge-Blue Waterholes-Clarks Gorge section of Cave Creek. Manage visitor activities at these places within impact thresholds.	Medium
9.4.1.23	Consider the provision of additional interpretive material within the buildings in the Coolamine Homestead complex.	Low
10.2.1.3	Work with lessees and other relevant authorities in the development and coordination of regional tourism strategies (Section 8.1).	Ongoing
10.2.1.6	Coordinate a program designed to investigate alternative mechanisms for measuring and regulating the carrying capacity of each resort. Liaise with DoP, resort lessees and licensees and other relevant organisations on the design and implementation of the program.	High
10.2.1.10	Coordinate the development of an education and interpretation strategy for the alpine resorts. The aim of the strategy is to manage the development of education and interpretation facilities and services across the resorts and the interface of other zones in the park. The strategy will form part of the Communication Plan (Chapter 13).	Medium
10.2.1.11	Include as part of the strategy education and training programs relevant for resort employees involved in providing recreational activities for visitors to the park.	Medium
10.2.1.16	Establish and update a register of the type and number of beds approved for construction by DoP to 30 June of each year for the purposes of updating Schedule 8.	High
10.2.1.17	Update Schedule 8 on an annual basis and make it available for examination by the public.	Ongoing
10.2.1.20	Add new accommodation establishments, so far as they are consistent with this plan, to Schedule 8 following their inclusion in lease/licence agreements. Remove from the Schedule any accommodation associated with any lease/licence agreement that expires or is terminated if the beds are not re-allocated within the management unit.	Ongoing
10.2.1.24	Conduct audits on accommodation numbers within the alpine resort management units and develop programs to ensure compliance within stated limits. Consider any breaches in lease renewals.	Medium
10.2.1.28	Develop waste avoidance and resource recovery targets for each alpine resort management unit in association with lessees/licensees and other government agencies. The targets will be consistent with state and regional reduction targets and will be specified in the environmental management systems established for each resort management unit.	High
10.2.1.33	Participate with DoP in the development of an Integrated Access Strategy for the alpine resort management units in association with the Roads and Traffic Authority (RTA), resort operators and local government.	Medium
10.2.2.2	Prepare an Environmental Health Plan for each alpine resort management unit, and for other key destinations in the park, in conjunction with lessees/ licensees and the Department of Health.	High
10.2.3.1	Establish an efficient information management system for the administration of leases in the alpine resort management units.	Medium
10.3.1.2	As part of the environmental management system an independent environmental audit of the Charlotte Pass Management Unit will be prepared within two years of the Minister's adoption of this plan.	High
10.5.1.2	The Director General will work with the lessee to investigate options for the future of the resort.	Medium
10.5.1.4	Provide for parking in specific locations along the Kings Cross ridge adjacent to the existing road leading up to Selwyn Snowfields.	Medium
10.6.1.3	Prepare municipal infrastructure funding plans and require contributions from lessees/licensees in accordance with those plans.	Medium
10.6.1.4	Rationalise existing ski lift infrastructure leases and establish new lease arrangements for the Perisher Range Resorts.	High
11.1.1.1	Prepare and implement a Restoration Plan that integrates soil conservation and rehabilitation works with introduced plant and animal control programs across the entire park.	High

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
11.1.1.4	Review the Restoration Plan every five years to incorporate the results of new research, the findings of mapping and monitoring projects, and the evaluation of works and programs against key performance indicators contained in the plan (Chapter 16).	Ongoing
11.1.1.5	Actively participate in the development and implementation of rehabilitation initiatives in cooperation with other Australian Alps park agencies and relevant catchment management authorities.	Ongoing
11.1.1.6	Investigate new ways of fostering inter-agency and community cooperation in site rehabilitation and introduced plant and animal control programs including the sharing of data, equipment, expertise and training opportunities amongst lessees, licensees, park neighbours, relevant private and public authorities, and local communities.	Ongoing
11.1.1.7	Establish mechanisms for community involvement in restoration and protection programs (Chapter 13).	Medium
11.2.1.1	Undertake soil conservation and rehabilitation programs within the context of the Ongoing Restoration Plan.	
11.2.1.4	Initiate a regular monitoring program to measure changes in the condition of degraded sites and detect the creation of new erosion problems.	Medium
11.2.1.6	Assess the potential impacts on soil values as part of the assessment process for restoration works.	Medium
11.2.1.9	Regularly inspect and maintain, repair or upgrade existing soil conservation works.	Ongoing
11.2.2.4	Develop soil “banks” for use in the park.	Ongoing
11.2.2.6	Monitor water quality and sediment flux before and after rehabilitation works and alter site management as necessary.	Ongoing
11.2.2.7	Pursue revegetation opportunities through government schemes and partnerships.	Ongoing
11.2.3.1	Identify and manage sites of human-created disturbance with important cultural values so as not to detract from their cultural significance.	Ongoing
11.3.1.3	Assess weed control priorities against established criteria to ensure the most effective use of resources.	Ongoing
11.3.1.6	Clear-fell the remaining stands of pine in the Jounama Plantation and revegetate the coupes with native plant species of local provenance (Section 9.3).	Ongoing
11.3.1.7	Investigate programs that test for the presence, abundance, distribution and impacts of exotic pathogens in the park. Control programs will be developed and implemented if deemed necessary, feasible and practical.	Medium
11.3.2.1	Undertake a parkwide and/or thematic research program to improve the level of knowledge of the cultural values of exotic plant species found in the park.	Medium
11.3.2.2	Establish a register of exotic plantings to be retained for cultural or amenity values, together with tailored management regimes designed to prevent the invasion of these species into native plant communities (Chapter 7). Decisions concerning the replacement of senescent plants or the re-establishment of historic gardens or plantings will be made on a case-by-case basis within the context of the natural and cultural attributes of each place, and where available, in accordance with the provisions of conservation management plans or related documents.	High
11.3.2.3	Remove or replace any culturally significant plantings that are invasive with non-invasive similar species.	Ongoing
11.3.2.4	Remove plantings of exotic species that have no cultural or amenity value and are not included on the register.	High
11.3.3.5	Maintain native seed harvesting programs, and storage and propagation facilities for use in site revegetation projects.	Ongoing
11.3.3.7	Develop and implement an early detection program for new weed species and new outbreaks of existing species within the context of the Restoration Plan.	Medium
11.3.3.9	Provide educational advice on weed hygiene procedures to relevant park employees, contractors, lessees, researchers, staff of relevant private and public authorities, and to park neighbours and visitors.	High

