BEN HALLS GAP NATIONAL PARK

PLAN OF MANAGEMENT

NSW National Parks and Wildlife Service

October 2002

This plan of management was adopted by the Minister for the Environment on 11th October 2002.

Acknowledgments

This plan of management is based on a draft plan prepared by a Steering Committee consisting of NPWS and community representatives. Members of the Steering Committee were Neil Heinze, Joy Carr, Geoff Mitchell, Pam Lunnon, Dave Brown and Brian Flannery.

Information provided in several reports contributed heavily to the plan, particularly a survey of native plants and animals by John Benson and Debbie Andrew.

The plan was developed following consultation with park neighbours, members of the local community and other interested individuals and organisations. The NPWS gratefully acknowledges the large amount of information, comment and ideas contributed by these people, and by all those who responded to the public exhibition of the draft plan.

The planning process leading to the development of this plan involved the collection and use of a large amount of information, which for reasons of document size, has not been included in the plan. For additional information or enquiries on any aspect of the plan, contact the NPWS's Upper Hunter Area Office at 137 Kelly Street, Scone, or by phone on (02) 6540 2300.

NSW National Parks and Wildlife Service

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FOREWORD

Ben Halls Gap National Park, which covers 2,500 ha, is located at the junction of the Liverpool and Mount Royal Ranges in the northern tablelands of New South Wales. It is 60 km south-east of Tamworth and 10 km from the township of Nundle. There are no public roads which provide access to the park and the park contains no visitor facilities.

The park features an outstanding area of tall, high nutrient old growth eucalypt forest. Very little logging and grazing have occurred in the park and as a result it has high quality habitat and virtually no weeds.

Sphagnum moss mounds found in some areas of rainforest in the park are significant. The rainforest and areas of sphagnum moss are remnants of a habitat thought to have been more extensive in past wetter climatic periods. The sphagnum moss cool temperate rainforest community within the park has been listed as an endangered ecological community under Schedule 1 of the *Threatened Species Conservation Act* 1995.

In order to protect the fragile ecology of the park and to keep it as free as possible of weeds, this plan provides that public use of the park will be primarily through NPWS Discovery tours and visits by educational and community organisations. Limits have been placed on the number of groups visits per year and all visitors to the park will be required to implement minimum impact practices, including cleaning of personal items before entering the park.

This plan of management establishes the scheme of operations for Ben Halls Gap National Park. In accordance with section 75 of the *National Parks and Wildlife Act 1974*, this plan of management is hereby adopted.

BOB DEBUS

Minister for the Environment

CONTENTS

1. INTRODUCTION

1.1 NATIONAL PARKS IN NEW SOUTH WALES

The national park concept was introduced into Australia through the establishment of Royal National Park in 1879.

The International Union for the Conservation of Nature and Natural Resources (IUCN) in 1994 defined a national park as:

> "A natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area, and (c) provide a foundation for spiritual, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible."

National parks are part of the regional pattern of land use. Management of national parks aims to minimise disturbance to natural and cultural heritage. Other land uses, for example agriculture, forestry and mining, are distinguished by an acceptance or encouragement of environmental modification. National parks, therefore, provide for only a limited part of the range of land uses in a region.

1.2 LOCATION, GAZETTAL AND REGIONAL SETTING

Ben Halls Gap National Park is located in the northern tablelands of New South Wales at the junction of the Liverpool and Mount Royal Ranges. It is 60 km southeast of Tamworth and 10 km from the township of Nundle (see Map). The park was gazetted in 1995 and covers 2,500 ha. The area was formerly Ben Halls Gap State Forest and was reserved as national park following campaigning for its protection by the local community.

Surrounding the park is steep, partially cleared country used for grazing and some agriculture. Several state forests are located to the northeast and to the southeast is the large area of Barrington Tops National Park.

The park is not far from the Fossickers Way, a popular tourist route through Nundle. Other nature-based attractions in the nearby area include state forests, Hanging Rock Reserve and Sheeba Dam Reserve.

2. MANAGEMENT CONTEXT

2.1 IMPORTANCE OF BEN HALLS GAP NATIONAL PARK

Ben Halls Gap is one of a series of conservation reserves and state forests located on the basalt cap of the Liverpool and Mount Royal Ranges. The other conservation reserves are Coolah Tops National Park, Cedar Brush Nature Reserve, Towarri National Park, Wallabadah Nature Reserve, Barrington Tops National Park and Mount Royal National Park. Ben Halls Gap National Park lies on the junction of the two ranges.

Scientific value

The park features an outstanding area of tall, high nutrient old growth eucalypt forest. Most of the tall high nutrient forests of the region, and elsewhere in the state, have been cleared or logged. The park is therefore an important scientific reference area. Very little logging and grazing have occurred in the park and as a result it has high quality habitat and virtually no weeds.

