



NSW NATIONAL PARKS & WILDLIFE SERVICE

Morton State Conservation Area

Plan of Management



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Cover photo: View from Three Peaks Lookout over the upper Grassy Gully valley. Photo: Bruce Gray, NPWS

This plan of management was adopted by the Minister for Energy and Environment on 22 August 2019.

Morton State Conservation Area is located in the traditional Country of the Wandrawandian Aboriginal People.

This plan of management was prepared by staff of NSW National Parks and Wildlife Service (NPWS).

For additional information or any inquiries about Morton State Conservation Area or this plan of management, contact the NPWS Office at 104 Flat Rock Road, West Nowra, or by telephone on (02) 4428 6300.

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Environment, Energy and Science
Department of Planning, Industry and Environment
59 Goulburn Street, Sydney NSW 2000
PO Box A290, Sydney South NSW 1232
Phone: +61 2 9995 5000 (switchboard)
Phone: 1300 361 967 (Environment, Energy and Science enquiries)
TTY users: phone 133 677, then ask for 1300 361 967
Speak and listen users: phone 1300 555 727, then ask for 1300 361 967
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

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Contents

1.	INTRODUCTION	1
1.1	Location, reservation and regional setting	1
1.2	Statement of significance	1
	Natural values:.....	1
	Scenic values:	2
	Cultural heritage values:.....	2
	Recreation and tourism values:	2
	Research values:.....	2
2.	MANAGEMENT CONTEXT	3
2.1	Legislative and policy framework.....	3
2.2	Management purposes and principles.....	3
2.3	Specific management directions.....	4
3.	VALUES	5
3.1	Geology, landscape and hydrology	5
3.2	Native plants	7
3.3	Native animals	9
3.4	Aboriginal heritage	12
3.5	Shared heritage	13
	Mining	14
	Forestry	15
	Other	15
3.6	Visitor use	16
	Historic Grassy Gully mining precinct.....	17
	Bushwalking	17
	Day use and camping.....	19
	Scenery and vehicle touring	19
	Cycling and horse riding	19
	Group and adventure activities	20
	Information provision	20
4.	THREATS.....	24
4.1	Pests and weeds.....	24
	Weeds	24

Morton State Conservation Area Plan of Management

Pest animals25

4.2 Fire26

4.3 Climate change28

5. MANAGEMENT OPERATIONS AND OTHER USES.....30

5.1 Access30

5.2 Other uses30

 Beekeeping.....30

 Mining and exploration31

 Other easements and occupations31

6. IMPLEMENTATION32

REFERENCES37

FIGURES

Figure 1 Location map iii

Figure 2 Morton State Conservation Area iv

TABLES

Table 1: Threatened animal species known or predicted to occur in the park.....10

Table 2: Walking tracks in the park 18

Table 3: Illawarra climate change snapshot29

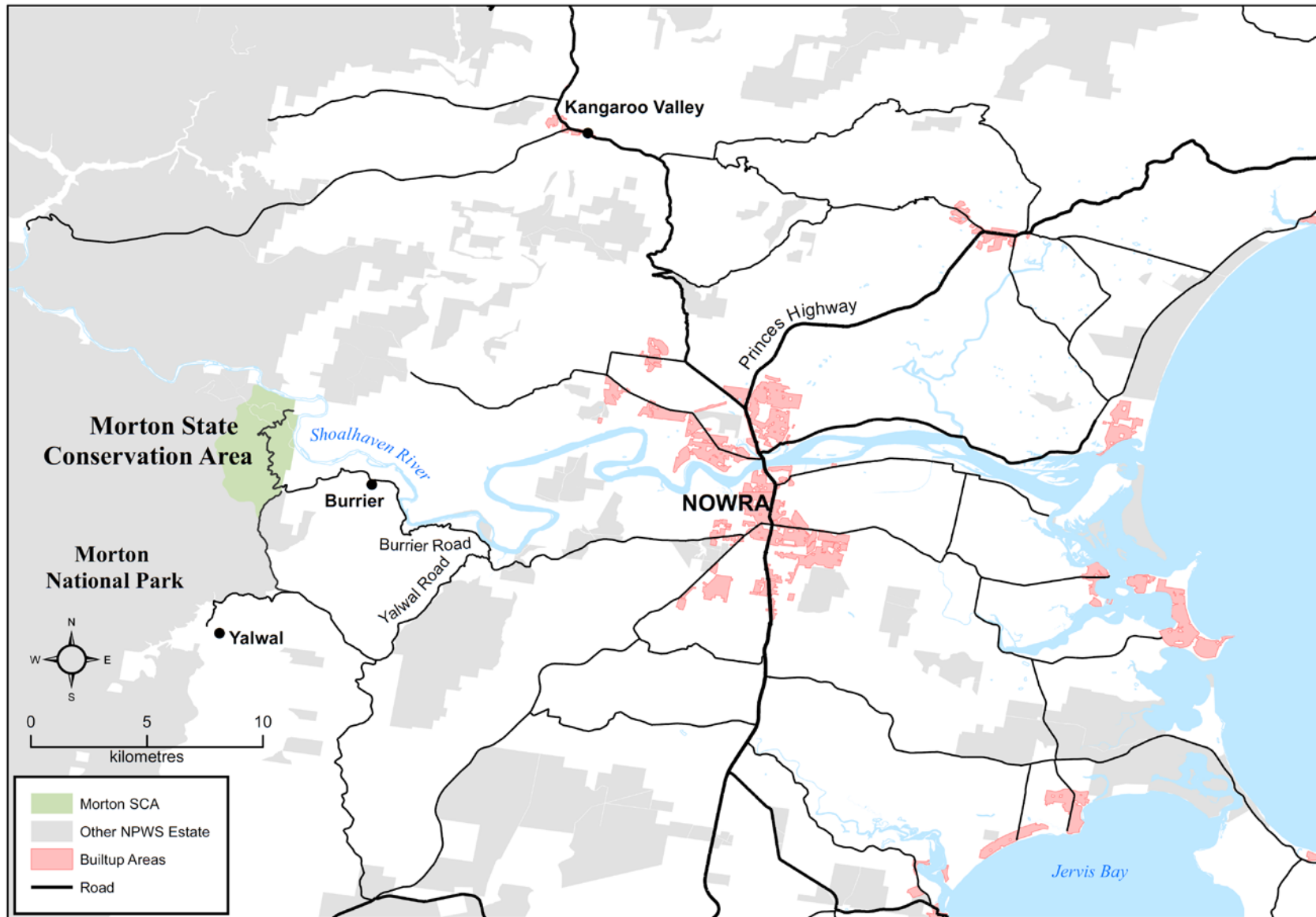


Figure 1 Location map

Morton State Conservation Area Plan of Management

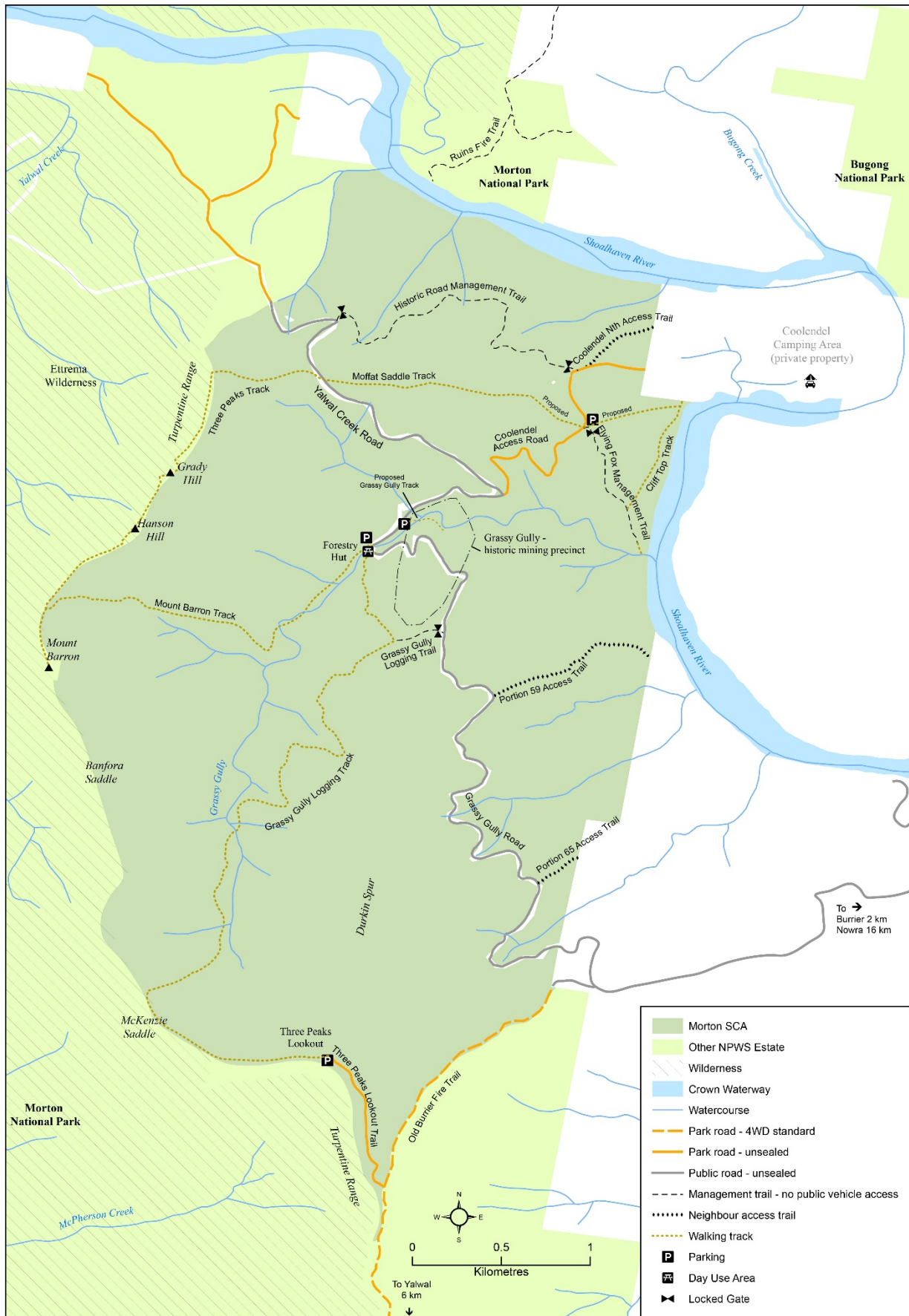


Figure 2 Morton State Conservation Area

1. Introduction

1.1 Location, reservation and regional setting

Features	Description
Location	Morton State Conservation Area (referred to as 'the park' in this plan of management) is located on the South Coast of New South Wales, 17 kilometres west of Nowra on the southern side of the Shoalhaven River (see Figure 1).
Area	1050 hectares
Reservation date	1 April 2005
Previous tenure	The park was formerly part of Yalwal State Forest. In 2001, as a result of the Southern Regional Forest Agreement, the area was reserved under the <i>National Park Estate (Southern Region Reservations) Act 2000</i> as Bundundah Reserve, a Crown reserve under the <i>Crown Lands Act 1989</i> , and managed by the National Parks and Wildlife Service (NPWS). In 2005, Bundundah Reserve was revoked, and its area reserved under the <i>National Parks and Wildlife Act 1974</i> as Morton State Conservation Area.
Regional context	
Biogeographic region	The park is located in the Ettrema subregion of the Sydney Basin Bioregion (Thackway & Cresswell 1995). The park is contiguous with the much larger Morton National Park to the west and south, and close to several other parks in the lower Shoalhaven River area (see Figure 1).
Surrounding land use	On its western boundary, the park adjoins the Ettrema Wilderness. To the east is largely forested private land along the Shoalhaven River, including the privately owned Coolendel Camping Area which can only be accessed through the park.
Other authorities	The park is located within the areas of the Nowra Local Aboriginal Land Council, South East Local Land Services and Shoalhaven City Council.