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
11.3.4.1	Evaluate the environmental acceptability of all weed control methods before they are adopted.	Ongoing
11.3.5.1	Participate in the development and implementation of weed control initiatives with Australian Alps park agencies.	Ongoing
11.3.5.2	Participate in the development and implementation of regional weed control initiatives with other state government agencies, local government, community groups and relevant catchment management authorities.	Ongoing
11.3.5.3	Investigate new ways of fostering inter-agency and community-wide cooperation in weed management including the sharing of data, equipment, expertise and training opportunities amongst park neighbours, relevant private and public authorities, other protected area management agencies, and members of local communities.	Medium
11.3.5.6	Promote the weed control strategies and efforts undertaken by the Service, especially within local communities.	Ongoing
11.4.1.3	Successful control strategies will be described and critically reviewed to determine the reasons for their success, and other programs will be adapted accordingly.	Medium
11.4.1.5	Assess introduced animal control priorities according to established criteria to ensure the most effective use of resources.	Ongoing
11.4.1.6	Investigate the need for a program to test for the presence, abundance, distribution and impacts of exotic pathogens spread by introduced animals in the park. Control programs will be developed and implemented if deemed necessary, feasible and practical.	Medium
11.4.1.8	Work closely with park agencies in Victoria and the Australian Capital Territory to ensure effective cross-border management of feral animals.	Ongoing
11.4.1.10	Implement the Feral Horse Management Plan for the alpine area. Prepare a similar plan for the entire park which will be linked to the Restoration Plan.	High
11.4.1.12	Liaise with NSW Fisheries to ensure those lakes and sections of rivers and streams that are currently free of introduced fish species are not stocked with such species. Periodically test these waterbodies for the presence of introduced fish with the aim of keeping them free of such species.	Medium
11.4.2.3	Investigate ways of improving the level of success in identifying and prosecuting people deliberately releasing introduced animals into the park.	Medium
11.4.3.3	Evaluate the environmental acceptability of all introduced animal control methods before they are adopted.	Ongoing
11.4.4.1	Participate in the development and implementation of introduced animal control programs and research with the Australian Alps park agencies and other relevant authorities.	Ongoing
11.4.4.2	Encourage the development and implementation of cooperative introduced animal control initiatives that encompass the park and adjoining lands and involve adjacent land owners and managers. Base these initiatives upon the priorities and programs contained within the Restoration Plan.	Ongoing
11.4.4.3	Investigate new ways of fostering inter-agency and community-wide cooperation in the management of introduced animals.	Medium
11.4.4.4	Investigate ways of involving members of the community in a voluntary capacity in introduced animal control planning and programs.	Medium
11.4.4.5	Promote community awareness and understanding of the potential and actual impacts of introduced animals on the values of the park through the Communication Plan (Chapter 13).	Ongoing
11.4.4.6	Promote the introduced animal control strategies and programs undertaken by the Service, especially within local communities.	Ongoing
11.4.5.3	Seek the co-operation of all neighbours in preventing the entry of stock into the park.	Ongoing
11.4.5.4	Consult with adjoining property owners regarding replacement of fencing where incursions of domestic stock occur from adjoining properties.	Ongoing
11.4.5.5	Encourage the Victorian National Parks Service to exclude grazing from areas under their control that adjoin the park.	Medium
11.4.5.6	Impound unauthorised stock found within the park as necessary.	Ongoing

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
11.5.1.6	Review the Fire Management Plan every five years.	Medium
11.5.1.7	Ensure fire protection strategies are prepared by leaseholders for all lease areas. Ensure these strategies are consistent with the relevant Bush Fire Management Plan for the region and the Fire Management Plan for the park. These strategies will be reviewed every five years concurrent with the review of the Fire Management Plan.	High
11.5.2.2	Ensure early detection and rapid suppression are key elements of the fire suppression strategy for the park.	High
11.5.2.3	Ensure fire suppression operations are consistent with the operational guidelines contained in the Fire Management Manual and are undertaken in ways that minimise impacts on the values of the park.	Ongoing
11.5.2.6	Undertake environmental impact assessments for proposed fire management works programs as required.	Ongoing
11.5.3.3	Maintain aerial surveillance during severe fire weather conditions or specific periods identified in the Fire Management Plan.	Ongoing
11.5.3.4	Maintain a strategic road access, water point and helipad network as prescribed in the Fire Management Plan. Periodically review the operational utility of these features.	Ongoing
11.5.3.5	Assess the operational utility of new management trails, helipads, breaks and water points resulting from suppression operations as soon as practicable after a fire. Rehabilitate these works unless they are assessed as being required for ongoing use under the Fire Management Plan.	High
11.5.4.2	Undertake environmental impact assessments for proposed fuel reduction and habitat manipulation burns as required.	Ongoing
11.5.4.4	Inform local communities of intended prescribed burning operations.	Ongoing
11.5.5.1	Investigate the cause of all wildfires.	Ongoing
11.5.5.2	Work with fire management authorities to investigate ways of improving the level of wildfire investigation and success in identifying and prosecuting arsonists.	Ongoing
11.5.5.3	Implement parkwide or site-specific bans on the use of solid fuel fires whenever warranted by fire danger conditions.	Ongoing
11.5.5.4	Brief all contractors working in the park on measures designed to minimise fire risks associated with their activities and ensure all contractors carry fire suppression equipment, where required.	Ongoing
11.5.5.5	Provide visitors with information on the appropriate use of campfires as prescribed in the Communication Plan (Chapter 13).	Medium
11.5.5.6	Actively encourage all visitors to the Wilderness and Back Country Zones to use fuel stoves rather than campfires.	Medium
11.5.6.1	Identify and undertake, or contribute to, research projects aimed at improving our knowledge and understanding of fire management in the park.	Medium
11.5.7.2	Continue to participate in community-based fire management planning and operations, primarily through involvement in local Bush Fire Management Committees.	High
11.5.7.3	Continue to liaise with all relevant public and private authorities and individuals regarding fire management including the Rural Fire Service, State Forests, Department of Planning, NSW Fire Brigades, Snowy Hydro Limited, lessees, local councils and park neighbours.	Ongoing
11.5.7.4	Promote the development and adoption of common data-sharing agreements for the transfer of fire information amongst relevant agencies, communities and individuals.	High
11.5.7.5	Raise awareness of fire management issues within neighbouring communities and amongst park visitors.	Ongoing
11.6.1.2	Periodically review developments in wastewater treatment technologies, especially in areas of similar climate and high conservation value, nationally and internationally.	Medium
11.6.1.3	Formulate water quality objectives and targets for catchments in the park. Aim to ensure	High