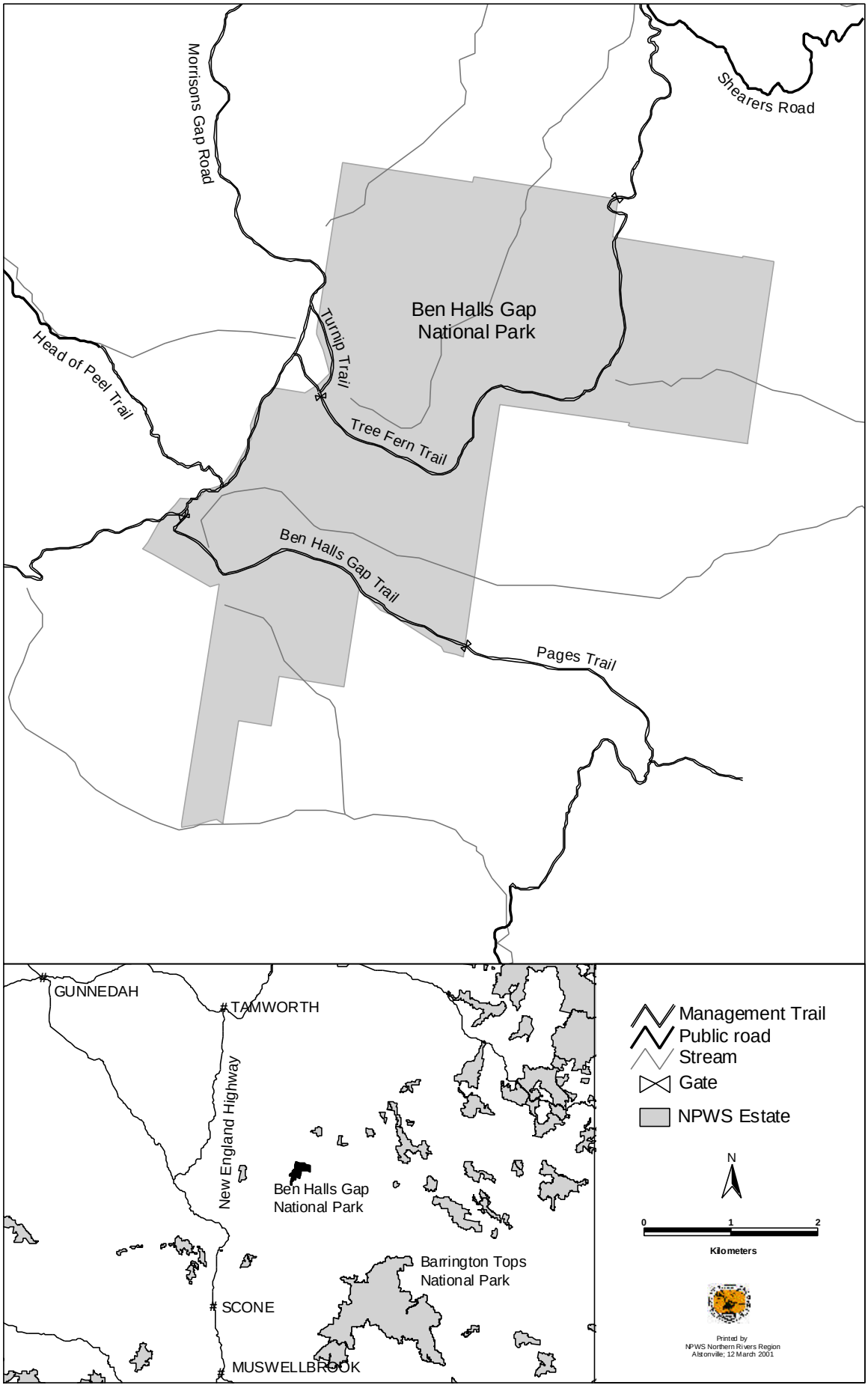
The mountain gum *Eucalyptus dalrympleana* / messmate *E. obliqua* association of the park is rare on an Australia-wide basis because of clearing, and is limited in extent in other conservation reserves. The *E. dalrympleana* trees in the park are probably the tallest in the state, with many over 40m, and the snowgums *E. pauciflora* are also unusually large (Benson & Andrew 1990).

Four other associations are poorly conserved elsewhere. These are:
- *E. obliqua,* northern pepper bush *Tasmannia stipitata* tall open forest;
- silver-topped stringybark *E. laevopinea*, *E. dalrympleana* tall open forest;
- closed shrubland of white banksia *Banksia integrifolia ssp A, Callistemon sp. nov., Leptospermum polygalifolium ssp. montanum* on the creeklines; and
- cool temperate rainforest on upper creeklines.

The creekline shrubland and rainforest contain a bottlebrush that may be a new species, *Callistemon sp. nov*. (Williams 1990), although confirmation of its identification is required. Antarctic beech *Nothofagus moorei* is notably absent from the rainforests in Ben Halls Gap although extensive areas are found to the south at Barrington Tops. The park is the northern limit of southern cool temperate rainforest.

Sphagnum moss mounds found in some areas of rainforest are significant. The rainforest and areas of sphagnum moss are remnants of a habitat thought to have been more extensive in past wetter climatic periods. The sphagnum moss cool temperate rainforest community within the park has been listed as an endangered ecological community under Schedule 1 of the *Threatened Species Conservation Act* 1995 (TSC Act). This community contains a new species of ground orchid *Corybas* sp. and may also contain the rare orchid *Adenochilus nortonii* (Metcalf 1995).

Two plant species listed on Schedule 2 of the TSC Act are found in the park plus several other species with unusual distributions. The threatened species are broad-leaved pepperbush *Tasmannia purpurascens* and fragrant pepperbush *T. glaucifolia. T. purpurascens* is at the northern limit of its range in the park and the population of *T. glaucifolia* is an isolated occurrence between its two other known populations (at Point Lookout, Barrington Tops and Goucester Tops).



MAP: BEN HALLS GAP NATIONAL PARK AND LOCALITY

Black sassafras *Atherosperma moschatum* and *Pomaderris aspera* are at the northern limit of their known ranges in the park.

The sub-alpine forests which the park supports have disjunct occurrences in a small number of high altitude locations. The park will become increasingly important for conservation of cold-adapted plant and animal species as climatic warming continues to occur.

The park has a rich bird and mammal fauna for its size. It is located at the overlap of the distributions of many eastern and western bird species. A large proportion of the mammal and bird species recorded are tree-hollow dwellers and the park contains one of the highest recorded densities of the greater glider *Petauroides volans*. This abundance is a result of the high nutrient levels of the eucalypt foliage developed on basalt soils and the number of available suitable sized hollows. The greater glider is a major prey item in the diet of the threatened powerful owl *Ninox strenua* that occurs in the park.

Other threatened animal species recorded in the park (listed on Schedule 2 of the TSC Act) are the tiger quoll *Dasyurus maculatus*, koala *Phascolarctos cinereus*, great pipistrelle *Falsistrellus tasmaniensis* and olive whistler *Pachycephala olivacea*. A glider that is either the squirrel glider *Petaurus norfolcensis* (a Schedule 2 species) or the sugar glider *Petaurus breviceps* has also been recorded from scat remains. Barrington Tops and the Liverpool Range appear to be a stronghold for the tiger quoll (Benson & Andrew, 1990). The park is one of the most inland occurrences of the olive whistler and also of the uncommon red-browed tree creeper *Climacteris erythrops*.

The rare skink *Lampropholis caligula* is found in the park. This species has an extremely restricted distribution, occurring only in a few remaining patches of little-disturbed high altitude eucalypt forest.

An invertebrate survey of the park (Gunning, 1995) found it to be very rich in insect species, with a particularly high diversity of butterflies, moths, beetles, bugs and wasps and of soil and ground dwelling insects associated with the large amount of organic matter on the forest floor. Two rare species were identified - an alpine fly *Eutanyderus sp* and Kershaws brown butterfly *Oxeixenica kershawi ella,* both of which are significant new distribution records. The mountain katydid *Acripeza reticulata* was also found in the park. This is an alpine species and its finding in Ben Halls Gap is a significant range extension.

In 1991 the NSW National Trust listed the park area as the ‘Ben Halls Gap old growth forest landscape conservation area’ in recognition of its outstanding natural heritage features. The park is also listed on the register of the National Estate.

Catchment value

The park lies at the head of the catchments of the Hunter, Barnard and Peel Rivers and as such has an important role in contributing to clean water and minimising the spread of weeds between catchments.

Cultural value

The Aboriginal cultural value of the park is largely unknown but it may have been a significant pathway for former movement between communities (Glen Morris, pers. comm.).