1.2 Statement of significance

The park is of significance for its biological and cultural heritage values.

Natural values:

- areas of riverbank forest along the Shoalhaven River are part of the River-flat Eucalypt Forest on Coastal Floodplains Endangered Ecological Community
- gully rainforest, including some areas dominated by black plum
- several significant plant species, including the locally endemic Tallowa mint bush
- several threatened animals, including the endangered broad-headed snake
- several former gold mining adits (tunnels) in the park used by micro-bat species as roost sites, with one site considered to be of regional importance for bat conservation.

Scenic values:

- extensive views from points along the western boundary ridgeline
- attractive sandstone cliffs featuring clefts and overhangs
- tall forests with a burrawang understorey.

Cultural heritage values:

- part of the traditional Country of the Wandrawandian group of the South Coast Aboriginal People
- historic Grassy Gully gold mining precinct, including remnants of the former mining village as well as mining works.

Recreation and tourism values:

- variety of bushwalking opportunities, ranging from relatively short tracks to longer tracks and routes suitable for overnight walks
- educational and tourism potential at the historic Grassy Gully mining precinct, with opportunities to view a variety of mining techniques and processing methods
- four-wheel drive vehicle touring on Old Burrier Fire Trail.

Research values:

- scientific and historic research values centred on the historic Grassy Gully mines and their use by bats.

2. Management context

2.1 Legislative and policy framework

The management of state conservation areas in New South Wales is in the context of the legislative and policy framework of NPWS; primarily the National Parks and Wildlife Act, the National Parks and Wildlife Regulation, the *Biodiversity Conservation Act 2016* and NPWS policies.

Other legislation, agreements and charters may also apply to management of the area. In particular, the *Heritage Act 1977* applies to historic relics and may apply to the excavation of known archaeological sites or sites with potential to contain historic archaeological relics. The *Environmental Planning and Assessment Act 1979* may require assessment and mitigation of the environmental impacts of any works proposed in this plan. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* may apply in relation to actions that impact matters of national environmental significance, such as threatened species listed under that Act.

A plan of management is a statutory document under the National Parks and Wildlife Act. Once the Minister has adopted a plan, the plan must be carried out and only those operations which are in accordance with the plan may be undertaken within the park. The plan will also apply to any future additions to the park. Should management strategies or works be proposed in the future that are not consistent with the plan, an amendment to the plan will be required.

2.2 Management purposes and principles

State conservation areas are reserved under the National Parks and Wildlife Act to protect and conserve areas that:

- contain significant or representative ecosystems, landforms or natural phenomena or places of cultural significance
- are capable of providing opportunities for sustainable visitor or tourist use and enjoyment, the sustainable use of buildings and structures, or research
- are capable of providing opportunities for uses permitted under other provisions of the Act.

Under section 30G of the National Parks and Wildlife Act, state conservation areas are managed to:

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

Land is reserved as a state conservation area primarily where mineral values do not allow for reservation as another category. The National Parks and Wildlife Act requires a review of the classification of state conservation areas every five years in consultation with the Minister administering the *Mining Act 1992*. The review considers whether each state conservation area should or should not be reserved as either a national park or nature reserve. Reviews of the Morton State Conservation Area reservation status were undertaken in 2008 and 2013 in which the status of the park remained unchanged.

Subject to the outcomes of future reviews, Morton State Conservation Area may become a national park. Hence, the management of the state conservation area will be guided by the management principles for national parks as far as possible. These requirements have been taken into account in this plan of management.

2.3 Specific management directions

The park will be managed to protect its natural and cultural values and provide for low-key recreation use. In addition to the general principles for the management of state conservation areas (see Section 2.2) the following specific management directions apply to the management of the park:

- prioritising conservation programs aimed at:
 - protecting threatened species (particularly populations of the broad-headed snake) and cave-dependent bats
 - controlling weed infestations along the Shoalhaven River
 - addressing erosion and weeds around the historic Grassy Gully mining precinct
- rationalising roads and trails while meeting management needs and maintaining vehicle touring opportunities and access to private property
- formalising a number of popular walking routes in the north of the park, improving directional and track-head signage, and addressing erosion
- continuing to allow basic vehicle-based camping at Grassy Gully while impacts remain at acceptable levels, as well as bush camping associated with long-distance walks at locations remote from public access roads
- improving safety warning signage in the historic Grassy Gully mining precinct.

3. Values

This plan aims to conserve both natural and cultural values of the park. The location, landforms and plant and animal communities of an area have determined how it has been used and valued by Aboriginal and non-Aboriginal people. These values may be attached to the landscape as a whole or to individual components, for example to plant and animal species used by Aboriginal people. To make this plan clear and easy to use, various aspects of natural heritage, cultural heritage, threats and ongoing use are dealt with individually, although these features are interrelated.

3.1 Geology, landscape and hydrology

The park occupies part of the eastern fall of a long ridgeline, the Turpentine Range, lying between Yalwal Creek and the Shoalhaven River (see Figure 2). This ridge forms the western boundary of the state conservation area and consists of a series of rocky peaks and saddles. A feature of the park is a large spur ridge, Durkin Spur, located between the headwaters of Grassy Gully and the Shoalhaven River. High parts of these ridges feature broken cliffs with boulders, clefts and overhangs. Most of the park is quite steep, and elevations range from 10 metres above sea level along the Shoalhaven River to 368 metres above sea level at an unnamed high point on the park boundary south-east of McKenzie Saddle.

The ridges are formed on Permian Nowra Sandstone and Wandrawandian Siltstone, and the slopes are conglomerate and sandstone of the Permian Conjola Formation. Older Upper Devonian rocks are exposed in lower areas of the park, with bands of quartzite, sandstone, siltstone and shale along the Shoalhaven River, and rhyolite (a volcanic rock) along Grassy Gully. Rhyolite also occurs nearby at Yalwal, another former gold mining area, but is otherwise uncommon in the district.

The park's soils are primarily shallow and stony but deeper soils occur on narrow flats beside Grassy Gully and the Shoalhaven River.

The Shoalhaven River forms part of the park's northern and eastern boundaries. In the vicinity of the park, the river's edges are mainly steep banks with some narrow stretches of gravel beach.

Short creeks drain into the Shoalhaven River from the ridges. All the creeks in the park are ephemeral. The main drainage in the park flows through Grassy Gully, an area named during gold mining activities undertaken during the late 1800s and early 1900s (see Section 3.5). The lower reaches of this creek flow through a small gorge.

The park is distant from urban areas and highways and located adjacent to the Ettrema Wilderness, giving it a remote character despite its small size.

The park has several attractive features including the undulating western ridgeline, broken cliffs, tall forests with a burrawang understorey, the Shoalhaven River shoreline, the rocky gorge along Grassy Gully, and small ephemeral waterfalls along Grassy Gully and other creeks.

Issues

- The natural landscape in the historic Grassy Gully mining precinct has been severely disturbed by mining activities, however, the historic values of the precinct are considered to outweigh its natural landscape values. As such, it will be retained as a cultural landscape unless there are significant erosion, pollution or safety issues.
- Due to the steep slopes over much of the park, there is a high potential for erosion from natural processes and human disturbance. Sediment is evident in the creek beds,

indicating that significant soil loss is occurring from sources such as old logging roads, unauthorised vehicle use and informal walking tracks on steep slopes (see Section 3.6). Most of the old logging roads are revegetating but some are still a source of sediment. Some are being kept open by unauthorised vehicle use.

- Gully erosion is occurring along Grassy Gully near its junction with the Shoalhaven River. This appears to be exacerbated by use of the creek bed as a walking track (see Section 3.6) and the erosion is gradually extending upstream.
- Minor erosion is occurring on mullock and spoil heaps, around shaft collars and on former mining tracks in the historic Grassy Gully mining precinct. This could be exacerbated if there is increased visitation, and therefore needs to be monitored.
- A small amount of fossicking is being undertaken in the historic Grassy Gully mining precinct. Fossicking is generally not permitted in NPWS parks because of its impact on land stability, cultural heritage and other values. Due to the significant and complex array of historic heritage items, including moveable heritage (see Section 3.5), fossicking is not considered appropriate in Morton State Conservation Area unless it is part of a licensed activity. There are also safety issues for fossickers associated with the numerous mine shafts and adits throughout the park (see Section 3.5).
- Iron-rich seepage is visible at the rear of the Grassy Gully mine adits and also appears to be coming from a spring west of Grassy Gully Road. Red stains are visible in Grassy Gully as far as the Shoalhaven River and neighbours have reported that a red plume comes out of the creek following heavy rains, which is a result of bacteria converting iron compounds into insoluble particles (A Spate [consultant] 2004, pers. comm.). Although a natural process, it may have been increased by mining activity. There also appears to be a significant amount of algae in the creek at times, possibly resulting from a combination of nutrients from the iron-rich seepage and erosion of the former mining area.

Desired outcomes

- Significant geological and geomorphological features are protected, including cliff lines and the banded rhyolite in Grassy Gully.
- Scenic values, particularly the ridgelines, Shoalhaven River foreshores and Grassy Gully are protected.
- Human-induced soil erosion is minimised.
- The park's catchment values, and the water quality and health of its streams are maintained as far as is practicable.

Management response

- 3.1.1 Design and undertake all works in a manner that minimises soil erosion and water pollution.
- 3.1.2 Maintain park roads and management trails shown on Figure 2. Close, and allow to revegetate naturally, trails within the park that are no longer required for management purposes. Undertake supplementary erosion or rehabilitation works as required.
- 3.1.3 Investigate options for treating gully erosion near the mouth of Grassy Gully and undertake rehabilitation work if feasible.
- 3.1.4 Monitor erosion in the historic Grassy Gully mining precinct. If found to be accelerating, treat where feasible, but retain the cultural landscape.

- 3.1.5 Investigate the extent of iron-rich seepage in the historic Grassy Gully mining precinct and implement control measures as necessary to improve water quality where these can be implemented simply and unobtrusively.
- 3.1.6 Locate and design management and visitor facilities to minimise their visual impact from vantage points in and near the park, including Grassy Gully Road, the Shoalhaven River and the Grassy Gully cultural landscape.
- 3.1.7 Install signage prohibiting fossicking in the park. Only permit fossicking as part of licensed commercial tours with an educational focus, where minimum impact practices are implemented. In the event this licensed fossicking negatively impacts natural or cultural values, issue revised licence conditions or revoke licences.

3.2 Native plants

The park adjoins Morton National Park to the west and thus is connected to a very large area of forested country. Private property adjacent to the park is also largely uncleared, adding to the viability of native plant and animal communities in the area.

Surveys and mapping of the park's vegetation have been undertaken (Tozer et al. 2010). Survey effort in the park included 16 full-floristic vegetation plots and other field surveys to locate and assess botanically significant plant species, to record the fern flora and to document the rainforest within the park (Mills 2013a, 2013c, 2014, 2015).

The vegetation is dominated by eucalypt forest and shrubland. Some heathland occurs in areas of poor drainage along the ridge tops. Moist forest and dry forest are restricted to the deeper gullies and south-facing slopes.

Plant community types known in the park, as listed on the *NSW Vegetation Information System* (OEH 2014b), are discussed below. The vegetation community names used in the following discussion come from Tozer et al. (2010).