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
	that the standards for effluent discharged into watercourses do not impair water quality above the levels prescribed.	
11.6.1.4	Expand water quality monitoring programs to include all watercourses and waterbodies in the park potentially at risk from pollution. Continue to utilise the AUSRIVAS model and other appropriate bacteriological indicators.	Medium
11.6.1.5	As part of this monitoring regime, annually assess the water quality of the five glacial lakes and streams and rivers adjacent to popular campsites on the Main Range.	High
11.6.1.7	Liaise with other authorities regarding water quality of lakes, rivers and streams as appropriate.	Ongoing
11.6.1.8	Notify visitors if and when monitoring indicates that water quality at popular day-use and camping areas does not meet the Australian Drinking Water Guidelines.	Ongoing
11.6.1.9	Investigate the need for toilets at all huts, popular campsites and day-use destinations and provide toilet facilities as necessary in accordance with Schedule 6.	Medium
11.6.1.11	Prohibit the construction of additional pit toilets. Progressively replace existing pit toilets with sealed toilet systems that do not result in localised groundwater contamination.	Medium
11.6.1.12	Investigate and, if necessary, trial a system in which visitors are required to carry out human waste from popular areas where toilets are not provided. Depending on the results of the trial, introduce the system.	Low
11.6.1.13	Encourage the investigation of the use of recycled sewage and grey water including recycling (following treatment) for purposes such as irrigation and domestic reuse.	Low
11.6.1.15	Require all lessees to implement all possible water conservation measures.	Ongoing
11.6.1.16	Monitor the impacts of using road de-icing agents on water quality. Depending on the monitoring results, restrict or prohibit this practice if safe road conditions can be obtained by other means.	Low
11.6.1.17	Establish a register of the locations within the park where liquid fuels and other toxic substances are stored. Manage all such sites in accordance with the <i>Dangerous Goods Act 1978</i> .	High
11.6.1.18	Assess sites that are of high risk of being contaminated from hydrocarbons or any other pollutant and require lessees or other appropriate authorities to develop environmental management plans for such sites.	High
11.6.1.19	Rehabilitate all existing landfills in the park and prohibit additional landfills.	High
11.6.1.22	Monitor the use of groundwater within the park for water supply to ensure ongoing suitability and availability.	Medium
11.6.1.23	Liaise with authorities that have an interest (legal or otherwise) in water quality and catchment protection within the park.	Ongoing
11.6.1.24	Liaise with Snowy Hydro Limited concerning the quality of water discharged from impoundments in the park and establish water quality targets for inclusion in the environmental management plan required to be prepared for the Snowy Scheme.	High
11.6.1.25	Environmental management systems will be prepared and implemented for Service operations and the activities of all lessees, licensees and other authorities operating in the park (Section 12.1).	Medium
11.6.2.1	Work with relevant authorities to ensure that emergency management and response procedures are in place for environmental accidents and pollution events.	High
11.6.3.1	Adopt and apply a Visual Management System (VMS) with the aim of maintaining and enhancing the visual quality of the landscapes of the park in a systematic way.	Medium
11.6.3.3	Develop a viewfield databank consisting of maps of viewed areas, photographs or computer-generated images to enable the visual impact of any future developments to be determined.	Medium
11.6.3.5	Based upon the desired visual quality levels described in the VMS, prepare and implement a Scenic Quality Enhancement Strategy (SQES) in cooperation with relevant lessees and operators with the aim of achieving these standards.	Medium



## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
11.6.3.6	Within the context of the SQES: Remove all redundant structures that are no longer required for operational purposes and not of cultural value unless where doing so would create unacceptable environmental impact; and Work with relevant authorities to promote the development and implementation of an undergrounding program for phone and electricity lines (Section 12.6).	Low
11.6.3.7	Liaise with local governments on management prescriptions to preserve the scenic amenity of approaches to the park.	Ongoing
11.6.3.8	Liaise with local governments and the Department of Planning regarding any changes to the provisions of local or regional environmental plans and strategies that may impact on the environmental quality of the park.	Ongoing
12.1.1.1	Ensure all operations and authorised uses in the park are consistent with the provisions of this plan of management and are undertaken through a lease, licence or other formal consent or agreement. Create and maintain a park register of all leases, licences and agreements.	Ongoing
12.1.1.2	Ensure all infrastructure located in the park is appropriately documented within the Service's geographic information system.	Ongoing
12.1.1.3	Require all lessees, licensees and other authorities operating in the park to develop and implement an environmental management system for the management of their activities and infrastructure. All environmental management systems will be required to be approved by the Service.	Medium
12.1.1.5	Establish minimum environmental performance standards with the assistance of independent scientific advice commissioned by the Service, in association with its lessees and other relevant authorities.	Medium
12.1.1.7	Require all lessees and licensees to provide an annual report to the Service on their environmental performance.	Medium
12.1.1.8	Report annually on environmental quality based on reporting associated with all environmental management systems that apply to the park (Chapter 16).	Medium
12.1.1.10	Establish means by which members of the community can be involved in a voluntary capacity in 'clean-up' or other environmental improvement programs in the park.	Medium
12.1.2.1	Conduct or require environmental impact assessments for activities and developments in accordance with the requirements of relevant Commonwealth and state legislation, state planning policy and Service policy and guidelines.	Ongoing
12.1.2.4	Review the Schedule of Significant Features as required to incorporate updates or corrections to the status of identified features, and to make additions or deletions to the features listed.	Ongoing
12.1.2.5	Consult with all relevant stakeholders if a proposed activity or development: Is likely to affect adjacent communities or park lessees; Significantly impacts on visitor use or enjoyment; Affects traffic volumes, flow or movement; Is of a nature, scale or complexity likely to cause adverse environmental and cultural impacts; Is likely to significantly impact on a feature listed in Schedule 1; or Is of particular interest to a specific user-group(s).	Ongoing
12.2.1.2	Incorporate actions and priorities outlined in this plan in regional operational plans.	Ongoing
12.2.1.3	Prepare an environmental management system (EMS) in accordance with Section 12.1 for all Service operations in the park.	High
12.2.1.4	Maintain an Asset Register for the park that will include all Service infrastructure.	Ongoing
12.2.1.5	Document all Service infrastructure within the Service's geographic information system.	Medium
12.2.1.6	Ensure all staff and contractors are aware of individual and corporate environmental performance responsibilities and are trained or qualified to meet these responsibilities.	Ongoing
12.2.1.9	Maintain field depots at Blowering, Waste Point, Bombala, Yarrangobilly and Khancoban.	Ongoing