Scenic value

The park is small but very attractive. Its high altitude and tall undisturbed forests give the park a strong feeling of isolation and solitude. The open grassy plateau top areas contrast with the moist forests and dense fern understorey of the slopes and creeklines.

Education and nature tourism value

The old growth forests and high populations of arboreal mammals offer interesting educational and ecotourism opportunities. These will be restricted, however, because of the over-riding need to protect the park's conservation values.

2.2 SUMMARY OF SIGNIFICANCE

Ben Halls Gap National Park is of state conservation significance for the following reasons:

- the park is an outstanding area of tall, high nutrient old growth eucalypt forest which is virtually free of weeds;

- most of the park's vegetation communities are poorly conserved and the *Eucalyptus dalrympleana, E. obliqua* association is rare on an Australia-wide basis;

- the park provides important habitat for several threatened native plant and animal species (broad-leaved pepperbush, fragrant pepperbush, powerful owl, tiger quoll, koala, great pipistrelle and olive whistler), the sphagnum moss cool temperate rainforest endangered ecological community and the rare skink *Lampropholis caligula*; it is a stronghold for the tiger quoll;

- southern cool temperate rainforest reaches its northern limit in the park, as do several native plant species;

- the park provides a refuge for cold-adapted plant and animal communities;

- the park is rich in insect species and supports two rare species; and

- the park is located at the overlap of the distributions of many eastern and western bird species and has one of the highest recorded densities of the greater glider.

3. OBJECTIVES OF MANAGEMENT

3.1 GENERAL OBJECTIVES FOR NATIONAL PARKS

The following general objectives relate to the management of national parks in New South Wales:

* protection and preservation of scenic and natural features, including significant geological and geomorphological features;

* conservation of wildlife, including maintenance of biodiversity and populations of threatened species;

* maintenance of natural processes;

* preservation of catchment values;

* preservation of Aboriginal sites in consultation with the Aboriginal community;

* conservation of non-Aboriginal historic features;

* provision of appropriate recreation opportunities; and

* encouragement of scientific and educational enquiry into environmental features and processes, cultural features and use patterns.

3.2 SPECIFIC OBJECTIVES FOR BEN HALLS GAP NATIONAL PARK

In addition to the above general objectives the management of Ben Halls Gap National Park will be subject to the following more specific objectives:

* conservation of Ben Halls Gap National Park as a sample of largely undisturbed old growth tall montane forest;

* conservation of habitat and populations of the threatened powerful owl, tiger quoll, koala, great pipistrelle and olive whistler and of native mammals and birds dependant upon tree hollows;

* protection of areas of cool temperate rainforest, threatened plant species and the Sphagnum Moss Cool Temperate Rainforest Endangered Ecological Community;

* promotion of community appreciation of the value of the undisturbed nature of the park's vegetation communities and its importance for conservation of threatened species and native animals dependent upon old growth forest; and

* provision of visitor opportunities which encourage appreciation of the natural environment and do not damage the special values of the park.

3.3 OVERALL STRATEGY

The primary management priority for the park will be protection of the undisturbed old growth forests by:

- restriction as far as possible of the incidence and extent of wildfire;

- monitoring and treatment if necessary to ensure that the park remains largely weed-free;

- control of introduced animal species, particularly pigs, to reduce populations to levels as low as feasible;

- specific measures such as survey and monitoring for threatened species and communities;

- maintenance of good working relationships with neighbours particularly with regard to cooperative pest control, fire management, boundary fencing and access; and

- restriction of public access to a limited number of organised tours to prevent weed introduction, fire escape, erosion and other damage.

4. POLICIES AND FRAMEWORK FOR MANAGEMENT

This chapter contains the policies and framework for the management of Ben Halls Gap National Park together with relevant background information. Policies are summarised under the following section headings:

4.1 NATURE CONSERVATION
4.2 CULTURAL HERITAGE
4.3 USE OF THE AREA

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

The policies established in this plan of management provide the framework for future management consistent with anticipated resources available to the NPWS over the next decade. The actions identified are those to which priority will be given in the foreseeable future.

Where not specifically provided for in this plan, management of Ben Halls Gap National Park will also be in accordance with the National Parks and Wildlife Act and with general NPWS policies.

4.1 NATURE CONSERVATION

Nature conservation covers all aspects of the natural environment including geology and soils, water quality, native plants and animals and the relationship between these. For convenience, management of landscape values, introduced species and fire are also considered in this section.

4.1.1 Landform, Catchments, Geology and Soils

Ben Halls Gap National Park is located on the southern end of the Northern Tablelands adjoining the northern side of the Hunter Valley. It occupies a small plateau on the Great Dividing Range formed by the meeting of the Mount Royal Range and the Liverpool Range. The maximum altitude in the park is 1400 m ASL on the western boundary.

The park contains the headwaters of several rivers including the Barnard and the Hunter, which are two of the major rivers in the region. Ben Halls, Brayshaws and Stockyard Creeks flow east into the Barnard River while Pages Creek flows south into Pages River and hence the Hunter River. The Peel River rises on the western side of the park and flows into the Namoi River. Water quality in the park is very high.

The plateau is gently undulating but falls steeply into deep valleys cut by Brayshaws Creek, Ben Halls Creek and Pages Creek.

The park's climate is cool and seasonally wet, with frequent dense fog and occasional snow.

The park is located predominantly on Tertiary basalt of the Liverpool Range Beds. The basalt resulted from the eruption of a number of shield volcanos between Coolah and Barrington Tops, 41 to 50 million years ago. A small area of shale outcrops near the Pages River.

Deep alpine humus soils have developed on the plateau. Small bogs are present where springs emerge on basalt benches on the mid-slopes. On lower and steeper slopes the soils are more shallow. There is little erosion because of the undisturbed dense ground cover and the nature of the soils. The soils are soft, however, and easily rutted and eroded by vehicle use, particularly in the frequently wet ground conditions of the winter months.

Policy

* All works will be designed and undertaken in a manner which minimises soil erosion and prevents water pollution.

4.1.2 Native Vegetation and Introduced Plants

Surveys of the plant communities of the park have been undertaken by the University of New England (Williams, 1990), the NPWS (Benson & Andrew, 1990), NSW Agriculture (Hoskins, 1992) and Metcalf 1995 (of orchids). Seven associations have been identified and are described below. Further survey is needed to adequately sample the Pages Creek section of the park.

The plateau tops support a tall open forest of mountain gum *Eucalyptus dalrympleana ssp. heptantha* and snow gum *E. pauciflora* with a snow grass *Poa sieberiana* understorey. Occasional patches of blackwood *Acacia melanoxylon* occur. Mother shield fern *Polystichum proliferum* and bracken *Pteridium esculentum* are found in moist locations. Herbs include *Geranium* sp., *Hydrocotyle* sp., field woodrush *Luzula flaccida*, starwort *Stellaria pungens* and *Pratia* sp.