Yalwal Shale-Sandstone Transition Forest covers the majority of the park. This is a medium to tall open forest dominated by red bloodwood (*Corymbia gummifera*), grey gum (*Eucalyptus punctata*) and red ironbark (*E. fibrosa*), with turpentine (*Syncarpia glomulifera*) and spotted gum (*C. maculata*). The tall shrub layer comprises geebung (*Persoonia linearis*), burrawang (*Macrozamia communis*), dogwood (*Jacksonia scoparia*) and needlebush (*Hakea sericea*). Ground cover includes grasses such as wiry panic grass (*Entolasia stricta*), sedges and low shrubs.

Southern Turpentine Forest occurs on steep slopes along the Turpentine Range and Durkin Spur. It is a medium forest dominated by red bloodwood, turpentine and Sydney peppermint (*E. piperita*). White stringybark (*E. globoidea*) and yertchuk (*E. consideniana*) may also occur. The community has an open dry shrubby understorey of species such as geebung, *Acacia obtusifolia*, *Leucopogon lanceolatus*, native holly (*Lomatia ilicifolia*) and *Platysace lanceolata*. The ground cover contains grasses including wiry panic grass and herbs including leafy purple-flag (*Patersonia glabrata*), blue flax lily (*Dianella caerulea* var. *caerulea*) and raspwort (*Gonocarpus teucrioides*).

Shoalhaven Sandstone Forest occurs on some ridge tops along the western boundary of the park. This is a medium to low forest dominated by scribbly gum (*E. sclerophylla*) with red bloodwood as a subdominant. It has a moderately dense heathy shrub layer dominated by sandstone broad-leaved hakea (*Hakea dactyloides*), swamp banksia (*Banksia paludosa*), hairpin banksia (*B. spinulosa*), mountain devil (*Lambertia formosa*) and flaky-barked tea-tree (*Leptospermum trinervium*).

Morton Mallee Heath occurs in small, poorly drained areas along the ridge tops. It has a dense cover of shrubs and sedges such as flaky-barked tea-tree, dagger hakea (*H. teretifolia*) and heath-leaved banksia (*B. ericifolia*), with emergent scribbly gum and red bloodwood.

Coastal Warm Temperate Rainforest is found in small patches on south-facing slopes and gullies. The main area is in the upper reaches of a tributary of Grassy Gully, east of Mount Barron. The canopy is dominated by black plum (*Diospyros australis*) but the community also contains sandpaper fig (*Ficus coronata*), scrub beefwood (*Stenocarpus salignus*) and other rainforest trees and shrubs. The ground cover is mainly ferns. This community has a restricted distribution and is vulnerable to drought and fire. The occurrences in the park are unusual in being dominated by a single species (black plum). A vegetation monitoring plot has been established in the rainforest east of Mount Barron and is checked periodically. Recent surveys have also recorded other rainforest types including Lowland Subtropical Rainforest and Ironwood Dry Rainforest (Mills 2014).

Ettrema Gorge Forest occurs on rocky lower slopes along Grassy Gully and above the Shoalhaven River west of Coolendel. It is an open eucalypt forest of grey ironbark (*E. paniculata*) and grey gum with a dense moist understorey and sparse ground cover including species such as sunshine wattle (*Acacia terminalis*), large mock-olive (*Notelaea longifolia*) and grey myrtle (*Backhousia myrtifolia*). This is a relatively rare community.

Riverbank Forest occurs along the Shoalhaven River and the lower reaches of Grassy Gully. It includes the hybrid Sydney blue gum – bangalay (*E. saligna* X *E. botryoides*), river peppermint (*E. elata*), forest red gum (*E. tereticornis*) and river oak (*Casuarina cunninghamiana*). This is a tall forest with a variable shrub layer of tree violet (*Meliccytus dentatus*), black wattle (*A. mearnsii*) and white sally (*A. floribunda*) and a ground cover of grasses and forbs. Along Grassy Gully there are occasional rainforest plants such as sandpaper fig. This community is part of the River-flat Eucalypt Forest on Coastal Floodplains Endangered Ecological Community (OEH 2011b). It is restricted in occurrence and vulnerable to weed invasion.

Currently there are no threatened plants known to occur in the park, however, a number of significant plant species are known from the park. These include the locally endemic shrub, Tallowa mint bush (*Prostanthera tallowa*) (Mills 2015), which is recommended for listing as threatened (Conn & Wilson 2012); the net-veined wattle (*A. subtilinervis*), which is considered rare by Briggs and Leigh (1996); and a number of regionally rare or restricted species (Mills 2013a, 2013c). The occurrence of red ironbark (*E. fibrosa*) is significant as it is very restricted within the region, being found only in and around the park (Mills & Jakeman 2010).

Strategies for the recovery of threatened species, populations and ecological communities are set out in a statewide *Biodiversity Conservation Program* (OEH 2017) These actions are currently prioritised and implemented through the *Saving our Species* program, which aims to maximise the number of threatened species that can be secured in the wild in New South Wales for 100 years (OEH 2013b). Individual recovery plans may also be prepared for threatened species or communities to consider management needs in more detail.

Specific management actions, survey and research that are identified in the *Biodiversity Conservation Program* may be carried out within the park for protection of individual populations of threatened species or stands of threatened ecological communities, and to monitor the effectiveness of management programs.

Issues

- Most stands of the River-flat Eucalypt Forest on Coastal Floodplains Endangered Ecological Community in the park contain weeds, particularly the lowest section of Grassy Gully which is heavily infested and also disturbed by bushwalking (see Sections 3.6 and 4.1).

- Informal bushwalking could also impact the patch of Coastal Warm Temperate Rainforest east of Mount Barron (see Section 3.6).
- The central and eastern parts of the park were logged in 1994, with many large trees removed, primarily spotted gum, grey ironbark and turpentine. These harvesting operations resulted in a lower and more open canopy, numerous trails, and small clearings where logs were dumped. Logged areas are progressively recovering and most trails are revegetating.
- Resources removed through illegal tree felling and firewood gathering along Grassy Gully Road and other trails in the park are thought to be largely for use outside the park. Closure of unnecessary trails (Section 3.1) and gating of management trails (Section 5.1) will help prevent unauthorised vehicle use and tree felling.

Desired outcomes

- The full range of native plant species and structural diversity found in the park is conserved.
- Significant and restricted communities and species are protected.

Management response

- 3.2.1 Implement relevant recovery actions in the *Biodiversity Conservation Program* and recovery plans for any threatened plant species, populations and ecological communities occurring in the park.
- 3.2.2 As far as possible, ensure that management and visitor facilities are not located in areas of restricted plant communities or significant plant species. If necessary, close or realign tracks to avoid impacts on significant plant species or communities.
- 3.2.3 Periodically re-sample the floristic plot in the rainforest community at Mount Barron to monitor the area's condition.

3.3 Native animals

The park has some important habitats that are not well-represented elsewhere, particularly the riparian forests and Grassy Gully mine adits. In addition, the park is part of a large area of native forest that includes the adjacent Morton National Park, and this contributes to the long-term viability of its animal populations, as long as fire and recreational use are appropriately managed.

The park is known to contain populations of several threatened species (NPWS 2013), with several others recorded nearby and predicted to occur in the park (see Table 1).

A significant population of the broad-headed snake is found in the park and adjoining Morton National Park. Morton State Conservation Area adds to the available habitat and viability of this population, which has been monitored by University of Sydney researchers (Webb & Shine 2000; Webb et al. 2002; Croak et al. 2010; Pike 2010). Along with the adjoining national park and several other reserves, the state conservation area is part of a key management site for the broad-headed snake in the *Biodiversity Conservation Program*.

Table 1: Threatened animal species known or predicted to occur in the park

Common name	Scientific name	BC Act status	EPBC Act status	Known or predicted
Frogs				
Giant burrowing frog	<i>Heleioporus australiacus</i>	Vulnerable	Vulnerable	Predicted
Reptiles				
Broad-headed snake	<i>Hoplocephalus bungaroides</i>	Endangered	Vulnerable	Known
Rosenberg's goanna	<i>Varanus rosenbergi</i>	Vulnerable		Known
Birds				
Gang-gang cockatoo	<i>Callocephalon fimbriatum</i>	Vulnerable		Predicted
Glossy black-cockatoo	<i>Calyptorhynchus lathami</i>	Vulnerable		Known
Little lorikeet	<i>Glossopsitta pusilla</i>	Vulnerable		Known
Masked owl ¹	<i>Tyto novaehollandiae</i>	Vulnerable		Known
Powerful owl ¹	<i>Ninox strenua</i>	Vulnerable		Known
Regent honeyeater ¹	<i>Anthochaera phrygia</i>	Critically endangered	Endangered	Predicted
Sooty owl ¹	<i>Tyto tenebricosa</i>	Vulnerable		Predicted
Varied sittella	<i>Daphoenositta chrysoptera</i>	Vulnerable		Predicted
Mammals (non-flying)				
Brush-tailed rock-wallaby ¹	<i>Petrogale penicillata</i>	Endangered	Vulnerable	Predicted
Greater glider	<i>Petauroides volans</i>		Vulnerable	Known
Koala ¹	<i>Phascolarctos cinereus</i>	Vulnerable	Vulnerable	Known
Long-nosed potoroo	<i>Potorous tridactylus</i>	Vulnerable	Vulnerable	Known
Yellow-bellied glider ¹	<i>Petaurus australis</i>	Vulnerable		Known
Mammals (flying)				
Eastern bentwing-bat	<i>Miniopterus schreibersii oceanensis</i>	Vulnerable		Known
Eastern freetail-bat	<i>Mormopterus norfolkensis</i>	Vulnerable		Predicted
Greater broad-nosed bat	<i>Scoteanax rueppellii</i>	Vulnerable		Known
Grey-headed flying-fox	<i>Pteropus poliocephalus</i>	Vulnerable	Vulnerable	Known
Large-eared pied bat	<i>Chalinolobus dwyeri</i>	Vulnerable	Vulnerable	Predicted

BC Act = Biodiversity Conservation Act.

EPBC Act = Environment Protection and Biodiversity Conservation Act.

¹ Recovery plan approved for species.

Five of the Grassy Gully mine adits are used by the eastern bentwing-bat and also the non-threatened eastern horseshoe bat (*Rhinolophus megaphyllus*) as roosting and resting sites (Berry 2004a). The bentwing-bats are obligate cave dwellers. Although the eastern horseshoe bat may roost in vegetation, the largest colonies are known from tunnels (Thompson 2002). The vulnerable large-eared pied bat may also occur in the mine adits.

Generally, bat numbers in the mines are low but monitoring indicates that the 'German Mine' (see Section 3.5) sometimes has large numbers of the eastern horseshoe bat and may be a maternity site (J Berry [local amateur historian and ecologist] 2005, pers. comm.). This would be highly significant given the very few known maternity sites for this species, but this is yet to be confirmed. Significant numbers of eastern bentwing-bats have also been recorded, indicating that the German Mine is an important roost site for this species at certain times of the year, possibly because the German Mine is more thermally stable than the other mines (Berry 2004b).

The critically endangered regent honeyeater was recorded adjacent to the park in 1999. Regent honeyeaters depend on mature open forest and woodland, particularly ironbark woodland and river oak forest. For this species, sites used only once a decade may be vital, so it is important to know the frequency with which they use the area and the locations they utilise. These honeyeaters are nomadic and may follow winter flowering and other resource patterns.