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
12.2.1.10	Maintain staff accommodation at Waste Point, Perisher Valley, Blowering Depot, Yarrangobilly Caves and Currango Homestead.	Ongoing
12.2.1.11	Subject to cultural heritage assessment, remove staff accommodation that is no longer required and where there is no appropriate alternative use.	Low
12.2.1.12	Maintain an effective radio communication system within the park.	Ongoing
12.2.1.16	Remove all temporary communication facilities upon completion of the particular operation for which they were installed.	Ongoing
12.2.1.17	Maintain a system of trails for fire management, pest species management and other essential park or emergency operations.	Ongoing
12.2.1.19	Periodically review the operational values of all management trails and close and rehabilitate those trails no longer required for management purposes.	Ongoing
12.2.1.25	Collect park use fees and other charges where necessary according to government policy.	Ongoing
12.2.1.26	Investigate alternative mechanisms for park use fee collection with the aim of improving traffic flows during peak periods on the Kosciuszko Road and the Alpine Way, and enhancing first impressions of the park. Any alternative option will ensure existing levels of revenue are maintained or enhanced.	High
12.2.1.27	Advise lessees, licensees and local communities of any changes to fees expeditiously to allow adequate time for marketing and promotional material to be adjusted.	Ongoing
12.2.1.28	Inform visitors and local communities of programs and operations funded by park use fees as part of the annual report (Chapter 16).	Ongoing
12.3.1.1	Liaise with the Roads and Traffic Authority (RTA) concerning the management of the roads for which it is responsible.	Ongoing
12.3.1.2	Re-survey those sections of the road reserve along the Snowy Mountains Highway that do not correspond with the actual alignment of the road. Formally gazette and de-gazette re-surveyed sections.	Medium
12.3.1.3	In order to improve the scenic quality of the major road corridors, negotiate with the RTA concerning the rationalisation of its depots. As part of this process, relocate the existing RTA depots at Kiandra Courthouse and Yarrangobilly Village (both along the Snowy Mountains Highway) to alternative sites that are not visible from the highway. Upon relocation, rehabilitate former depot sites. Any new sites must be consistent with other provisions of this plan.	Medium
12.3.1.4	Formalise an arrangement with the RTA concerning cost-sharing of weed control works.	Medium
12.3.1.5	Liaise with the RTA and the Department of Planning concerning the management of RTA roads and the development and implementation of the Integrated Access Strategy for the alpine resorts (Section 10.2).	Ongoing
12.4.1.1	Participate in government forums for agencies operating in the region.	Ongoing
12.4.1.2	Continue to play an active role in regional and local planning and administrative committees.	Ongoing
12.4.1.3	Develop and maintain a register of licences and leases and government legislative powers and functions exercised in the park.	Ongoing
12.4.1.5	Formalise an arrangement with Tumut Shire Council for the maintenance of the management trail beyond Jounama Creek camping area.	Medium
12.6.1.1	Seek easement licences with owners of utility infrastructure that set prescriptions for operations and maintenance.	High
12.6.1.4	Together with the relevant owners and operators, undertake a review of all existing overhead lines in the park and determine future management actions to reduce the impacts associated with these lines.	Medium
12.6.1.5	Together with the relevant owners and operators, undertake a review of all existing telecommunication towers and associated infrastructure in the park and determine future management actions to reduce the impacts associated with these facilities.	Medium
12.7.1.6	Liaise with relevant organisations to promote the undertaking of joint training exercises that facilitate the exchange of skills and knowledge.	Ongoing
13.1.1.1	Prepare and implement a parkwide Communication Plan.	High

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
13.1.1.4	Work in partnership with all park lessees and licensees to coordinate the provision of communication programs and services across the park. Where appropriate, develop joint interpretation and education programs, services and facilities.	Ongoing
13.2.1.1	Develop and maintain a database of park stakeholders that includes all neighbours, residents, lessees, licensees, relevant community groups, families and individuals, user and interest groups and voluntary organisations.	Medium
13.2.1.2	Produce a regular newsletter for park stakeholders.	Ongoing
13.2.1.3	Develop cooperative arrangements with park neighbours, residents and lessees concerning matters such as fire management and weed and feral animal control (Chapter 11).	Ongoing
13.2.1.4	Work with appropriate Aboriginal people on programs to facilitate their involvement in park management (Chapter 7).	Ongoing
13.2.1.5	Involve relevant communities, groups, families and individuals in the management of heritage places and structures that are of significance to them (Chapter 7).	Ongoing
13.2.1.6	Work in partnership with user and interest groups to better manage their recreational pursuits	Medium
13.2.1.7	Encourage the formation of a "Friends of Kosciuszko" group to serve as an umbrella organisation that coordinates the work of individual volunteers and voluntary groups in the park.	Medium
13.2.1.8	Prepare a schedule of prioritised projects for which voluntary assistance will be sought.	Medium
13.2.1.9	Explore the feasibility and desirability of using appropriately trained volunteer visitor liaison officers.	Medium
13.2.1.10	Support partnerships with wildlife care groups such as Looking After Our Kosciuszko Orphans (LAOKO) and Wildlife Information and Rescue Service (WIRES).	Ongoing
13.2.1.11	Support the involvement of the Kosciuszko Huts Association and other groups in managing the cultural heritage of the park (Chapter 7).	Ongoing
13.2.1.12	Recognise and promote community involvement and the work of volunteers through, for example, special acknowledgement events, awards and media publicity.	Medium
14.2.1.1	Promote the recognition and protection of natural and cultural values on land adjoining and close to the park irrespective of land tenure and use.	Medium
14.2.1.2	Liaise with all relevant local, regional and state authorities and all neighbours concerning: The adoption, as far as possible, of complementary management provisions on lands adjoining or near the park; and The protection and enhancement of native vegetation corridors and refuges that are linked or close to the park.	Medium
14.2.1.3	Consult with local communities and shire councils concerning the possible expansion of the current biosphere reserve listing for the park to incorporate adjacent areas. Promote the use of the biosphere reserve concept as a possible means of: Establishing zones of community cooperation to achieve landscape-wide conservation outcomes across various land tenures; and Strengthening social and economic linkages between the park and local communities.	Medium
14.2.1.4	Cooperate with any initiatives for an expanded biosphere reserve listing if there is general community support for the proposal.	Medium
14.2.1.5	Liaise with appropriate authorities to ensure that state environmental planning policies, regional environmental plans and local environmental planning instruments encourage the sympathetic management of areas adjoining the park.	Ongoing
14.2.1.6	Liaise with local councils, the Department of Planning and the Roads and Traffic Authority concerning the management of key gateways or approaches to the park including the Kosciuszko Road, Alpine Way, Snowy Mountains Highway, Khancoban-Cabramurra Road and Elliott Way. Promote the management of these park approaches and their visual catchments so as to retain the existing native vegetation, rural character and scenic quality of these places.	Medium
14.2.1.7	Work with the Australian Alps park agencies to ensure complementary reserve management across park boundaries.	Ongoing