Along the western edge of the park in areas exposed to cold westerly winds are areas of snow gum with some black sally *E. stellulata*. The ground cover is snow grass with matrush *Lomandra longifolia*. There are occasional blackwood and silver wattle *A. dealbata*.

The most extensive association in the park is tall open forest of messmate *E. obliqua,* forest ribbon gum *E. nobilis* and mountain gum on the upper and middle slopes. Snowgum and ribbon gum *E. viminalis* occur occasionally. The understorey is mainly snow grass and soft tree fern *Dicksonia antarctica*. As stated in section 2.1 this association is rare and it contains the threatened plants *Tasmannia purpurascens* and *T. glaucifolia* (see below). Other understorey species include northern pepper bush *T. stipitata*, mock olive *Notelaea venosa*, common whitebeard *Leucopogon lanceolatus*, blackwood, fishbone fern *Blechnum nudum,* Austral sarsaparilla *Smilax australis* and the herbs listed above.

On the lower slopes is a tall open forest of silver-topped stringybark *E. laevopinea* and mountain gum. Blackthorn *Bursaria spinosa* is common in the understorey. Other understorey species include white banksia *Banksia integrifolia ssp. A*, *Leptospermum polygalifolium*, alpine beard-heath *Leucopogon hookeri*, *Cassinia quinquefaria*, soft tree fern, hairy bracken *Pteris comans* and various herbs.

Along the main creeklines is a tall closed shrubland of white banksia *Banksia integrifolia*, tall bottlebrush *Callistemon sp. nov*. and mountain tea tree *Leptospermum polygalifolium ssp montanum*. Ribbon gum forms an overstorey.

Other species include black olive berry *Elaeocarpus holopetalus*, *Blechnum* spp, *Juncus sp D*. and a diversity of mosses and lichens.

The shrubland grades into cool temperate rainforest at higher altitudes. Dominant species are black olive berry, white banksia, possumwood *Quintinia sieberi, Callistemon* sp. *nov., Leptospermum polygalifolium*, tree fern and other ferns, mosses and lichens. Areas of mounded sphagnum moss *Sphagnum cristatum* occur in the rainforest along creeklines. The rainforest community is rare in the park and susceptible to disturbance, especially by fire. It contains the species black sassafras *Atherosperma moschatum* that is at its northern limit in the park.

An area adjacent to Brayshaws Creek on the northern boundary of the park has a pure stand of *E. obliqua* tall open forest. Shrubs and ground cover include *Tasmannia stipitata*, *Bursaria spinosa*, mother shield fern, bracken, *Hydrocotyle sp*. and *Poa sieberiana*.

Sphagnum moss cool temperate rainforest community

As stated in section 2.1, the sphagnum moss cool temperate rainforest community has been listed as an endangered ecological community. The community, and the sphagnum moss in particular, is vulnerable to trampling, illegal collection, fire, weed invasion, drainage and microclimate disturbance and pollution. The main community is located close to the western boundary of the park and will require special protective measures as set out below:

- potential for human disturbance and of illegal collection of sphagnum moss will be minimised by maintenance of the current lack of public vehicle access and limitations on visitation to the park (see section 4.3.1). The sphagnum moss cool temperate rainforest community will not be promoted or included in tours of the park. A carefully located sign explaining its value and sensitivity to disturbance will be erected for those visitors who may be aware of the community and visit the park outside of approved arrangements.

- the wildfire incidence is low and all fires will be suppressed as quickly as possible. The park fire management plan (see section 4.1.4) provides for exclusion of the sphagnum moss cool temperate rainforest community from any prescribed burning that may be undertaken in the park.

- control of introduced species, particularly pigs, will be undertaken as needed. Investigations will be carried out into additional measures such as deflection fencing for avoiding pig damage in the sphagnum moss cool temperate rainforest community (section 4.1.3).

- monitoring of the condition of the sphagnum moss cool temperate rainforest community and of impacts from people and pigs will be undertaken and ameliorative measures will be implemented if needed to address impacts.

Threatened species

The threatened species *Tasmannia purpurascens* is relatively common in the upper catchment of Ben Halls Creek. It was previously thought to be restricted to the Barrington-Gloucester Tops area, where it is considered to be vulnerable because of the spread of English broom *Cytisus scoparius*.

Only one small occurrence of the threatened *T. paucifolia* has been found in the park, on a head-water tributary of Brayshaws Creek. Further survey is needed to determine its total population.

Under the *Threatened Species Conservation Act 1995* a recovery plan must be prepared for endangered (Schedule 1) and vulnerable (Schedule 2) flora and fauna and for endangered ecological communities. The purpose of a recovery plan is to promote the recovery of a threatened species, population or ecological community to a position of viability in nature. Recovery plans will be implemented in the park when prepared.

Introduced species

An introduced species is defined in this plan as any plant or animal species that does not occur naturally in the park. Introduced species within the park and on adjoining land are of concern because they have the potential to have detrimental effects on ecological values and can spread to and from neighbouring land. Because of the lack of past disturbance and its river-head position, there are very few introduced species in the park. Small occurrences of herbaceous weeds such as spear thistle *Cirsium vulgare*, black-berry nightshade *Solanum nigrum*, white clover *Trifolium repens*, dandelion *Taraxacum officinale* and green mullein *Verbascum virgatum* have been recorded in disturbed sites along tracks and near the park boundaries.

The *Noxious Weeds Act 1993* places an obligation upon public authorities to control noxious weeds on land that they occupy to the extent necessary to prevent such weeds spreading to adjoining lands. No noxious weeds have been found in the park but blackberry occurs extensively on adjoining properties. It will be necessary to regularly check for its presence in the park.

It will be important to avoid bringing in weeds on vehicles or with material used for management purposes. It will be particularly important to ensure that English broom *Cytisus scoparius* is not introduced to the park. It can be carried on vehicles as well as being spread by natural means.

Adjoining areas of native vegetation

Much of the land around the park has been cleared and it is largely isolated from other large forested areas. Significant areas of native vegetation remain, however, adjacent to the eastern, southern and northern boundaries. Retention of nearby forested areas is important for maintaining native animal populations particularly since the park itself is so small. If the park were to become surrounded by cleared land, decline in species abundance and, in the longer term, extinction of some species could be expected. The NPWS will encourage, in association with park neighbours, protection of nearby naturally vegetated areas through such means as preparation of voluntary conservation agreements, Landcare programs and incentives of the *Native Vegetation Conservation Act* 1997.

Policies

* The old growth nature of the park's vegetation is recognised to be of significant value and as far as possible will be maintained.