As for plants, strategies for the recovery of some threatened native animal species and populations have been set out in the statewide *Biodiversity Conservation Program*. Individual recovery plans may also be prepared for threatened species to consider management needs in more detail, as indicated in Table 1.

Issues

- Threatened species depend on maintenance of the park's diverse forest communities and may be adversely affected by inappropriate fire regimes or increased recreational disturbance (see Sections 3.6 and 4.2). The yellow-bellied glider population, for example, was severely affected by a wildfire in 2002 but may now be recovering (NPWS 2013).
- Illegal reptile collection and the removal or disturbance of bush rock, including the creation of cairns by bushwalkers or rock climbers, are significant threats to the broad-headed snake. Bush rock removal is listed as a key threatening process under the Biodiversity Conservation Act (NSW SC 1999).
- Berry (2004a) notes a correlation between higher visitation levels to the mine adits and decreased bat numbers. Bat disturbance by visitors is of most concern at the German Mine. Even a small amount of disturbance could have serious impacts during the maternity season or when the cave is occupied by hibernating bats. In addition, the portal and roof are unstable, which presents a safety risk. Unfortunately, the only feasible support method would adversely affect bat habitat value (McKenzie 2005). To limit visitation to this remote site, the German Mine is not promoted to visitors. Signs have also been installed at the German Mine and at other important adits, warning people not to enter to reduce risks to visitor safety (see Section 3.5) and minimise bat disturbance.
- Eastern bentwing-bats have great difficulty negotiating gates or grilles (Thompson 2002) and any future or replacement structures to prevent visitor entry should be designed to cater for this species.
- Other threatening processes that may affect threatened animals in the park include predation by foxes and feral cats, and competition and grazing by feral goats and rabbits (see Section 4.1).

Desired outcomes

- The full range of native animal species found in the park is conserved.
- The habitat and populations of threatened species and other significant fauna species are protected and maintained.

Management response

- 3.3.1 Implement relevant recovery actions in the *Biodiversity Conservation Program* and relevant recovery plans for threatened animal species and populations occurring within the park.
- 3.3.2 Continue to monitor the use of old mine sites by bats.
- 3.3.3 Discourage public visitation to the German Mine. Work with the Coolendel Camping Area and commercial tour operators to ensure that the mine is not promoted and not visited by walking groups.
- 3.3.4 If feasible, undertake work to stabilise the German Mine while ensuring its habitat value for bats is retained.
- 3.3.5 Undertake or encourage targeted surveys for threatened species in the park, with priority given to the yellow-bellied glider.
- 3.3.6 Monitor disturbance to broad-headed snake habitat and undertake protective actions, including the closure or realignment of walking tracks and trails, where needed.
- 3.3.7 Erect signs and/or provide information to advise visitors that bush rock removal and disturbance are prohibited.

3.4 Aboriginal heritage

Aboriginal communities have an association and connection to the land whereby natural values within a landscape are central to Aboriginal spirituality and contribute to Aboriginal identity. NPWS recognises the significance of Aboriginal cultural heritage and the need to ensure that it is managed in an integrated manner across the landscape.

Plants, animals and landscape features, as well as sites with physical evidence of past use or occupation, are an integral part of the cultural heritage of contemporary Aboriginal communities. Aboriginal communities associate natural resources with the use and enjoyment of foods and medicines, caring for the land, passing on cultural knowledge, kinship systems and strengthening social bonds. Aboriginal heritage and connection to Country are inseparable and need to be managed in an integrated manner across the landscape.

The park lies within the traditional Country of the Wandrawandian People. The Shoalhaven River forms the boundary with the lands of the Wodi Wodi group to the north. The Wandrawandian and Wodi Wodi peoples would have had close cultural connections through intermarriage, trade and shared ceremonies; and also continue to have family and cultural ties with people from the Far South Coast and the Southern Tablelands. Dharawal was the main language spoken but there was overlap with the Dhurga language of the Far South Coast.

It is likely that Aboriginal people traditionally used the park area for camping, hunting and food gathering, particularly along the Shoalhaven River and the main ridgelines. It is also possible that high points along the park's western boundary served as lookouts or signal points. The dry open forests provide easy country to travel through. Sites recorded in the park include a few scattered artefacts along Durkin Spur. Open artefact scatters are the result of hunting and gathering activities, camping, or manufacture and maintenance of stone tools.

It is likely that other sites in the park will be found with more survey effort. Landscapes where sites are most likely to be found include the broad spur ridges, the gentle slopes near the Shoalhaven River and possibly the flats beside Grassy Gully. A survey of the ridge top and rock overhangs south of McKenzie Saddle failed to find any evidence of Aboriginal occupation, possibly due to distance from water (Stone 1996).

To protect Aboriginal sites and places, including those not yet recorded, NPWS applies the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010a) before undertaking works involving ground disturbance or with the potential to disturb Aboriginal sites and places.

While the NSW Government has legal responsibility for the protection of Aboriginal sites and places under the National Parks and Wildlife Act, it acknowledges the right of Aboriginal people to make decisions about their own heritage. It is NPWS policy that Aboriginal communities are consulted and involved in the management of Aboriginal sites and related issues, and the promotion and presentation of Aboriginal culture and history.

Contemporary Aboriginal groups who may have an interest in the park area include the Nowra Local Aboriginal Land Council and the Shoalhaven Aboriginal Corporation of Elders.

Issues

- There is little knowledge of Aboriginal cultural values in the park. While some Aboriginal sites are likely to have been damaged by past mining, others may be at risk from recreational activities, or road and track works.

Desired outcomes

- Aboriginal sites and places are protected from damage.
- Aboriginal people are involved in the management of Aboriginal cultural values in the park.
- Understanding of the Aboriginal cultural values of the park is improved.

Management response

- 3.4.1 Consult and involve relevant Aboriginal community organisations, including Elders groups and the Nowra Local Aboriginal Land Council, in the management of Aboriginal cultural heritage.
- 3.4.2 Ensure visitor facilities do not adversely impact Aboriginal sites and places.
- 3.4.3 Apply due diligence as required by law and NPWS policy, to ensure the protection of Aboriginal cultural heritage. This includes the appropriate level of cultural impact assessment and consultation required prior to any works that have the potential to affect Aboriginal sites, places or values.
- 3.4.4 Do not publicise the location of Aboriginal sites or places except where the agreement of relevant Aboriginal community organisations has been obtained. Before promoting a site or place, undertake any necessary works to protect the site or place.

3.5 Shared heritage

Heritage places and landscapes are made up of living stories as well as connections to the past that can include natural resources, objects, customs and traditions that individuals and communities have inherited and wish to conserve for current and future generations. Cultural heritage comprises places and items that may have historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance. NPWS conserves the significant heritage features of the parks and reserves that it manages.

Cedar-getters may have been the first Europeans to visit the area in the early 1800s (Evans 2001). They were followed by farmers along the Shoalhaven River and then miners and later foresters.

Several land grants were made along the Shoalhaven River in the early to mid-1800s and grazing took place on lands that are now within the park. Short sections of a post and rail fence remain along the eastern park boundary, to the south of Grassy Gully.

A road was constructed through what is now park during the early 1800s linking Burrier to the junction of Yalwal Creek and Shoalhaven River, and thence across Drovers Ridge (now in the Ettrema Wilderness) to Tolwong and the Braidwood Road. The road was used by local landowners to drive cattle to and from Bundundah and Ettrema creeks from the 1840s (Berry 2005). Flying Fox Management Trail and Historic Road Management Trail follow parts of this original road.

Mining

Gold was discovered at Grassy Gully in 1860 by Henry Moss and his companions, and there are indications that local pastoralists undertook small-scale gold mining in the following decades. However, it was not until the 1890s that the area was worked systematically, and several mining leases were registered.

In 1895 there was a small rush when some 70 miners came from Yalwal (located to the south of the park) to make claims and an accommodation house was opened (Berry 2002). Prominent among the miners were Hanson, Barron, Moffat and later McKenzie, after whom topographic features in and around the park are named. Most of the mines were shafts but there were also several adits and some alluvial and open-cut mining.

Supplies were brought up the Shoalhaven River and landed at the mouth of Grassy Gully, then taken by cart to the mining area (J Berry [local amateur historian and ecologist] 2005, pers. comm.). The early road used by pastoralists had crossed the mouth of Grassy Gully where supply boats were unloaded for the gold miners. A cart track led south–west from the creek mouth then turned north–west to the mining area (J Berry [local amateur historian and ecologist] 2005, pers. comm.). Grassy Gully Road was constructed in 1899 to access the mining area from Burrier.

In 1899 a Gold Reserve was gazetted, allowing miners to construct huts (Berry 2002). In 1901 there were at least 21 dwellings, most of which were located on the area of flat land beside Grassy Gully Road. A store and post office were established, and a school was constructed. However, it is likely that many of the miners employed at the smaller Grassy Gully field came across from Yalwal where their families remained in residence (Berry 2002).

The Grassy Gully Extended Gold Mining Company was floated in 1900 and a weir, battery, cyanide plant and tramway were installed. The cyanide treatment allowed gold to be precipitated out of finely crushed ore. There were problems, however, with flooding of the mines and treatment of the tailings (Berry 2002) and a cave-in in the main shaft cut off the richest ore vein. Returns declined and mining had essentially finished by 1907, although a small number of miners stayed on, most notably Jim Barron.

Barron lived at Grassy Gully with his wife until 1952, undertaking mining sporadically and attempting to have the site revived. Jim and Jane Barron's homestead was located on the eastern side of Grassy Gully Road, north of the creek, and consisted of a house, several sheds and fenced paddocks. There were fruit trees, a grape vine and gardens (Evans 2001).

Two other families also had dwellings along the flats during the first half of the 20th century (Evans 2000). A small number of miners worked the field during the depression of the 1930s, and temporary huts were built at this time (Evans 2001). The last miner is reported to have been a German-born hermit who worked on the adit, now named the German Mine, until the 1960s.

About 40 separate sites associated with the park's mining history have been identified at Grassy Gully. Most of these occur within a small area and include shafts, adits, costeans (trenches),

pits, stacked tailings, battery footings, cyanide treatment plant, a dam, a rail line, a blacksmith's forge and fireplaces of former huts (Spate 2004; McGowan & O'Keefe 2008).

A conservation management plan (McGowan & O'Keefe 2008) sets out the area's history, features and significance. It describes Grassy Gully as a classic example of a small-scale goldfield where most of the miners worked either in collaboration with other miners or for themselves, earning no more than subsistence wages. Such fields were common in Australia and were part of the overall pattern of rural economic activity. Grassy Gully is considered to be of local heritage significance, however, some individual features have higher significance because of their archaeological research value as places of processing and habitation. These include the German Mine, Barron's Farm complex and other hut sites, the dam, the battery and cyanide treatment plant, the blacksmith's camp and some mine areas.

The conservation management plan includes recommendations that take into account the heritage values of the site as well as the public risk and mine stability issues identified in an earlier geotechnical assessment (McKenzie 2005).

In 2009 funding was provided by the Derelict Mines section of what is now the NSW Department of Planning, Industry and Environment (Resources and Energy) to undertake priority safety works including the installation of fences and signs around shafts and other hazards, construction of a platform over one shaft and placement of grilles on two adits.

Forestry

The park was gazetted as a timber reserve in 1903 and became Yalwal State Forest in 1918. It was selectively logged before 1970 but there are no records of this harvesting in terms of locations or years. The last major logging program occurred in 1994 in the central and eastern parts of what is now the park. Trees harvested from this area were used mainly as sawlogs, mining props and posts. This history of timber harvesting has left a network of trails and snig tracks, most of which serve no ongoing purpose and will be allowed to close and revegetate (see Section 5.1).