## Schedule 11 Plan Implementation Priorities continued

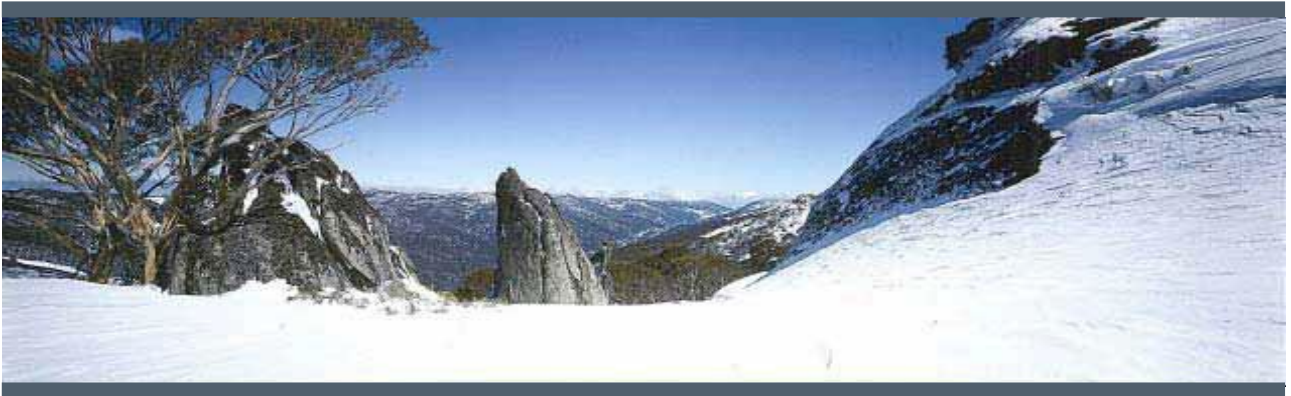
Number	Actions	Priority
14.2.1.8	Encourage the owners and managers of land adjoining the park to adopt voluntary conservation mechanisms for their properties.	Medium
14.3.1.1	Pursue cooperative management arrangements with the owners and managers of inholdings in relation to weed and feral animal control programs, fire protection and suppression operations, access and boundary-related issues.	Ongoing
14.3.1.2	Encourage the owners of inholdings to enter into conservation agreements that protect the natural and cultural values of their land and those of the surrounding park.	Medium
14.3.1.4	Seek to purchase the remaining inholdings if and when they are placed on the market and incorporate them into the national park.	Medium
15.0.1.1	Implement the Register of Required Research (Schedule 10) and report on progress as part of the annual report (Chapter 16).	Medium
15.0.1.2	Identify research priorities for a five-year period, based on the Register of Required Research, taking into account research priorities identified in the Service's Corporate Research Framework and associated research plans and priorities developed for the Australian Alps agencies.	Medium
15.0.1.3	Review the content of the Register of Required Research and research priorities every five years as part of the review process for the plan of management.	Ongoing
15.0.1.7	Prepare a prospectus and actively promote and encourage the involvement of research institutions and individuals in identified research areas as outlined in the Register of Required Research.	Medium
15.0.1.8	Actively pursue opportunities for collaborative research between the Service, other organisations, cooperative research centres and the Australian Institute of Alpine Studies. Ensure that all collaborative projects are conducted in accordance with the Service's Corporate Research Framework and other relevant policies.	Ongoing
15.0.1.9	Contribute to research projects initiated through the Australian Alps agencies where these are consistent with the research aims identified for the park.	Medium
15.0.1.10	Encourage, and where possible, provide in-kind support for postgraduate research.	Ongoing
15.0.1.12	Ensure all research, survey and monitoring projects are planned, reviewed, approved and implemented in accordance with the Service's Corporate Research Framework and associated research plans, including the Cultural Heritage Research Plan and the Natural Heritage Research Plan.	Ongoing
15.0.1.14	Apply appropriate conditions to all licences and approvals granted for research, survey and monitoring projects within the park to ensure that the conduct of research activities does not adversely impact on park values, park visitors or general public safety.	Ongoing
15.0.1.16	Ensure that the community is appropriately involved in all cultural heritage research projects.	Ongoing
15.0.1.17	Encourage all prospective researchers to consider opportunities for active community involvement in research, monitoring and survey programs.	Ongoing
15.0.1.18	Maintain a capacity to support or implement technical and/or field-based aspects of approved research projects through the provision of appropriate equipment, personnel or facilities.	Ongoing
15.0.1.19	Ensure that the results of research conducted within or relevant to the park inform the reviews of the plan of management (Chapter 16).	Medium
15.0.1.20	Maintain active research links with appropriate research organisations, universities, cooperative research centres and other government agencies to remain abreast of current research initiatives and results.	Ongoing
15.0.1.21	Institute a program of training courses in field research techniques for field-based staff to actively encourage their participation in research programs in the park and facilitate skills and knowledge transfer.	Medium
15.0.1.22	Ensure that key research findings and the results of ongoing research programs in the park are conveyed to staff and the community on a regular basis, and that these results inform park management activities.	Ongoing

## Schedule 11 Plan Implementation Priorities continued

Number	Actions	Priority
15.0.1.23	Ensure that the results of ongoing research are conveyed to park visitors and the wider community on a regular basis through interpretation and education programs and products, consistent with the Communication Plan (Chapter 13).	High
15.0.1.24	Inform park visitors about important research projects which may be visible to visitors within the park through on or off-site interpretation.	Medium
15.0.1.25	Investigate and pursue options for establishing a national leadership role for the park in the conduct of alpine research.	Medium
15.0.2.1	Develop and maintain the Kosciuszko Research, Survey and Planning Database - a parkwide electronic system for storing and managing information regarding research, surveys and monitoring programs relating to the park and environs.	High
15.0.2.3	Regularly update and maintain the Kosciuszko Reference Library.	Ongoing
15.0.2.4	Store, catalogue and maintain hard-copies of all relevant publications, environmental impact assessments, research and survey reports, and monitoring data in the Kosciuszko Reference Library, and link this to the Kosciuszko Research, Survey and Planning Database.	High
15.0.2.5	Require all lessees, licensees and other organisations operating within the park to provide information captured by environmental management systems or any other relevant research or monitoring programs to the Service, and incorporate this into the Kosciuszko Research, Survey and Planning Database.	Medium
15.0.2.6	Ensure that all relevant data produced from research, surveys and monitoring programs is used to update the Service's data information systems, including the Wildlife Atlas, Aboriginal Information Heritage Management System, and Historic Heritage Information Management System.	Ongoing
16.0.1.1	Undertake monitoring programs as prescribed throughout this plan.	High
16.0.1.2	Identify key performance indicators for the park. These indicators will provide the basis for monitoring, evaluation and review of the plan.	High
16.0.1.3	Establish and maintain a regular monitoring and data collection program to provide information on key performance indicators.	High
16.0.1.5	Develop monitoring partnerships and establish reciprocal data sharing agreements with lessees and other relevant organisations to obtain information that is consistent with the key performance indicators.	High
16.0.1.6	Develop and maintain a database for key performance indicators.	Medium
16.0.1.7	Establish and maintain a coordinated reporting structure for all environmental management systems and environmental management plans (Section 12.1) that can contribute information relevant to the key performance indicators.	Medium
16.0.1.8	Utilise existing, and investigate the establishment of further, benchmarking areas or sites that can be used to monitor long-term environmental change within the region. Consideration should be given to establishing areas across a range of representative ecosystems within the park.	Medium
16.0.1.9	Prepare an annual report that charts the trend in condition of the park's values and progress of plan implementation.	High
16.0.2.1	Introduce an integrated evaluation system that measures management progress in achieving the key desired outcomes for the park as listed in Section 4.3.	Medium
16.0.2.2	As part of the integrated evaluation system, prepare assessments on the condition of the values of the park and the degree to which management policies and actions are achieving stated objectives every five years. These assessments will form the basis of the five-yearly reviews of the plan of management (Section 3.7).	Medium
16.0.2.3	Prepare a publicly-available report on each five-yearly assessment.	Ongoing
16.0.2.4	Commission an independent scientific review of the condition and trends in condition of the values of the park on a ten-yearly basis.	High