* No track construction or other work will be undertaken in cool temperate rainforest or areas of the threatened *Tasmannia* species.

* The provisions of recovery plans prepared for *Tasmannia* species and the sphagnum moss cool temperate rainforest community will be implemented.

* As far as possible the park will be maintained in a weed-free condition and any introduced species will be eradicated.

* Foreign materials such as road base that could carry weeds will not be introduced into the park.

* Management vehicles will be washed before entering the park to ensure that they do not carry weed seeds or weed material. Washing of other vehicles will also be required if entry is authorised.

* Weed control programs will be carried out in cooperation with other authorities and park neighbours where appropriate.

* The NPWS will encourage retention of areas of native vegetation close to the park through such means as voluntary conservation agreements and other voluntary vegetation management schemes.

Actions

* A vegetation survey will be undertaken for *Tasmannia pauciflora* to determine its extent in the park.

* A vegetation survey will be carried out in the Pages Creek section of the park.

* A monitoring program will be designed and implemented for the sphagnum moss cool temperate rainforest community to record its extent, condition, any changes and the impacts of people and feral pigs. Ameliorative measures will be undertaken if monitoring indicates that damage is occurring.

* Survey will be undertaken to fully determine the location of weeds in the park and known occurrences will be treated as needed.

* A weed management plan will be prepared covering monitoring and treatment, including means for preventing introduction.

4.1.3 Native and Introduced Animals

Several fauna surveys have been undertaken in the park and quite good information is available. Further survey is needed, however to obtain comprehensive lists of reptiles and amphibians and to check for the presence of some threatened mammal species. The information below comes largely from Benson and Andrew, 1990.

The park supports a good diversity of native mammal species, particularly arboreal mammals. Relatively common ground dwelling species recorded include the eastern grey kangaroo *Macropus giganteus*, swamp wallaby *Wallabia bicolor*, red-necked wallaby *Macropus rufogriseus*, common wombat *Vombatus ursinus*, short-beaked echidna *Tachyglossus aculeatus*, northern brown bandicoot *Isoodon macrourus*, common dunnart *Sminthopsis murina*, brown antechinus *Antechinus stuartii* and bush rat *Rattus fuscipes.* Arboreal mammals include the common brushtail possum *Trichosurus vulpecula*, greater glider *Petauroides volans*, feathertail glider *Acrobates pygmaeus* and nine species of bat including the white-striped mastiff bat *Tadarida australis* and the threatened great pipistrelle. Two and possibly three other threatened mammal species are present in the park - the tiger quoll, koala and possibly the squirrel glider (see section 2.1). It is also possible that the rare Hastings River Mouse *Pseudomys oralis* is present. All of the bats and gliders are tree-hollow dwellers while the tiger quoll, brown antechinus and common dunnart use hollows of mainly fallen trees.

Eighty-seven native bird species have been recorded in the park. Sixteen of these are tree-hollow dwelling species and a number are largely dependent upon rainforest

or tall open forest. Four of the bird species recorded; the sulphur-crested cockatoo *Cacatua galerita*, yellow-tailed black cockatoo *Calyptorhynchus funereus*, southern boobook owl *Ninox novaeseelandiae* and powerful owl require large hollows in large old trees. Such hollows may take up to 200 years to develop.

Notable birds recorded include the threatened powerful owl and olive whistler, the peregrine falcon *Falco peregrinus*, the spotted quail-thrush *Cinclosoma punctatum*, yellow throated scrubwren *Sericornis citreogularis* and red-browed tree-creeper *Climacteris erythrops*. More common species include the yellow thornbill *Acanthiza nana*, red wattlebird *Anthochaera carunculata*, white-winged triller *Lalage tricolor*, flame robin *Petroica phoenicea*, channel-billed cuckoo *Scythrops novaehollandiae*, sacred kingfisher *Halcyon sancta*, cicadabird *Coracina tenuirostris*, brown-headed honeyeater *Melithreptus brevirostris* and green catbird *Ailuroedus melanotis*.

Information about reptiles and amphibians in the park is limited. The following species have been recorded; common eastern froglet *Ranidella signifera*, Verreaux's tree frog *Litoria verreauxii*, a toadlet *Pseudophryne* sp., red-bellied black snake *Pseudechis porphyriacus*, tiger snake *Notechis scutatus*, White's skink *Egernia whitii*, a water skink *Eulamprus tympanum*, Weasel skink *Lampropholis mustelina*, a burrowing skink *Saiphos equalis* and the skinks *Lampropholis caligula* and *Leiolopisma entrecasteauxii*. The park is one of only four recorded occurrences of *Lampropholis caligula*. Its habitat at Barrington Tops is threatened by English broom.

Almost 100 species of invertebrates were collected in the park by Gunning (1995). As stated in section 2.1 the survey found the park to be very rich in insects and three significant species were found.

All records of native animals (and plants) are collected and stored on the NSW Wildlife Atlas, a state-wide data base established by the NPWS. Information is built up about locality, habitat and breeding records and used to assist management of native wildlife.

Introduced species

The feral goat, feral pig, fox, feral cat, European rabbit and black rat are all found in the park, fortunately not in high numbers. Foxes can have a significant impact on native animals and introduce weeds such as blackberry. Control of foxes and pigs has high priority and baiting and trapping are undertaken. Pigs could potentially damage the main area of sphagnum moss since it is a source of permanent water. Pig activity will be monitored and investigation will be undertaken into measures for eliminating any pig impacts in this area.

Wild dogs occur in the area and control programs are undertaken in response to stock loss problems on neighbouring properties. Targeted ground baiting programs are used to minimise impacts on other native animals such as the tiger quoll. Wild dogs can be divided into three groups; dingos, hybrids with domestic dogs, and feral dogs. The dogs in the park are mainly hybrids and feral dogs. The NPWS considers the dingo to be part of the native fauna of NSW that it has a responsibility to conserve. The dingo is not a declared noxious species under the *Rural Lands Protection Act* 1989 as long as it remains on NPWS land. The NPWS recognises, however, that wild dogs from NPWS lands may impact on livestock on adjacent areas and accepts the need for management to minimise their attacks on stock. It is NPWS policy to remove feral dogs from its lands.

Boundary fences are in poor condition in places and fencing work will be necessary to keep neighbouring stock out of the park.

Policies

* Priority will be given to management strategies or programs that favour conservation of threatened species. As far as possible programs will be designed, however, to conserve the full range of native animal species in the park and reserve.

* Recovery plans prepared for threatened native animal species occurring in the park will be implemented.

* Introduced animals will be controlled where they have a significant impact on native species. Priority will be given to pig, fox and wild dogs. Control programs will be designed to avoid impact on non-target species and will be undertaken in cooperation with the Tamworth and Scone Rural Lands Protection Board and neighbouring land holders where appropriate.