The concrete foundations of a two-room Forestry Hut are located on the western side of Grassy Gully Road, in the planned day use area (see Section 3.6 and Figure 2). The weatherboard hut was standing during the 1960s but its date of construction is not known. It had been removed by the 1970s.

Other

Other historic structures in the park include part of an old telegraph or telephone line above the Shoalhaven River north of Grassy Gully.

During the 1960s, Sydney Water erected a flying fox over the Shoalhaven River near its confluence with Grassy Gully. The cable was used to lower flow recorders into the river as part of investigations into the potential for using the Shoalhaven as a source of water for Sydney. The flying fox is still in use and is maintained by WaterNSW (see Section 5.2).

Issues

- The significance of some of the historic features has not been assessed.
- Some of the mine workings are unstable and potentially subject to collapse. They may pose a risk to public safety. Erosion is slowly changing the landscape at the historic Grassy Gully mining precinct (see Section 3.1) and damaging mining features.
- Clearings at the historic Grassy Gully mining precinct are being used for camping and picnicking by visitors to the area. This could potentially damage cultural remains if use expands or intensifies (see Section 3.6).

- There are several items of moveable heritage in the historic Grassy Gully mining precinct that may be vulnerable to theft. The conservation management plan considered that some sites should not be publicised or opened to the public in order to protect moveable heritage and also protect features from human-induced erosion or other damage.
- A wildfire in 2002 burnt some of the timber features at the historic Grassy Gully mining precinct. Vigorous vegetation growth since the fire is changing the nature of the area's cultural landscape and may be affecting other features such as dry-stone walls.
- Vegetation regrowth is encroaching on the Forestry Hut foundations. The area adjacent to the foundations is also used for car parking and occasional camping (see Section 3.6).

Desired outcomes

- Negative impacts on historic heritage values are minimised.
- Significant historic features are conserved.
- Understanding of the shared heritage values of the park is improved.

Management response

- 3.5.1 Protect the historic Grassy Gully gold mining precinct (including Barron's Farm) as an historic, cultural and educational feature. Implement priority recommendations of the conservation management plan. Do not publicise features that are vulnerable to damage or theft.
- 3.5.2 Record the remains of the former Forestry Hut.
- 3.5.3 Protect the remains of the former Forestry Hut from vehicle damage and vegetation growth.
- 3.5.4 Retain and protect the historic road formation on Historic Road Management Trail and Flying Fox Management Trail. These trails will be available for walking, cycling, horse riding and for management purposes.
- 3.5.5 Undertake the cultural assessments, required by law and NPWS policy, for all proposals with the potential to impact on shared heritage sites, places and values.

3.6 Visitor use

Visitor opportunities provided in natural settings within state conservation areas are generally those at the low-key end of the spectrum. Recreational uses that are ecologically sustainable and directly contribute to visitors' understanding and appreciation are considered appropriate.

The provision of facilities needs to be considered within a regional context, including the availability of camping and day use facilities nearby. Ongoing provision of low-key bushwalks and opportunities to explore Grassy Gully are considered to be the main recreational values of the park and will be the focus of future facility provision. A significant attraction of the park is its remote undeveloped character, and this will be retained as far as possible. Other areas nearby provide a more developed experience.

The park adjoins Morton National Park, much of which is declared wilderness. Picnic and camping opportunities are provided at Yalwal (see Figure 1) on NPWS and Council land. Privately owned camping areas are located at Coolendel, adjacent to the park, and at Burrier. Both of these businesses provide cabin and bunkhouse accommodation, campsites and facilities for day visitors.

The only visitor facilities currently in the park are roads and walking tracks. The main recreation activities are bushwalking, vehicle touring and exploring the historic Grassy Gully gold mining precinct. There is also a small amount of informal camping, picnicking, recreational fishing, horse riding and rock climbing. A significant proportion of visitors are school or other groups on organised adventure activities.

It is estimated that there are about 12,000 visitors to the park each year. A survey of Grassy Gully mine visitors (Berry 2004a) indicated that the majority were camping at Coolendel, Burrier or Grassy Gully and were from Wollongong or Sydney.

Access to the park from the east is via Grassy Gully Road from Burrier, or from the south through Morton National Park via the Old Burrier Fire Trail from Yalwal.

Grassy Gully Road is an unsealed public road maintained by Shoalhaven City Council and, although winding, is of a standard generally suitable for two-wheel drive vehicles. The ford at Grassy Gully is occasionally impassable after heavy rain. Old Burrier Fire Trail is four-wheel drive standard and very steep in places.

Historic Grassy Gully mining precinct

The historic Grassy Gully gold mining precinct (including Barron's Farm) is easily accessible, being only one hour's drive from Nowra and close to Grassy Gully Road. The area is not signposted, but it is promoted by word-of-mouth and by the owners of the Coolendel Camping Area. Commercial tour operators take school and other groups there on a regular basis.

The compact nature of the historic Grassy Gully mining precinct (see Figure 2) increases the potential for educational and tourism use of the site. There are concerns, however, about safety, erosion and protection of micro-bat habitat (see Sections 3.1 and 3.3). An existing short, informal walking track (Grassy Gully Track) could be signposted to the Grassy Gully battery and processing site, the weir and one adit. Formalising the track through the precinct will assist in addressing some safety concerns and potential impacts, particularly if visitors keep to this track rather than explore elsewhere.

Bushwalking

The park provides a range of bushwalking opportunities within a number of settings with varying degrees of social interaction, physical challenge and self-reliance. Walkers range from small groups of family and friends to large organised groups, including school groups. Family groups are likely to seek good, signposted tracks. School groups commonly combine walks with overnight camping and adventure activities as part of Duke of Edinburgh or Outward Bound programs and seek a more remote, self-reliant walking experience.

The park has the capacity to cater for a considerable increase in walker numbers and could become a significant walking area because of the number of tracks and the beautiful views from high points.

Most walking routes combine walking tracks, roads and management trails. The walking tracks in the park are listed in Table 2 and shown on Figure 2. They offer a range of walking experiences. These have been graded, using the Australian Walking Track Grading System (DSE no date), to identify a track's suitability for different user groups as follows:

- Grade 3 — suitable for most ages and fitness levels.
- Grade 4 — experienced bushwalkers (generally rough tracks, limited directional signage).

Table 2: Walking tracks in the park

Name and length	Description of track and list of issues	Proposed standard ¹ and works
Cliff Top Track (700 m existing; 500 m new)	<p>Currently a one-way track, accessed from Flying Fox Management Trail, which combines with Flying Fox Management Trail and Coolendel Access Road to form a popular loop walk for guests at Coolendel.</p> <ul style="list-style-type: none"> • The loop walk is not available to other park visitors as it crosses private property. • Erosion occurs in places. • The track runs close to the cliff edge. 	<p>Grade 3.</p> <p>Construct a new 500-metre track section to link to Flying Fox Management Trail (see Figure 2) to provide a 1.6 km, off-road, loop track within the park.</p>
Moffat Saddle Track (1.2 km)	<p>Attractive route with river views that is parallel to Historic Road Management Trail and is part of a popular loop walk.</p> <ul style="list-style-type: none"> • Erosion is occurring on steep eastern slope. 	<p>Grade 4.</p> <p>Realign eastern end to a gentler slope and link to Flying Fox Management Trail (see Figure 2).</p>
Flying Fox Track (50 m)	<p>Short track extending from the end of the Flying Fox Management Trail to the convergence of Grassy Gully Creek and Shoalhaven River.</p>	<p>Grade 3.</p> <p>Formalise walking track and address erosion issues at convergence of creek and river.</p>
Grassy Gully Logging Track (3.3 km)	<p>Northern end of the Two Rivers Walk (a long-distance, 5-day route linking the Shoalhaven River to the Clyde River).</p> <ul style="list-style-type: none"> • The section close to the Forestry Hut site has been bypassed by a steep, informal track. 	<p>Grade 4</p> <p>Reinstate the original switch-back alignment near the Forestry Hut site.</p>
Three Peaks Track (2.2 km)	<p>A footpad along part of the western park boundary. Provides excellent views and enables several loop walks combined with other tracks or routes.</p> <ul style="list-style-type: none"> • Steep descent at northern end. 	<p>Grade 4.</p> <p>Realign steep section.</p>
Mount Barron Track (1.5 km)	<p>Mount Barron is a popular destination as it provides extensive views. Most of the route is a former logging trail.</p> <ul style="list-style-type: none"> • Western section is steep and can be hard to find. • Cliffs around Mount Barron are scenic but present potential risks. 	<p>Grade 4.</p> <p>Minor rerouting on steep section near Mount Barron.</p> <p>Formalise a linking track from the Forestry Hut site.</p>
Grassy Gully Track (300 m)	<p>Short track from the clearing beside Grassy Gully Road to the former mine processing area.</p> <ul style="list-style-type: none"> • Track is poorly defined and visitors wander off track. 	<p>Grade 3.</p> <p>Formalise the existing informal pad which is the shortest and easiest route to the mining precinct.</p>

¹ The Australian Walking Track Grading System has been used as the basis for this track classification system. For further information on these grades and their relationship to the Australian Standard please refer to the *Users Guide to the Australian Walking Track Grading System* (DSE no date).

This plan proposes to improve the sustainability of walking experiences for the range of visitors, and to provide loop walks that minimise use of roads. This will require formalisation of some tracks including signposting and some minor track rerouting to make the track system more accessible and environmentally sustainable, as described in Table 2.

The Two Rivers Walk is a long-distance walking route that traverses the park. The identified route through the park includes several roads, trails and a walking track, including Coolendel Access Road, Grassy Gully Road, Three Peaks Lookout Trail and Grassy Gully Logging Track.

Other routes not listed in Table 2 are less well-defined and are classified as Grade 5 tracks. These are suitable for very experienced bushwalkers with specialised skills, as they are generally very rough tracks, with no directional signage, and will continue to provide opportunities for remote self-reliant walking.

Day use and camping

The primary need in the park is for track-head day use facilities rather than camping, given the availability of car-based camping nearby at Coolendel, Burrier and Yalwal. Under this plan, it is proposed to formalise the Forestry Hut site as a basic day use area, by providing low-key picnicking facilities at this location. The Forestry Hut site is the most suitable location for day use as there is sufficient room, existing disturbance and two walks begin here. The site is also close to the historic Grassy Gully mining precinct. A small carpark for walkers will still be needed at Grassy Gully.

Informal picnicking and car-based camping occur on the creek flats beside Grassy Gully Road. This area is partly within the park but mostly on the adjacent public road reserve (i.e. off-park). Flat land is limited and there is a risk of damage to the remains of the old mining village, as well as the potential for vegetation damage and pollution of the creek should the area used for camping expand. Vehicle-based camping will be allowed in the Grassy Gully precinct (see Figure 2) but no facilities will be provided. If impacts become unacceptable, the cooperation of Shoalhaven City Council will be sought to close the area.

Walk-in bush camping occurs at several locations, particularly near the Flying Fox Management Trail where clearings and fire rings have been established. Groups also camp at Mount Barron, Three Peaks Lookout and other locations. Walk-in camping is a regular part of school group activities and the park's value for these activities is recognised. However, large numbers or frequent use of a site could have significant impacts and use needs to be managed.

Scenery and vehicle touring

The area around Yalwal, including the park, is popular for four-wheel drive touring and trail bike riding because of its isolation and the variety of trails. Vehicle touring on roads is a legitimate use of NPWS areas, but off-road and inappropriate vehicle use can result in significant damage (see Section 3.1). Old Burrier Fire Trail links Grassy Gully Road to Yalwal Road south of the park and so forms part of a loop drive (see Figure 1).