## Part D Appendices







## Appendix 1 Glossary

This glossary has been provided to assist readers of this plan. The definitions apply in the context of this plan and may be inappropriate for other planning instruments. The glossary is not comprehensive, especially in regard to specialist scientific terminology. Interested readers should consult specialist literature if further explanation of scientific terminology is required. Italicised words and phrases indicate definitions elsewhere in this glossary. Square brackets [...] indicate the source of a definition.

***Aboriginal Heritage Information Management System (AHIMS)***: an information management system maintained by the Service. It contains:

- (a) a database and cards recording details of all Aboriginal objects, places and other Aboriginal heritage values across NSW that have been reported to the Service; and
- (b) a database index of archaeological reports and a library of these reports.

***Aboriginal place***: a location containing physical and/or non-physical features resulting from Aboriginal occupation or use, or of significance to Aboriginal people, such as landscape features and ceremonial areas. (Note: It does not refer, in the context of this plan, to an Aboriginal place as defined under the *National Parks and Wildlife Act 1974*).

***Aboriginal site***: a location containing features and/or physical evidence resulting from Aboriginal occupation or use.

***Acceptable change/disturbance***: the limits to the type and scale of change appropriate to an area. The limits of acceptable change establish the maximum 'damage' that society is prepared to accept to a resource.

***Accommodation***: see *visitor accommodation*.

***Activity***:

- (a) the use of land;
- (b) the subdivision of land;
- (c) the erection of a building;
- (d) the carrying out of a work;
- (e) the demolition of a building or work;
- (f) any other act, matter or thing referred to in Section 26 that is prescribed by the regulations for the purposes of this definition, but does not include:
  - (i) any act, matter or thing for which development consent under Part 4 of the *Environmental Planning and Assessment Act 1979* is required or has been obtained, or
  - (ii) any act matter or thing that is prohibited under an environmental planning instrument, or
  - (iii) exempt development, or
  - (iv) development carried out in compliance with an order under Division 2A of Part 6 of the *Environmental Planning and Assessment Act 1979*, or
  - (v) any development of a class or description that is prescribed by the regulations for the purposes of this definition. [National Parks and Wildlife Act 1974]

***Adaptive management***: park management policies and actions are adjusted and refined based upon the results of research and monitoring and the outcomes of performance evaluation.

***Adaptive reuse***: the modification of a building or structure and its curtilage to suit an existing or proposed use, in which:

- (a) the modification and use is carried out in a sustainable manner; and
- (b) the modification and use are consistent with the conservation of the natural and cultural values of the place.

***Adopted***: with reference to a plan of management - adopted by the Minister in accordance with Section 75(6) of the *National Parks and Wildlife Act 1974*.

**Aircraft:** powered fixed wing aircraft and helicopters, and non-powered aircraft such as gliders, paragliders and hang gliders.

**Alpine:** above the treeline approximating to above 1800 m altitude.

**Alpine Resorts Environmental Planning Instrument:** The environmental planning instrument for the alpine resorts as defined by the *Environmental Planning and Assessment Act 1979* and accompanying regulations.

**Alpine skiing:** recreational downhill skiing or slalom, giant slalom or downhill racing; all are generally dependent on mechanised uphill transport.

**Appropriate uses:** those activities that are consistent with community expectations for the protection of the natural and cultural values of the park.

**Australian Alps agencies (park agencies):** signatories to the Australian Alps Memorandum of Understanding – the Commonwealth of Australia, the States of New South Wales and Victoria, and the Australian Capital Territory working through the Australian Alps Liaison Committee.

**Australian Natural Heritage Charter:** standards and principles for the conservation of Australian places of natural heritage significance promulgated by the Australian Committee for *IUCN*.

**Bed numbers:** a measure of the accommodation capacity of an establishment or resort based on a single bed.

**Benchmark:** a measurement or standard that serves as a point of reference against which change or performance is measured.

**Biodiversity (biological diversity):** the variety of life forms: the different plants, animals and micro-organisms, the genes they contain, and the *ecosystems* they form. It is usually considered at four levels: genetic diversity, species diversity, ecosystem diversity and community diversity. [Australian Natural Heritage Charter]

**Bioregion:** relatively large land areas characterised by uniformity of broad, landscape-scale natural features and environmental processes that influence the functions of entire ecosystems.

**Biota:** animal and plant life, and micro-organisms.

**Building Code of Australia:** a document published on behalf of the Australian Building Codes Board in October 1996, together with:

- (a) such amendments made by the Board; and
- (b) such variations approved by the Board in relation to NSW, as are prescribed by the regulations.

**Burra Charter:** Australian ICOMOS (International Council on Monuments and Sites) Charter for the Conservation of Places of Cultural Significance and its guidelines.

**Capacity:** the ability of an ecosystem or infrastructure item to carry or support use within limits of *acceptable change*.

**Climate change:** defined by the United Nations Convention on Climate Change as “change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”.

**Community:** (1) in an ecological context - all the living parts of an *ecosystem*; (2) in the context of plants and animals - a naturally occurring group of organisms inhabiting a common environment; (3) in the context of society - the general public.

**Concession:** the grant of a licence or franchise to carry out a commercial undertaking (hence concessionaire: the holder of such a grant).

**Consent:** includes any licence, permit, authority or consent issued or given by a government agency or a Minister of the Crown.

**Conservation:** all the processes and actions of looking after a place so as to retain its natural or cultural significance. It always includes protection, maintenance and monitoring. [Australian Natural Heritage Charter and Burra Charter]

**Conservation management plan:** a non-statutory document that outlines the significance of an item and how the item is to be managed. A conservation management plan is prepared in two sections; the first contains a description of the item, its setting, identification of its heritage values and a statement of significance; the second provides conservation policies and a strategy for their implementation.

**Cooperative management agreement:** an agreement between the government and local Aboriginal people about management of a park, ensuring the continuance of traditional and contemporary cultural practices in the management of land. It aims to provide Aboriginal people with an opportunity to participate in planning and decision-making for the park or reserve, while maintaining access to parks for everyone.

**Cross-country skiing:** recreational touring on skis, ski-mountaineering or competition events on skis (but not biathlon) that are not dependent on mechanised uphill transport.