* Wild dog control may be undertaken on park to reduce the impact to livestock on adjoining land in accordance with s.156 of the Rural Lands Protection Act 1998 and NPWS policies. Control programs will be designed to minimise impacts on non-target species.

* Maintenance of effective fencing of boundaries with grazing properties will be facilitated. Fencing assistance may be provided where appropriate in accordance with the NPWS fencing policy.

* Neighbours may be permitted, with prior consent, to retrieve strayed stock from the park.

Actions

* Survey will be undertaken to improve knowledge of the reptile and amphibian species present in the park and for threatened fauna, in particular trapping for the Hastings River mouse.

* On-going fox and wild dog baiting will be undertaken.

* Feral pig activity will be monitored and trapping will be carried out as needed. Additional measures for protection of the sphagnum moss cool temperate rainforest community from pigs will be implemented if necessary, including possible deflection fencing.

* A pest species management plan will be prepared for the park setting out techniques and programs, including monitoring of effectiveness.

* Undertake boundary fencing where necessary.

4.1.4 Fire Management

NPWS Fire Management Responsibilities

NPWS is a prescribed fire fighting authority under the *Rural Fires Act 1997* and is responsible for the control and suppression of all bushfires occurring in the park and preventing the spread of bushfires to adjacent property. Under the Rural Fires Act, NPWS is also responsible for the implementation of fuel management programs to protect life and property within and immediately adjacent to the park.

NPWS also has responsibilities under the *National Parks and Wildlife Act 1974* and *Threatened Species Conservation Act 1995* to conserve natural and cultural heritage.

Thus, fire management within the park must aim to protect life and property while simultaneously conserving natural and cultural heritage. This makes fire management a complex and important issue.

Bushfire Environment

The park is located at a comparatively high altitude that results in generally cool temperatures and a high rainfall. Although there are no formal weather records available for the park, it is believed that the simultaneous occurrence of high temperatures and wind speeds and low relative humidity that is required for high intensity fire behaviour is an unusual event. This is reflected in the parks fire history with no record of a significant bushfire in the park since records began in 1979/80. The only areas that have been burnt are small areas (less than 300 ha in total) around the northern, north eastern and south western sides of the park which have been burnt as part of larger bushfires on adjacent private property.

The generally cool, moist climate and predominance of moist vegetation types makes the risk of fire in the park relatively low. However, the park could burn under prolonged drought conditions and in such conditions fire intensity could be high due to generally high fuel loads. Fortunately, there are few potential ignition sources within and surrounding the park.

The absence of visitor facilities and the fact that private property is generally located downhill results in the park posing only a low bushfire risk to life and property. All Aboriginal heritage sites may be damaged by earthmoving machinery during bushfire suppression operations and the park is may contain a large number of, yet undiscovered, Aboriginal heritage sites.

The low incidence of fire in the park has allowed the development of extensive areas of species and communities that are sensitive to fire, including *Tasmannia stipitata*. Indeed, the large number of fire sensitive species, the comparatively small size of the park and poor links to other naturally vegetated areas means that a widespread fire would pose a significant threat to the natural heritage of the park. However, the risk of a widespread bushfire is considered low.

The following table sets out interim fire regime thresholds for the park's vegetation communities (and animal habitats) based on a current understanding of their ecological requirements. The reliable fire history for the park does not date back far enough to identify any areas where prescribed burning is required to maintain fire regimes within the thresholds specified in the following table.

Vegetation Community	Plant species decline predicted if the following fire regime thresholds are exceeded
Rainforest	• Any fire.
Open forest	• More than one fire every 30 years. • No fire for more than 200 years.
Riparian (closed shrubland)	• More than one fire every 100 years. • No fire for more than 200 years.

While prescribed burning to protect life and property or to conserve biodiversity is not considered necessary within the park in the near future, vehicle access to the park is poor and is of rough 4WD standard. Within the park, management tracks provide good access to the plateau areas but there is a constant risk of the tracks being blocked by tree falls. The tall tree canopy makes fire suppression access from the

air difficult. There is no water in sufficient quantity for fire fighting within the park and there are few convenient sources outside. These limitations make fire prevention and cooperative strategies with park neighbours for fire detection, fire trails and suppression important.

Policies

* Fire will be managed in accordance with a fire management plan and the principles below to ensure:
  – protection of human life and property within and adjacent to the park;
  – conservation of all plant and animal species that occur naturally within the park, with special attention to rare, threatened and biogeographically significant species and communities;
  – protection of all Aboriginal heritage sites, historic places and culturally significant features; and
  – maintenance as far as possible of the majority of the park in old growth condition.

* All wildfires will be suppressed as quickly as possible if they are likely to exceed biodiversity thresholds or threaten neighbouring assets. As far as possible fire will be completely excluded from areas of cool temperate rainforest.

* The use of heavy machinery for fire suppression will be avoided as far as possible and will not be used in the vicinity of threatened species, cool temperate rainforest or cultural heritage sites. If such machinery is used in the park, efforts will be made to avoid disturbance to soil profiles.

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

* Records and maps will be maintained of all fires as they occur.

* Research will be encouraged into the ecological fire needs of the park's plant and animal communities, particularly the fire response of significant plant species.

* Close contact and cooperation will be maintained with volunteer bush fire brigades and Council fire officers. The NPWS will continue to actively participate in the Nundle, Murrurundi and Scone Bush Fire Management Committees.

Actions

* A fire management plan will be prepared for the park. This plan will identify:
  – the fire prevention strategies to be applied in the park, including cooperative strategies with neighbours;
  – the assets to be protected during bushfire suppression operations, including natural, cultural and built assets; and
  – the fire control advantages that may be used during fire suppression operations and any restrictions on their use.

* As far as possible, the strategies identified in the fire management plan, including trail maintenance, research and monitoring and cooperation with neighbours, will be implemented.

4.2 CULTURAL HERITAGE

Cultural heritage includes both Aboriginal and non-Aboriginal history and associated activities and works. It comprises important sites, structures and relics that may have aesthetic, historic, scientific and social significance to present and future generations.

4.2.1 Aboriginal Heritage

The area of the park was located in the lands of the Gumaroi Aboriginal people. It is now in the area of the Nungaroo Local Aboriginal Land Council but Aboriginal people living in other land council areas may have an interest in the management of the park.

Traditional knowledge held by Aboriginal people today indicates that the park was significant to Aboriginal people (Tommy Taylor, pers. comm.). There is known to have been movement from the Nowendoc area into the Hunter Valley and it is probable that Ben Halls Gap was used as a travel route as it is a relatively low point and permanent water is available.

No Aboriginal sites have been located in the park but formal survey has not been undertaken. A scarred tree and open campsite have been recorded along Ben Halls Creek immediately east of the park. Aboriginal sites known to occur in surrounding areas include campsites, axe-grinding grooves and a carved tree.