Three Peaks Lookout Trail, a spur road from Old Burrier Fire Trail, leads to a track-head for walkers heading north along the Turpentine Range or along the Grassy Gully section of the Two Rivers Walk. A short way along the walking track there is an excellent viewing point that provides extensive views of the three peaks of Mount Barron, Grady Hill and Hanson Hills and the Ettrema Wilderness beyond (see Figure 2). There are also views to the west across the Yalwal Creek Valley from along the road.

Cycling and horse riding

The park provides opportunities for cycling and horse riding along existing public roads and on the Historic Road and Flying Fox management trails. Given the wide range of cycling and horse

riding opportunities available in the broader Shoalhaven region and the relatively limited opportunities available in the park, cycling and horse riding levels in the park are expected to remain relatively low. Cycling and horse riding on park roads and management trails at these low levels is not expected to negatively impact on park values.

Grassy Gully Road and Yalwal Creek Road are public roads that bisect the park (see Figure 2). Horse riding and cycling are allowed on these roads.

Old Burrier Fire Trail, Three Peaks Lookout Trail and Coolendel Access Road are open to public vehicles. Historic Road Management Trail and Flying Fox Management Trail are only open to authorised vehicles. These trails can be promoted for cycling and horse riding, although there is potential for conflicts with vehicles on public and park roads open to public vehicles. Grassy Gully Logging Trail is only some 250 metres long and therefore considered too short to be a useful horse riding or cycling route. Neighbour access trails (see Portion 65 and Portion 59 access trails on Figure 2) are also not suitable for promotion to general park visitors including for cycling or horse riding (see Section 5.1).

Consistent with NPWS policy, horse riding and cycling are not allowed on designated walking tracks as listed in Table 2 due to the potential for conflict with other park users.

Group and adventure activities

Under the NPW Regulation, NPWS consent is required to conduct 'large' non-commercial organised group activities or gatherings, and to conduct competitive events, training exercises or adventure activities of any size. This recognises that certain activities and 'large' groups can have a significant impact on the park, its wildlife, other users and neighbours.

For the purposes of this plan, the definition of 'large' varies according to the activity. For rock climbing and abseiling, it is defined as a group larger than eight participants. For other activities, the default group size under the NPW Regulation applies (currently set at 40 people). The lower number is appropriate for abseiling and rock climbing because these activities are focussed on vulnerable cliff edges where vegetation and soil loss are more likely to occur.

Abseiling and rock climbing are classed as 'adventure activities' under the NPW Regulation because they are recreational pursuits that involve risking the safety of the person engaging in the activity or other persons. Participants are required to accept responsibility for their own safety. A location favoured for these activities is a cliff above the Shoalhaven River near Coolendel beside the Cliff Top Track. It has become known as 'Scenic Lookout' as it provides views of the river. A small amount of rock climbing also takes place on the cliffs at Grady Hill and possibly on other cliffs along the western ridgeline and Durkin Spur.

Orienteering and rogaining contests have been held in the area in the past. These and any other competitive event can only be carried out with NPWS consent and subject to conditions to minimise potential impacts on natural and cultural heritage values. Occasional use would be sustainable in most parts of the park but would not be appropriate in the historic Grassy Gully gold mining precinct because of the potential for erosion, bat disturbance and safety risks.

Under the National Parks and Wildlife Act, all commercial tourism operators also require a licence to operate in a park.

Information provision

Provision of information to park visitors should be at three levels:

- promotion to increase community awareness of the park's existence and visitor opportunities, including information at visitor centres and on the NPWS website and other media

- orientation and regulatory signage to enable visitors to find their way around and advise about permissible activities and safety risks
- interpretation to increase visitor understanding of the park's values and promote minimal impact use, through on-site signage and Discovery programs.

Directional signage on walking tracks and provision of interpretive information at the historic Grassy Gully mining precinct are the main information needs in this park. Information will also be provided for visitors at the day use area at the Forestry Hut and at the proposed small carpark adjacent to the Coolendel Access Road.

Provision of information at Coolendel and other nearby camping areas where a high proportion of park visitors stay will be encouraged.

Issues

- At present the park has only minimal visitor facilities and there is no signage apart from the warning signs near mine sites (see Section 3.5) and boundary signs at the park entry. Directional and interpretive signage would improve visitor appreciation and understanding of park values.
- Several existing walking tracks in the park were established before its transfer to NPWS, mostly by use rather than by design. Several are poorly located and/or are causing erosion and vegetation loss (see Sections 3.1 and 3.2).
- Visitor safety, erosion and damage to cultural features are concerns at the historic Grassy Gully mining precinct (see Section 3.5). Some of the workings are unstable and there are several open mine shafts, including shafts adjacent to Grassy Gully Road. The most accessible have been fenced. Visitors scrambling on the slopes to view mining features could affect vegetation cover and increase erosion levels and be at risk of falling. Group use has the potential to result in significant disturbance to bats because of the length of time groups tend to stay in the caves (see Section 3.3).
- Uncontrolled vehicle-based and walk-in camping, including campfires, is causing localised vegetation damage and other impacts.
- Informal picnicking and car-based camping occurs on the creek flats beside Grassy Gully Road (partly on-park and partly off-park). Should the area used for camping expand, there is a risk of damage to park values.
- Abseiling and rock climbing at 'Scenic Lookout' along the Cliff Top Track are causing vegetation damage and soil loss.
- Old Burrier Fire Trail is easily damaged by vehicles during wet conditions. The section closest to Grassy Gully Road is steep and has a high potential for damage by excessive vehicle use, particularly when wet.
- Unfenced cliffs along Three Peaks Lookout Trail pose a potential safety hazard where visitors occasionally park off the road to enjoy views from the cliff edge.

Desired outcomes

- Visitor use is compatible with the purposes of state conservation areas and is ecologically sustainable and undertaken safely.
- The provision of visitor opportunities and information maintains the remote character of the park and encourages appreciation of the natural and cultural environment.
- The park is a useful educational resource for schools and community organisations.

Management response

- 3.6.1 Provide a basic day use area at the Forestry Hut site, including a small carpark, low-key visitor facilities and interpretive information.
- 3.6.2 Provide a small carpark and visitor information on the existing clearing adjacent to the Coolendel Access Road for visitors using the Flying Fox Management Trail, Moffat Saddle Track, Cliff Top Track and Historic Road Management Trail.
- 3.6.3 Formalise the walking tracks shown on Figure 2 and progressively carry out the proposed works listed in Table 2. Further rerouting, erosion control, upgrading and signage may occur where needed to address environmental, safety and visitor orientation issues.
- 3.6.4 Ensure the work to formalise Grassy Gully Track minimises impacts on historic heritage. Provide interpretive signs that explain the area's history, mining methods and processes, cultural and habitat values, and safety risks.
- 3.6.5 Maintain safety fencing around shafts and adits in the historic Grassy Gully gold mining precinct.
- 3.6.6 Permit commercial and community group tours, activities and small-scale events throughout the park, except at the German Mine. Ensure these tours, activities and events are subject to specific conditions including conditions related to visitor numbers, visitor safety and minimising impacts.
- 3.6.7 Seek the cooperation of Shoalhaven City Council to formalise a pull-in area for one to two cars to allow safe access for viewing of the mining shaft adjacent to the western side of Grassy Gully Road.
- 3.6.8 Allow vehicle-based and walk-in camping within the park at the existing clearing adjacent to Grassy Gully Road in the Grassy Gully precinct as depicted on Figure 2. Do not provide facilities. With the cooperation of Shoalhaven City Council, close the area to camping if impacts become unacceptable.
- 3.6.9 Allow walk-in camping at locations more than 150 metres from public roads and park roads. Restrict or prohibit camping in locations where impacts become unacceptable.
- 3.6.10 Monitor the impacts of wood fires within the park, in particular at the Forestry Hut day use area and where camping is allowed at Grassy Gully. Prohibit the use of wood fires in specific areas where impacts become unacceptable.
- 3.6.11 Allow public vehicle access on Old Burrier Fire Trail, Three Peaks Lookout Trail and Coolendel Access Road. Old Burrier Fire Trail may be closed to public vehicle access during periods of wet weather.
- 3.6.12 Allow cycling and horse riding on park roads and on Historic Road and Flying Fox management trails, but not on walking tracks.
- 3.6.13 Liaise with Shoalhaven Council to install 'Caution Horses' signage on Grassy Gully Road to manage potential conflicts between horse riders and cars.
- 3.6.14 Allow rock climbing and abseiling within the park for groups of up to eight participants without requiring consent, as long as:
 - these activities occur at sites where impacts on walking tracks or risks to other visitors will not occur

- permanent bolts are not used.
- 3.6.15 Require any non-commercial climbing and abseiling groups larger than eight participants to obtain prior written consent from NPWS, and all commercial climbing and abseiling activities to be conducted by licensed operators.
- 3.6.16 Monitor the impacts of rock climbing and abseiling and introduce temporary closures or other controls if needed.
- 3.6.17 Ensure that orienteering and rogaining activities are only conducted in suitable locations that will not impact on natural and cultural values and other visitors.
- 3.6.18 Make information about the park, its values and recreation opportunities available at nearby private campgrounds, in conjunction with managers of those camping areas.
- 3.6.19 Develop visitor information about natural and cultural values and visitor safety for inclusion on the NPWS website and other media as facilities are developed.

4. Threats

4.1 Pests and weeds

Pest species are plants, animals and pathogens that have negative environmental, economic and social impacts and are most commonly introduced species. Pests can have impacts across the range of park values, including biodiversity, cultural heritage, catchment and scenic values.

The *Biosecurity Act 2015* and its regulations provide specific legal requirements for the response, management and control of biosecurity risks, including weeds and pest animals. These requirements apply equally to public and privately owned land. Under this framework Local Land Services has prepared regional strategic management plans for each of its 11 regions, including South East Region: *South East Strategic Weed Management Plan* (South East LLS 2017) and *South East Strategic Pest Management Plan* (South East LLS 2018).

The LLS plans identify priority weeds and pest animals in each of the regions, plus the appropriate management response for the region (i.e. prevention/alert, eradication, containment or asset protection).

NPWS prepares pest management strategies which identify the operations and control actions undertaken by NPWS to meet the priorities from LLS regional strategic pest and weed management plans. This also includes other important programs such as the *Biodiversity Conservation Program* (see Sections 3.2 and 3.3).

The overriding objective of the NPWS pest management strategies is to minimise adverse impacts of introduced species on biodiversity and other park and community values while complying with legislative responsibilities.

The NPWS pest management strategy (OEH 2012) identifies pest species and priority programs for this park (OEH 2012). The strategy also identifies where other site- or pest-specific plans or strategies need to be developed to provide a more detailed approach. The strategy will be regularly updated. Reactive programs may also be undertaken in cooperation with neighbouring land managers, in response to emerging issues.

Pest species that are also key threatening processes may be managed under the *Biodiversity Conservation Program* where it includes strategies for key threatening processes. The *Saving our Species* program has developed targeted strategies for managing key threatening processes using the best available information to minimise current and future impacts of key threatening processes on priority biodiversity values, including threatened species and ecological integrity.

Weeds

Most of the park is free of weeds because of the poor soils, but there are extensive infestations along the Shoalhaven River, the lower reaches of Grassy Gully and other tributaries in the flood zone. Weeds also occur on the flats around the historic Grassy Gully gold mining precinct and in small numbers in other locations along Grassy Gully Road.