**Cross-cultural awareness training:** training aimed at raising awareness about Aboriginal culture, heritage, protocols and practices.

**Cultural connection:** a relationship, attachment or association that people have with a place or landscape, arising from traditional, historical or contemporary events or experiences.

**Cultural heritage:** the value that people have given to items through their associations with those items. These associations may be traditional, historical and/or contemporary. Cultural value may be embodied in physical elements such as art, buildings, landscapes and human remains, or expressed in non-physical forms such as cultural practices and beliefs, knowledge, songs, and stories. When natural elements in a landscape acquire meaning for people these elements become cultural heritage. [NPWS Cultural Heritage Division Guidelines]

**Cultural landscape:** a landscape in which some features are man-made or have been significantly modified as a result of human activity. It can also be defined as the way in which perceptions, beliefs, stories, experiences and practices give shape, form and meaning to the landscape. [NPWS Cultural Heritage Division Guidelines]

**Cultural significance:** aesthetic, historic, scientific or social value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. The term cultural significance is synonymous with heritage significance and cultural heritage values. [Burra Charter]

**Development:**

- (a) the use of land;
- (b) the subdivision of land;
- (c) the erection of a building;
- (d) the carrying out of a work;
- (e) the demolition of a building or work; and
- (f) any other act, matter or thing referred to in Section 26 of the *Environmental Planning and Assessment Act 1979* that is controlled by an environmental planning instrument, but does not include any development of a class or description prescribed by the regulations for the purposes of this definition. [*Environmental Planning and Assessment Act 1979*]

**Development application:** an application for consent under Part 4 of the *Environmental Planning and Assessment Act 1979* to carry out development but does not include an application for a complying development certificate.

**Development consent:** consent under Part 4 of the *Environmental Planning and Assessment Act 1979* to carry out development and includes, unless expressly excluded, a complying development certificate.

**Dimictic:** a lake in which the water mixes completely twice a year.

**Director-General:** the Director of National Parks and Wildlife Service appointed under the *National Parks and Wildlife Act 1974*.

**Earth processes:** the interactions, changes and evolutionary development of *geodiversity* over time. [Australian Natural Heritage Charter]

**Ecological integrity:** the degree to which a natural system retains its condition and natural rate of change in terms of size, *biological diversity*, *geodiversity* and *habitat*.

**Ecological processes:** all those processes that occur between organisms, and within and between populations and *communities*, including interactions with the non-living environment, that result in existing *ecosystems* and bring about changes in *ecosystems* over time. [Australian Natural Heritage Charter]

**Ecologically Sustainable Development (ESD):** requires the effective integration of economic and environmental considerations in decision-making processes. ESD recognises development that improves the total quality of life, both now and in the future, and requires the maintenance of essential ecological process. ESD can be achieved through the implementation of the following principles:

- (a) the precautionary principle;
- (b) *inter-generational equity*;
- (c) conservation of *biodiversity*; and
- (d) improved valuation, pricing and incentive mechanisms. [*Protection of the Environment Administration Act 1991*]

**Ecosystem:** the dynamic interaction between the complex of organisms that make up a *community* with their non-living environment and each other. [Australian Natural Heritage Charter]

**Ecosystem services:** environmental items such as pure, sustained water flows, erosion prevention or clean air provided by plants and animals living in their natural settings.

**Endemic:** only found in a specific locality.

**Environmental indicator:** for the purposes of this plan an environmental indicator is an aspect of the natural world or built environment that can be monitored to provide information on environmental conditions and trends.

**Environmental Management Plan (EMP):** for the management of environmental issues throughout the lifetime of a *development consent* for a project, and usually provides for management:

- (a) during all construction stages;
- (b) during the lifetime of the operation; and,
- (c) following completion of the operation. [Service Policy]

**Environmental performance:** a measure of whether the natural or cultural environment is improving or deteriorating against defined *benchmarks*.

**Environmental stewardship:** acceptance that responsibility for protecting the values of the park extends beyond the Service to include all lessees, licensees, relevant public and private authorities, visitors, neighbours and the general community.

**Existence values:** recognition that living organisms, earth processes and ecosystems have value beyond the social, economic or cultural values held by humans.

**Exotic:** see *introduced species*.

**Fabric:** all the physical material of the place including components, fixtures, contents, and objects and includes building interiors and sub-surface remains, as well as excavated material. [Burra Charter]

**Feldmark:** an alpine plant community that occurs in the most unfavourable situations for plant growth and is characterised by scattered dwarf prostrate plants, some with mat or cushion habit.

**Feral:** see *introduced species*.

**Fire regime:** the pattern, frequency, seasonal distribution, size and intensity of fires.

**Franchise rights:** special privilege conferred by one party (the franchisor) on another party (the franchisee).

**Frost hollow:** a treeless valley, plain or depression into which cold air drains and where the growth and establishment of trees is suppressed. Cold air drainage can sometimes produce inverted treelines.

**Fuel stove:** a device for cooking that:

- (a) does not, during normal operation, affect the soil or vegetation surface it is used on (e.g. no coals that can burn into peat soil or hot material that can harm vegetation);
- (b) does not use fuel from the local environment (e.g. may run on shellite, methylated spirits or other fuels); and
- (c) does not leave any residue in the local environment.

**Geodiversity:** the range of earth features including geological, geomorphological, palaeontological, soil, hydrological and atmospheric features, systems and earth processes. [Australian Natural Heritage Charter]

**Geographic Information System (GIS):** a system of computer hardware, software and procedures to facilitate the management, manipulation, analysis, modelling, representation and display of geo-referenced data to solve complex problems regarding planning and management of resources.

**Geomorphological:** pertaining to the study of landforms.

**Grooming:** the process of maintaining the operational quality of ski slopes. It includes terrain smoothing in summer and snow shaping in winter.

**Habitat:** an area or areas, permanently, periodically or occasionally occupied, by a species, population or ecological community and includes any biotic or abiotic component.

**Head lease:** generally a major commercial lease where a number of subordinate tenancies (subleases or licences) have been granted by the head lessee with the approval of the head lessor.

**Heritage action statement:** a report prepared to investigate the significance of a place, site or building and to provide general policy recommendations. It is structured as a basic *Conservation Management Plan* and it is used as a management tool for simple sites and/or places.

**Heritage place/item:** a place, building, work, relic, moveable object or precinct that relates to the settlement of NSW, not being Aboriginal settlement, that is more than 25 years old. It may include components, contents, spaces and views. [National Parks and Wildlife Act 1974 and Regulations 2002]

**Heritage precinct plan:** Similar to a *Conservation Management Plan*, but it is a plan for a geographically defined area, usually within a landscape containing related historic heritage places, items or themes.

**Heritage significance:** see *cultural significance*.

**Historic Heritage Information Management System (HHIMS):** a catalogue of post-contact heritage items and places managed by the Service. It contains all potential heritage items (including built assets), landscapes and moveable heritage items situated on Service estate, and includes information on documents and studies related to these heritage items.