While the NPWS presently has legal responsibility for the protection of Aboriginal sites it acknowledges the right of Aboriginal people to make decisions about their own heritage. It is therefore policy that Aboriginal communities be consulted and involved in the management of Aboriginal sites and related issues and in the promotion and presentation of Aboriginal culture and history of an area controlled by the NPWS.

Policies

* The Nungaroo Local Aboriginal Land Council and other relevant Aboriginal community organisations will be consulted and actively involved in all aspects of management of Aboriginal sites and values in the park.

* Any Aboriginal sites found in the park will be recorded, entered into the NPWS Aboriginal Heritage Information Management System (AHIMS) and protected from disturbance or damage.

* All works with the potential to impact on Aboriginal sites will be preceded by an archaeological assessment and management options discussed with local Aboriginal groups.

* The location of Aboriginal sites will not be publicised except where:
  - the agreement of the Nungaroo Local Aboriginal Land Council and other relevant Aboriginal community organisations has been obtained;
  - a conservation study has been prepared and any management works necessary to protect the site from damage have been implemented; and
  - the site will be interpreted to promote public knowledge and appreciation of Aboriginal culture.

* Any interpretation of Aboriginal heritage will be undertaken in conjunction with relevant Aboriginal community organisations.

* Research into past Aboriginal use of the area will be encouraged.

4.2.2 Historic Heritage

European explorers Nisbet and Dangar crossed the Great Divide close to the park in 1831. In the 1850's the area was included in the Barry Station lease which adjoins the south-eastern corner of the park. The forest was used for summer grazing.

Ben Halls Gap is a relatively low point on the ranges and was therefore part of a stock droving route between the Barnard and Hunter catchments. It is also reported that the Gap was part of the route taken by people heading to the Uralla gold fields during the 1850s.

The area was called 'the New Guinea Tops' on old maps, possibly because of the old moist forests (Mitchell 1990).

Because of its isolation the area is said to have been useful for cattle duffers. Local tradition has it that the area was used by Ben Hall, father of the famous bushranger, and that this is how the area got its name. An alternative view is that the name derives from a former Barry station stockman named Hall (Wiggin 1997).

Two old fencelines can be found in the park. They are a plain 14 wire dog proof fence constructed for Barry Station between 1850 and 1890, and a paling sheep fence along the western boundary probably constructed before 1900. Little of the paling fence remains (Tomalin 1997).

In 1956 the area was gazetted as Ben Halls Gap State Forest. Only a small area in the south of the park was logged. The forest was subject for some time to a lease for grazing.

Two former campsites are located in the park, one on the eastern boundary and the other adjacent to the Mount Royal Trail in the south-west. It is not known whether these sites were used for recreational camping or for uses such as stock movement or timber getting.

Based on current information none of the above features are considered historically significant, although they are of local interest. They will be recorded and protected from disturbance but not actively conserved.

Policies

* The historic places of the park will be conserved in accordance with the Burra Charter of Australia ICOMOS.

* Significant features from former grazing, logging and recreational activities in the park will be protected from disturbance.

Action

* Historic places will be recorded.

4.3 USE OF THE AREA

Certain public and private uses may be appropriate in NPWS areas provided that they do not conflict with the primary purpose of conservation of natural and cultural heritage and are consistent with the objectives and strategy of the plan of management. The major categories of use that can be appropriate in NPWS areas are:

- education and promotion of the area, the NPWS and the conservation of natural and cultural resources;
- involvement of the public in aspects of management;
- certain types of recreation;
- research; and
- management operations by the NPWS and other authorities with statutory responsibilities in the area.

The extent to which these categories of use will be provided for in park is indicated in the following sections.

4.3.1 Visitor Use

Tamworth, which is 60 km from the park, is one of the largest rural centres in NSW, while a number of nearby smaller centres such as Nundle and Murrurundi are nearby. No visitor facilities, however, are provided in the park.

Opportunities for walking, picnicking, driving and some camping in natural settings are provided in Warrabah National Park, the state forests of the district and in Hanging Rock Reserve and Sheeba Dams Reserve, managed by Nundle Shire Council. In the wider region Towarri, Woko, Barrington Tops, Oxley Wild Rivers, Werrikimbe, Cathedral Rock and Mount Kaputar National Parks provide opportunities for vehicle-based camping, scenery viewing, picnicking and a variety of bushwalks.

The recreational opportunities of Ben Halls Gap National Park are limited because of the nature of the area. It is a small plateau-top area with restricted views, little permanent water and restricted access. Nevertheless, the old growth forests of the park, areas of ferny understorey, cool temperate rainforests and the potential for sighting arboreal mammals would be attractive for educational visits and nature tourism provided it did not impact on conservation values.

There are several factors that limit the recreational potential of the park, including:

- the park's special features are extremely sensitive to damage by inappropriate vehicle use, trampling, introduction of weeds, fire escape and pollution. The park is particularly vulnerable to weed introduction because of the conditions provided by the rich basalt soils and high moisture levels. As discussed in section 4.1.4, a wildfire in the park could be devastating, particularly to the threatened plants and populations of arboreal mammals. Risk of fire would be significantly increased by uncontrolled public use.
- the basalt soils make the internal roads unusable or vulnerable to damage during wet conditions, with the potential for inhibited access during fire suppression operations.

- tree falls during frequent windy conditions pose a severe safety risk and regularly close the roads. Campers would be particularly at risk from tree falls.

- there is no public vehicle access to the park. Existing access tracks are located on private property and are of 4WD standard. The only feasible route for provision of public vehicle access would be from the north along a road reserve extending from Morrisons Gap Road. The cost of construction and maintenance of a public road would be very high. In addition, the lack of public vehicle access presently affords a high level of protection to the park.

Visitor opportunities must be managed to avoid damage to the significant vegetation communities, populations of threatened plants and animals and scientific reference values of the park and with the above constraints in mind. Accordingly, opportunities for public visits to the park will be restricted to authorised activities such as guided tours, educational group visits and other pre-arranged visits under conditions designed to minimise impacts. Such visits could include a variety of activities such as walks, plant and animal survey, spotlighting for arboreal mammals and talks about Aboriginal culture by members of the local Aboriginal community. Emphasis will be placed on interpretation of the high conservation values of the park.

Public vehicle access to the park for authorised visits will require the consent of neighbours for use of access tracks through private property. The NPWS will seek agreement from relevant park neighbours for a limited number of organised NPWS Discovery Program visits to the park. Negotiation of access for other authorised visits will be the responsibility of the organiser.

Camping, wood fires and public vehicle access will not be permitted in the park. Horse riding will not be permitted because of the risk of weed introduction.