Weeds in the park include lantana (*Lantana camara*), wild tobacco tree (*Solanum mauritianum*), wandering creeper or 'trad' (*Tradescantia fluminensis*), mistflower (*Ageratina riparia*), crofton weed (*Ageratina adenophora*), ink weed (*Phytolacca octandra*), turkey rhubarb (*Acetosa sagittata*), moth vine (*Araujia sericifera*), wild lemon (*Citrus x taitensis*), sweet broom (*Genista stenopetala*), small-leaved privet (*Ligustrum sinense*), cape gooseberry (*Physalis peruviana*), blackberry (*Rubus fruticosus* agg.), smooth cassia (*Senna septemtrionalis*) and Madeira winter cherry (*Solanum pseudocapsicum*). Most are isolated and in small numbers, but lantana,

mistflower, turkey rhubarb, smooth cassia and wandering creeper are quite common in some locations (Mills 2013b).

Infestations of lantana and other weeds along the lower part of Grassy Gully are of particular concern as the weeds have almost completely displaced native ground covers and shrubs and are affecting regeneration of the rainforest understorey. Any control work needs to be done as part of a strategic program and will require an ongoing commitment because of the likelihood of reintroduction from upstream. A weed management plan for the Shoalhaven River Corridor between Tallowa Dam and Coolendel (Bush and Landcare Services 2002) prioritised treating those weeds that occur in relatively small infestations, acknowledging that some weeds, such as wandering creeper, are so widespread and prolific that their control is beyond available resources. However, these weeds do pose a significant threat to moist forest areas and should be monitored and treated where possible. Mistflower is currently widespread but may be brought under control by the recently released biological control agent, white smut fungus (*Entyloma ageratinae*).

Lantana has been declared a priority weed in New South Wales and is also listed as a Weed of National Significance. Invasion, establishment and spread of lantana is listed as a key threatening process under the Biodiversity Conservation Act (NSW SC 2006b). A plan has been developed that establishes national conservation priorities for the control of lantana (Biosecurity Queensland 2010). It identifies the research, management and other actions needed to ensure the long-term survival of native species and ecological communities affected by the invasion of lantana.

Pest animals

Red foxes (*Vulpes vulpes*), wild dogs (*Canis lupus* subsp.), feral cats (*Felis catus*) and rabbits (*Oryctolagus cuniculus*) are likely to occur in the park. Feral pigs (*Sus scrofa*) have been reported and are probably present along the river and gullies from time to time. There is evidence of feral goats (*Capra hircus*) along the cliffs at the southern end of the park.

Red foxes suppress native animal populations, particularly medium-sized mammals, ground-nesting birds and freshwater turtles. They have also been implicated in the spread of a number of weed species, such as blackberry. As foxes are known to prey on domestic stock, including lambs and poultry, they are a priority pest throughout New South Wales under the Biosecurity Act.

Predation by the European red fox is a key threatening process under the Biodiversity Conservation Act (NSW SC 1998) and Environment Protection and Biodiversity Conservation Act (DoE 2009). The NSW fox threat abatement plan was initiated in 2001 (and revised in 2010 — see OEH 2011a) with the primary objective of establishing long-term control programs to protect priority threatened animal species and populations. Foxes are being controlled at priority sites across New South Wales to protect biodiversity but none of these sites occur in the park.

Wild dogs are known to occur within the park. Wild dogs (*Canis lupus* subsp.) include any wild-living dog in New South Wales, including dingos (*Canis lupus dingo*), feral dogs (*Canis lupus familiaris*) and their hybrids. NPWS has a statutory obligation under the Biosecurity Act to control wild dogs on its estate.

LLS has developed regional strategic pest animal management plans (South East LLS 2018) which provide a framework for priority management activities across all tenures. The park is part of a dingo management area that is covered by the *Shoalhaven Wild Dog Management Plan* (Shoalhaven Wild Dog Working Group 2015).

The impact of feral goats on conservation values can be substantial because they graze native plants, compete with native animals for shelter, spread weeds, trample vegetation and damage

Aboriginal heritage sites. Congregations of goats in favoured locations can result in erosion and impacts on amenity. The impact of feral goats has been listed as a key threatening process under the Biodiversity Conservation Act (NSW SC 2004) and Environment Protection and Biodiversity Conservation Act (DoE 2009).

Desired outcomes

- The impact of introduced species on native plants and animals is minimised.

Management response

- 4.1.1 Manage introduced species in accordance with the pest management strategy and where appropriate in association with Shoalhaven City Council, South East Local Land Services and park neighbours.
- 4.1.2 Work with neighbours to update the weed management plan for the Shoalhaven River Corridor between Tallowa Dam and Coolendel.
- 4.1.3 Control weed infestations around the historic Grassy Gully mining precinct to prevent their spread.
- 4.1.4 As resources allow, progressively reduce the extent of weeds in lower Grassy Gully, beginning at the upstream end.
- 4.1.5 Control wild dogs as required by the Shoalhaven Wild Dog Management Plan.

4.2 Fire

The primary objectives of NPWS fire management are to protect life, property, community assets and cultural heritage from the adverse impacts of fire, while also managing fire regimes in parks to maintain and enhance biodiversity. NPWS also assists in developing fire management practices that contribute to conserving biodiversity and cultural heritage across the landscape and implements cooperative and coordinated fire management arrangements with other fire authorities, neighbours and the community (OEH 2013a).

Fire is a natural feature of many environments and is essential to the survival of some plant and animal communities. Inappropriate fire, however, can damage natural and cultural heritage and endanger park visitors and neighbours. Management of bushfire in the park is a complex issue. Management must aim to achieve the long-term conservation of native plant and animal communities while also meeting fire management obligations that contribute to the protection of life and property within and adjacent to the park.

Records indicate that much of the park area was burnt in wildfires in 1953, 1980, 1997 and 2002. There was a smaller wildfire in 1965 and several prescribed burns in the central part of the area during the 1990s. The 2002 fire was extensive and also burnt much of the neighbouring national park.

Bushfire regimes are a major determinant of the distribution and abundance of plants and animals in the park. Fire can directly impact threatened species such as the endangered broad-headed snake and can damage the habitat of other threatened species. Fires also affect nutrient cycles, erosion patterns and hydrological regimes. Ecological research suggests the following requirements for biodiversity conservation:

- Varying fire intervals and the area burnt is important to conserve floristic diversity and provide diversity of habitat for animals. Fire at regular intervals or over the same area will lead to the loss of species.

- Most plant species and communities require infrequent fires of moderate to high intensity to achieve regeneration, although patchy burns are better for native animals due to the retention of shelter and food refuges.
- Fires during the breeding season are the most damaging to native animal communities because of direct killing of young and increased exposure.
- The appropriate mix of fire frequency and intensity is influenced by a range of factors including land use, topography and climate for example, drought may delay recovery following a fire.

Two vegetation communities in the park are likely to be impacted by inappropriate fires: Coastal Warm Temperate Rainforest and Riverbank Forest. Rainforest is damaged by fire, whether it is wildfire opening up the canopy and destroying the stand structure, or frequent burns drying the margins and encouraging the encroachment of grasses and other plants that create more fuel load around the edges. The riparian river oak forests in the park would also be damaged by fire and this could lead to bank erosion. Fire should not be deliberately introduced into these communities.

Elsewhere in the park, a variable fire frequency of 5–30 years is indicated as generally appropriate for most of the park's vegetation communities, with the majority of each community maintained at the longer intervals. Species decline is likely if successive fires occur at relatively frequent intervals or if there are no fires for more than 30 years. Most of the park appears to have been burnt at appropriate intervals, although the central area was affected by fires in 1995, 1997 and 2002 and potentially suffered biodiversity loss.

Fire can damage some types of Aboriginal sites and historic places. Features such as scarred trees, old buildings and implements can be permanently damaged or lost through fire. A significant concern in the park is the potential for damage to Aboriginal sites or to hut sites and other mining relics by heavy machinery during fire suppression activities.

NPWS is a fire authority under the *Rural Fires Act 1997* and is responsible for controlling fires on the park and ensuring that they do not cause damage to other land or property. An important part of NPWS fire management is participation in local cooperative fire management arrangements, including implementation of bush fire risk management plans developed by district bush fire management committees. NPWS is a member of the Shoalhaven Bush Fire Management Committee.

A fire management strategy has been prepared for the park that provides the detail for its fire management and aims to maintain biodiversity and protect cultural heritage, life and property (NPWS 2009). This strategy outlines key assets within and adjoining the park, including sites of natural and cultural heritage value, fire management zones and fire control advantages such as management trails and water supply points. It also contains fire regime guidelines for the conservation of the park's vegetation communities.

Under the strategy, the majority of the park is designated as a land management zone in which the objective is to conserve biodiversity and protect cultural heritage. The strategy also identifies a strategic fire advantage zone on the park's north–east boundary that aims to limit the spread of wildfire to and from neighbouring lands and to reduce the risk of bushfire to community assets that border the park.

Desired outcomes

- Fire regimes are appropriate for long-term maintenance of the park's plant and animal communities.
- The potential for spread of bushfires on, from, or into the park is minimised.

- Bushfire mitigation measures contribute to the cooperative protection of persons and property on or immediately adjacent to the park.
- Aboriginal sites, historic places and culturally significant features are protected from damage caused by bushfires and firefighting machinery.

Management response

- 4.2.1 Implement the fire management strategy for the park. Regularly review the strategy and update as required.
- 4.2.2 Use prescribed fire to achieve fuel management as needed in strategic areas, to achieve a range of appropriate ages for each vegetation community and to protect threatened species and ecological communities. Where appropriate, carry out fuel management in cooperation with neighbours for mutual protection.
- 4.2.3 Seek to avoid fires in rainforest and riparian forest, and in areas adjacent to mining relics and adits used by bats.
- 4.2.4 Avoid use of heavy machinery for fire suppression in areas around Grassy Gully that contain mining and other remains.
- 4.2.5 Rehabilitate areas disturbed by fire suppression operations as soon as practical after the fire.
- 4.2.6 Continue to actively participate in the Shoalhaven Bush Fire Management Committee. Maintain close contact and cooperation with the NSW Rural Fire Service.

4.3 Climate change

Human-induced climate change is listed as a key threatening process under the Biodiversity Conservation Act (NSW SC 2000) and the associated loss of habitat is listed under the Environment Protection and Biodiversity Conservation Act (TSSC 2001).

The latest information on projected changes to climate are from the NSW and ACT Regional Climate Modelling (NARcliM) project (OEH 2014a). The climate projections for 2020–2039 are described as ‘near future’ and projections for 2060–2079 are described as ‘far future’. The snapshot shown in Table 3 is for the Illawarra Region, which includes Morton State Conservation Area (OEH 2014a).

The projected increases in temperature, number of hot days and severe fire weather days (OEH 2014a) are likely to influence bushfire frequency and intensity across the Illawarra Region and result in an earlier start to the bushfire season. Higher rainfalls in summer and autumn are likely to accelerate all forms of soil erosion across the region and increase runoff at these times, which may cause flooding (DECCW 2010b).

Climate change may significantly affect biodiversity by changing the size of populations and the distribution of species and altering the geographical extent and species composition of habitats and ecosystems. Species most at risk are those unable to migrate or adapt, particularly those with small population sizes or with slow growth rates.