**Horse riding:** the use of horses, donkeys or mules for recreational riding or their use as pack animals or to draw carts, wagons or carriages.

**Hut:** generally refers to a relatively simple walled and roofed structure.

**Impact thresholds:** see *acceptable change*.

**Intangible value:** values that cannot be expressed in physical or direct monetary terms.

**Inter-generational and intra-generational equity:** the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations by the present generation [Australian Natural Heritage Charter] and that decisions affecting current generations must be socially equitable.

**Interpretation:** communicates ideas, stories, feelings and experiences to help people understand more about themselves and their environment.

**Introduced species:** a translocated or alien species occurring outside its historically known natural range as a result of intentional or accidental dispersal by human activities. [Australian Natural Heritage Charter]

**IUCN:** the International Union for the Conservation of Nature and Natural Resources (also referred to as the World Conservation Union).

**Kosciusko State Park:** those lands, later incorporated into the Kosciuszko National Park, that were reserved under the *Kosciusko State Park Act 1944* and described in the schedule thereto.

**Kosciusko State Park Trust:** a trust created to administer the Kosciusko State Park under Section 4 of the *Kosciusko State Park Act 1944*; the former Trust is now constituted under the *National Parks and Wildlife Act 1974* as the Kosciuszko National Park Advisory Committee.

**Lease:** an agreement which gives rise to the relationship of landlord and tenant or lessor and lessee. A lease of land conveys from the owner (the lessor) to the tenant or lessee an estate in the land with an exclusive right of possession for a certain period. [Service Policy]

**Levels of acceptable change:** see *acceptable change*.

**Licence:** the permission by a competent authority (the licensor) to do something, which, without permission, would be unlawful. A licence with respect to property is a privilege to go onto land for certain purposes but does not operate to confer on or vest in the person granted the licence (the licensee) any estate in the land and may not give the licensee exclusive possession. [Service Policy]

**Limits of acceptable change:** see *acceptable change*.

**Maintenance:**

- (1) the continuous protective care of the fabric and setting of a place. It does not include repair, which involves restoration or reconstruction. [Burra Charter]; and
- (2) the continuous protective care of the *biodiversity* and *geodiversity* of a place and is to be distinguished from repair. Repair involves restoration and reinstatement. [Australian Natural Heritage Charter]
- (3) as it relates to existing infrastructure associated with the Snowy Mountains Hydro-electric Scheme is defined as: activities undertaken to maintain the Existing Scheme Development but excludes activities resulting in an expansion, enlargement or intensification of the Existing Scheme Development. [Schedule of Existing Developments]

**Management trail:** a vehicle trail that is not available for public vehicular use.

**Minister:** in this plan - the Minister of the Crown from time to time administering the *National Parks and Wildlife Act 1974*.

**Monitoring:** the ongoing review, evaluation and assessment to detect changes in condition of the natural integrity of a place, with reference to a baseline condition. [Australian Natural Heritage Charter]

**Natural significance:** the importance of *ecosystems*, *biological diversity* and *geodiversity* for their existence values, or for their importance for present or future generations in terms of their scientific, social, aesthetic and life-support value. [Australian Natural Heritage Charter]

**Multi-purpose trail:** a trail that is available for horse riders, cyclists and walkers; and park management, emergency and other authorised uses. Currently the only multi-purpose trail in the park is the Bicentennial National Trail which follows management trails and short sections of public road.

**Off-road:** driving or riding away from defined roads and tracks; i.e. cross-country over untracked ground.

**Performance criteria:** standards against which the behaviour and health of ecosystems or cultural settings can be judged.

**Performance indicator:** a benchmark or standard used for assessing the behaviour and health of ecosystems or cultural settings.

**Periglacial:** pertaining to cold climate features, conditions and processes that do not involve an ice sheet or a slow-moving mass of ice but involve freezing temperatures and freeze/thaw processes.

**Preservation:**

- (1) natural - maintaining the *biodiversity* and/or an *ecosystem* of a place at the existing stage of succession, or maintaining existing *geodiversity* [Australian Natural Heritage Charter]; and
- (2) cultural – maintaining the *fabric* of a place in its existing state and retarding deterioration. [Burra Charter]

**Prescribed burning:** burning of vegetation undertaken as part of a fire management program.

**Protection:** taking care of a place by *maintenance* and by managing impacts to ensure that natural and cultural significance is retained. [Australian Natural Heritage Charter & Burra Charter]

**Provenance:** in relation to plants and animals – organisms from the same environment with genetic uniformity.

**Reconstruction:** returning a place to a known earlier state and is distinguished from restoration by the introduction of new material into the fabric. [Burra Charter]

**Regeneration:** the recovery of natural integrity following disturbance or degradation.

**Rehabilitate:** to restore disturbed natural or cultural features to near their original condition.

**Restoration:**

- (1) natural - returning existing habitats to a known past state or to an approximation of the natural condition by repairing degradation, by removing introduced species, or by reinstatement. [Australian Natural Heritage Charter];
- (2) cultural – returning the existing fabric of a place to a known earlier state by removing accretions or by reassembling existing components without the introduction of new materials. [Burra Charter]

**Ribbon development:** building or infrastructure development in a continuous fashion along a road or other line.

**Riparian:** pertaining to river banks, or dwelling on the banks of a river or other body of water.

**Scenic amenity:** a measure of the relative contribution of each place in the landscape to the collective community appreciation of open space, as viewed from places which are important to the public.

**Shared-use track:** a track that is available for cyclists and walkers.

**Significance:** historical, scientific, cultural, social, archaeological, natural or aesthetic value for past, present and future generations. It defines the meaning of a place. [based on the Australian Natural Heritage Charter and the Burra Charter]

**State of Environment/State of Park reporting:** statutory reporting, usually annual, which identifies the health, condition and trends of the natural and cultural heritage of reserved lands.

**Subalpine:** generally from the treeline to about 300-500 m below it (approx 1300/1500 – 1800 m) characterised by *frost hollows* and by woodlands and open forests generally dominated by snowgums.

**Threatening process:** has the same meaning as in the *Threatened Species Conservation Act 1995* or the *Fisheries Management Act 1994* - a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities.

**Trackhead:** the starting and finishing point for walking tracks.

**Trailhead:** the starting and finishing point for cross-country skiing trails.

**UNESCO:** the United Nations Educational and Scientific Organization.

**Visitor accommodation:** a building or buildings used for the temporary accommodation of visitors that may have facilities for the convenience of patrons such as restaurants, conference facilities or recreation areas, and entertainment establishments. It includes apartments, serviced apartments and lodges (commercial and club). [Kosciuszko Resorts Environmental Planning Instrument]

**Visitor node:** a focal point for park visitors usually with facilities.



## Appendix 2 Sources for the quotations

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