The NPWS will seek to erect an interpretive display about the parks of the area in an appropriate location in Nundle. This should include information about the recreation opportunities available in the area, as well as outlining why recreation opportunities are restricted in the park.

Policies

* Public use of the park will be permitted primarily through the NPWS Discovery program and visits by educational or community organisations. A maximum of 6 groups a year will be permitted in the park. Visits by individuals may also be permitted for appropriate purposes. Prior approval from the NPWS and the concurrence of neighbours will be required for all public visits.

* All visitors to the park will be required to implement minimum impact bushwalking practices. The cleaning of personal items will be required before entering the park. Educational material and consents relating to the park will require this practice.

* Camping, wood fires, horse riding and public vehicle access will not be permitted.

* Park visitors do not access the sphagnum moss cool temperate rainforest community.

* The following themes will be emphasised in promotional and interpretive material and talks:
  - the high significance of the park as an area of tall, high altitude, old growth forest on basalt;

- the restricted occurrence of most of the park's vegetation communities;
- the value of the park for arboreal mammals, hollow-dwelling birds and threatened species; and
- the importance of keeping fire and weeds out of the park.

Actions

* The NPWS will negotiate arrangements with relevant landowners for a limited number of NPWS Discovery Program visits to the park.

* A sign explaining the values and sensitivity of the sphagnum moss cool temperate rainforest community will be erected in an appropriate location so as to discourage access to this sensitive community.

* The impacts of tours in the park will be monitored and the results of monitoring will be used to set limits on numbers, frequency and activities.

* Arrangements will be negotiated for the placement of an interpretive display about the park in the Nundle area.

4.3.2 Research

The park is an important reference area for scientific study of old growth temperate eucalypt forest, an ecosystem that is not well understood. A considerable amount of plant survey and some survey for native animals has been undertaken in the park but further work is needed to improve understanding of the park's natural and cultural heritage and management needs.

NPWS research efforts must be directed towards the areas of greatest need. Priority research topics are set out earlier in this plan. Research by other organisations and individuals may also provide valuable information for management. A prospectus will be prepared to encourage involvement of other organisations in priority research areas.

Policies

* Ben Halls Gap National Park will be available for appropriate research.

* NPWS conducted research will aim to provide information about the natural and cultural heritage in order to facilitate management of the park.

* Researchers from other organisations will be encouraged to design programs to provide information which is directly useful for management purposes.

* Liaison will be maintained with researchers to obtain as much mutual information and assistance as possible. The results of research will be required to be provided to the managers of the area.

* Research structures and long term markers must be placed in locations which will minimise their visual impact and be removed upon completion of the research.

* Research vehicles must be washed to remove weed material before entering the park and must not use tracks during wet ground conditions.

Actions

* A prospectus will be prepared as a guide to preferred research projects in the park. Preferred topics will be those of direct relevance to management and will include:
  - vegetation survey in the Pages Creek area;
  - survey for *Tasmannia pauciflora;*
  - survey for the orchid *Adenochilus nortonii;*
  - survey for threatened fauna, in particular the Hastings River mouse;
  - survey for reptiles and amphibians; and
  - the ecological fire requirements of the park's plant and animal species and communities.

4.3.3 Management Operations and Neighbour Liaison

No management facilities are located in the park apart from vehicle tracks. Several tracks were present upon gazettal and those essential for management purposes have been retained (see Map). Other tracks will be allowed to revegetate.

One of the management tracks more or less follows part of the western boundary of the park. Relocation of this track to lie along the boundary would be desirable to form a fire break along the western boundary.

As stated in section 4.3.1, there is no legal road to the park; all tracks are located off road reserves. An access agreement has been arranged with neighbours for management access to the park from the western side. This track is very steep, however, and can be difficult to negotiate. It will be necessary to arrange all-weather access for management purposes along a suitable route.

A fenceline along the western side of the park does not appear to be located on the boundary. Survey and possibly relocation are needed.

Policies

* Management tracks shown on the Map will be maintained to a good standard of stability and access.

* Management vehicles will not be used on the tracks during wet ground conditions, except for emergency purposes.

* Close liaison will be maintained with park neighbours.

Actions

* The NPWS will negotiate with neighbours for all-weather management access to the park.

* Survey will be undertaken to determine whether the western fence line is located on the park boundary. If needed, action will be taken to have the fence relocated.

* If necessary a section of Turnip trail will be relocated to follow the park boundary.

5. PLAN IMPLEMENTATION

This plan of management is part of a system of management developed by the NPWS. The system includes the National Parks and Wildlife Act, management policies, established conservation and recreation philosophies, and strategic planning at corporate, Regional and Area levels.

The implementation of this plan will be undertaken within the annual programs of the NPWS's Hunter Region. Priorities, determined in the context of regional strategic planning, will be subject to the availability of necessary staff and funds and to any special requirements of the Director-General or Minister.

Regional programs are subject to ongoing review, within which, works and other activities carried out in Ben Halls Gap National Park are evaluated in relation to the objectives laid out in this plan.

The environmental impact of all development proposals will continue to be assessed at all stages of the development and any necessary investigations undertaken in accordance with established environmental assessment procedures.

Section 81 of the Act requires that this plan shall be carried out and given affect to, and that no operations shall be undertaken in relation to the national park unless they are in accordance with the plan.

No term is proposed for this plan of management. If after adequate investigation, operations not included in the plan are found to be justified, this plan may be amended in accordance with section 75(7) of the Act.

As a guide to the implementation of this plan, relative priorities for identified activities are summarised below:

	ACTIVITY	**PLAN REF**
High Priority		
*	Initiate monitoring of sphagnum moss community	4.1.2
*	Survey and treat weeds	4.1.2
*	Prepare pest species management plan	4.1.3
*	On-going fox and wild dog control	4.1.3
*	Monitor pigs and control or take other protective measures if needed	4.1.3
*	Undertake boundary fencing where necessary	4.1.3
*	Finalise and implement fire management plan	4.1.4
*	Negotiate all-weather management access to park	4.3.3
Medium Priority		
*	Survey *Tasmannia pauciflora*	4.1.2
*	Survey for threatened fauna, reptiles and amphibians	4.1.3

*	Record historic places	4.2.2
*	Negotiate Discovery Program vehicle access to park	4.3.1, 4.3.3
*	Erect interpretive sign to protect sphagnum moss	4.3.1
*	Monitor impacts of tours and adjust frequency, numbers and activities	4.3.1
*	Arrange interpretive display in Nundle	4.3.1

Low Priority

*	Survey vegetation in the Pages Creek area	4.1.2
*	Prepare weed management plan	4.1.2
*	Prepare research prospectus	4.3.2
*	Survey western fence line and relocate if needed	4.3.3
*	Relocate Turnip Track along park boundary	4.3.3

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