Table 3: Illawarra climate change snapshot

Projected temperature changes	
Maximum temperatures are projected to increase in the near future by 0.4–0.9°C	Maximum temperatures are projected to increase in the far future by 1.6–2.3°C
Minimum temperatures are projected to increase in the near future by 0.4–0.7°C	Minimum temperatures are projected to increase in the far future by 1.5–2.4°C
The number of hot days will increase	The number of cold nights will decrease
Projected rainfall changes	
Rainfall is projected to decrease in winter	Rainfall is projected to increase in summer and autumn
Projected Forest Fire Danger Index changes	
Average fire weather is projected to increase in spring	Severe fire weather is projected to increase in summer and spring in the far future

Source: OEH 2014a.

The specific impacts of climate change on the park are difficult to assess since they will depend on the compounding effects of other pressures, particularly barriers to migration and pressure from weeds and feral animals. However, it is likely that moist open forest and rainforest will be under greater stress from fire and drought.

It is likely that erosive rainfall events will be more common, negatively impacting water quality in the creeks and streams, and riparian vegetation. More intense rainfall events also have implications for increased landform instability along the escarpments.

Programs to reduce pressures arising from habitat loss, fragmentation and introduced species will help reduce the severity of the effects of climate change on native species. Programs that control illegal track creation and realign existing tracks to address current erosion concerns will help reduce negative impacts on water quality.

Desired outcome

- Minimise the impacts of climate change on natural systems.

Management response

- 4.3.1 Continue fire, pest and erosion management programs and adapt where required to minimise climate change–induced threats. Encourage maintenance of connectivity with nearby parks and other vegetated areas.

5. Management operations and other uses

5.1 Access

Grassy Gully Road and Yalwal Creek Road are public roads, maintained by Shoalhaven City Council. These roads are not within the park.

Several roads and trails through the park provide access to adjacent private property:

- Coolendel Access Road (which provides access to the privately owned Coolendel Camping Area)
- Coolendel North Access Trail
- Portion 59 Access Trail
- Portion 65 Access Trail.

Formal rights of way are in place for the first two of these roads.

Public roads, park roads, management trails and trails that provide access to adjacent private property are shown on Figure 2. Together, the road and management trail system provides access for management purposes such as fire suppression and pest control, as well as some recreational activities. Management trails are managed primarily for NPWS management or other authorised purposes, including bushwalking and cycling. All other trails, apart from those that provide access to adjacent private property, will be closed and allowed to revegetate, although some may be temporarily reopened in emergencies or for other management purposes such as prescribed burning.

In the event a neighbour access trail shown on Figure 2 is no longer required for private property access, it will be closed to public access and designated as a management trail.

Desired outcomes

- Management facilities adequately serve the needs of park management and have acceptable environmental impact.
- Non-NPWS uses have minimal impact on natural and cultural heritage.

Management response

- 5.1.1 Maintain the park road and management trail network as shown on Figure 2. Install gates, barriers or signs to prevent unauthorised public vehicle access to management trails and, where necessary, walking tracks.

5.2 Other uses

Beekeeping

There are a number of authorised apiary sites with the park. These sites were originally established under occupation permits when the area was part of Yalwal State Forest and will continue to be permitted as existing interests.

NPWS policy on beekeeping allows existing sites to continue but does not allow any new or additional sites. The European honeybee (*Apis mellifera*) can have adverse impacts on some native plants and animals (Paton 1996) including poor flower pollination and competition with native nectar feeders.

While no problems are currently known in the park, hive sites may cause unacceptable environmental impacts or user conflicts in the future. Where needed, NPWS will aim to

negotiate relocation of hives to sites that allow the closure of trails or minimise the impact of the honeybees. Apiary sites that significantly compromise environmental values of the park or pose a risk to visitors will be relocated in consultation with licensees.

Mining and exploration

Exploration for minerals and petroleum, as well as mining and petroleum production, are permissible uses within state conservation areas. As discussed in Section 3.5, there is a history of exploration and mining in the park, with gold mining in the Grassy Gully area dating back to the 1860s.

The Department of Planning, Industry and Environment (Resources and Energy) is the lead authority for mining, exploration and mine site rehabilitation, and is required under the Environmental Planning and Assessment Act to undertake environmental assessments for mining and exploration activities in the park. The Department has procedures for the management and consultative arrangements associated with exploration and mining in state conservation areas.

While exploration licences and assessment leases may be granted within state conservation areas without the concurrence of the Minister for the Environment, the Minister's approval must be obtained before any rights under that lease or licence can be exercised.

Other easements and occupations

As noted in Section 3.5, Water NSW maintains a flying fox across the Shoalhaven River, just upstream of its confluence with Grassy Gully, which is used to lower flow-measuring devices into the river during floods. One end of the structure sits beside the Flying Fox Management Trail within an easement over the park. Vehicle access for inspection and maintenance purposes will continue to be needed.

Desired outcomes

- Management facilities adequately serve the needs of park management and have acceptable environmental impact.
- Commercial and other non-park uses have minimal environmental impact.

Management response

- 5.2.1 Continue to authorise and manage the existing apiary sites within the park in accordance with NPWS policy and consent conditions. Where necessary, and in conjunction with apiarists, seek to relocate sites or vary their operations in order to minimise environmental impacts and any impacts on park visitors.
- 5.2.2 Ensure that applications for mining or mineral exploration are subject to environmental assessment in accordance with the memorandum of understanding between NPWS and Department of Industry – Resources and Energy.
- 5.2.3 Continue to permit vehicle access to the flying fox site by WaterNSW or its contractors via Flying Fox Management Trail.

6. Implementation

This plan of management establishes a scheme of operations for the park. Implementation of this plan will be undertaken within the NPWS annual work program.

Identified activities for implementation are listed in the table below. Relative priorities are allocated against each activity as follows:

- **High priority** activities are imperative to achieve the plan's objectives and desired outcomes and must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources.
- **Medium priority** activities are necessary to achieve the objectives and desired outcomes but are not urgent.
- **Low priority** activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.
- **Ongoing** is for activities that are undertaken on an annual basis or statements of management intent that will direct the management response if an issue arises.

This plan of management does not have a specific term and will stay in force until amended or replaced in accordance with the National Parks and Wildlife Act.

Management response	Priority
3.1 Geology, landscape and hydrology	
3.1.1 Design and undertake all works in a manner that minimises soil erosion and water pollution.	Ongoing
3.1.2 Maintain park roads and management trails shown on Figure 2. Close, and allow to revegetate naturally, trails within the park that are no longer required for management purposes. Undertake supplementary erosion or rehabilitation works as required.	Medium
3.1.3 Investigate options for treating gully erosion near the mouth of Grassy Gully and undertake rehabilitation work if feasible.	Medium
3.1.4 Monitor erosion in the historic Grassy Gully mining precinct. If found to be accelerating, treat where feasible, but retain the cultural landscape.	Low
3.1.5 Investigate the extent of iron-rich seepage in the historic Grassy Gully mining precinct and implement control measures as necessary to improve water quality where these can be implemented simply and unobtrusively.	Low
3.1.6 Locate and design management and visitor facilities to minimise their visual impact from vantage points in and near the park, including Grassy Gully Road, the Shoalhaven River and the Grassy Gully cultural landscape.	Ongoing
3.1.7 Install signage prohibiting fossicking in the park. Only permit fossicking as part of licensed commercial tours with an educational focus, where minimum impact practices are implemented. In the event this licensed fossicking negatively impacts natural or cultural values issue revised license conditions or revoke licences.	Ongoing
3.2 Native plants	
3.2.1 Implement relevant recovery actions in the <i>Biodiversity Conservation Program</i> and recovery plans for any threatened plant species, populations and ecological communities found to occur in the park.	High

Management response	Priority
3.2.2 As far as possible ensure that management and visitor facilities are not located in areas of restricted plant communities or significant plant species. If necessary, close or realign tracks to avoid impacts on significant plant species or communities.	Ongoing
3.2.3 Periodically re-sample the floristic plot in the rainforest community at Mount Barron to monitor the area's condition.	Medium
3.3 Native animals	
3.3.1 Implement relevant recovery actions in the <i>Biodiversity Conservation Program</i> and relevant recovery plans for threatened animal species and populations occurring within the park.	Medium
3.3.2 Continue to monitor the use of old mine sites by bats.	Medium
3.3.3 Discourage public visitation to the German Mine. Work with the Coolendel Camping Area and commercial tour operators to ensure that the mine is not promoted and not visited by walking groups.	Ongoing
3.3.4 If feasible, undertake work to stabilise the German Mine while ensuring its habitat value for bats is retained.	Low
3.3.5 Undertake or encourage targeted surveys for threatened species in the park, with priority given to the yellow-bellied glider.	Low
3.3.6 Monitor disturbance to broad-headed snake habitat and undertake protective actions, including the closure or realignment of walking tracks and trails, where needed.	Ongoing
3.3.7 Erect signs and/or provide information to advise visitors that bush rock removal and disturbance are prohibited.	Medium
3.4 Aboriginal heritage	
3.4.1 Consult and involve relevant Aboriginal community organisations, including Elders groups and the Nowra Local Aboriginal Land Council, in the management of Aboriginal cultural heritage.	Ongoing
3.4.2 Ensure visitor facilities do not adversely impact on Aboriginal sites and places.	Ongoing
3.4.3 Apply due diligence as required by law and NPWS policy, to ensure the protection of Aboriginal cultural heritage. This includes the appropriate level of cultural impact assessment and consultation required prior to any works that have the potential to affect Aboriginal sites, places or values.	Ongoing
3.4.4 Do not publicise the location of Aboriginal sites and places except where the agreement of relevant Aboriginal community organisations has been obtained. Before promoting a site or place undertake any necessary works to protect the site or place.	Ongoing
3.5 Shared heritage	
3.5.1 Protect the historic Grassy Gully gold mining precinct (including Barron's Farm) as an historic, cultural and educational feature. Implement priority recommendations of the conservation management plan. Do not publicise features that are vulnerable to damage or theft.	Medium
3.5.2 Record the remains of the former Forestry Hut.	High
3.5.3 Protect the remains of the former Forestry Hut from vehicle damage and vegetation growth.	Medium

Management response	Priority
3.5.4 Retain and protect the historic road formation on Historic Road Management Trail and Flying Fox Management Trail. These trails will be available for walking, cycling, horse riding and for management purposes.	Ongoing
3.5.5 Undertake the cultural assessments, required by law and NPWS policy Ongoing for all proposals with the potential to impact on shared heritage sites, places and values.	
3.6 Visitor use	
3.6.1 Provide a basic day use area at the Forestry Hut site, including a small carpark, low-key visitor facilities and interpretive information.	Medium
3.6.2 Provide a small carpark and visitor information on an existing clearing adjacent to the Coolendel Access Road, for visitors using the Flying Fox Management Trail, Moffat Saddle Track, Cliff Top Track and Historic Road Management Trail.	Low
3.6.3 Formalise the walking tracks shown on Figure 2 and progressively carry out the proposed works listed in Table 2. Further rerouting, erosion control, upgrading and signage may occur where needed to address environmental, safety and visitor orientation issues.	Medium
3.6.4 Ensure the work to formalise Grassy Gully Track minimises impacts on historic heritage. Provide interpretive signs that explain the area's history, mining methods and processes, cultural and habitat values and safety risks.	Low
3.6.5 Maintain safety fencing around shafts and adits in the historic Grassy Gully gold mining precinct.	High
3.6.6 Permit commercial and community group tours, activities and small-scale events throughout the park, except at the German Mine. Ensure these tours, activities and events are subject to specific conditions including conditions related to visitor numbers, visitor safety and minimising impacts.	Ongoing
3.6.7 Seek the cooperation of Shoalhaven City Council to formalise a pull-in area for one to two cars to allow safe access for viewing of the mining shaft adjacent to the western side of Grassy Gully Road.	Low
3.6.8 Allow vehicle-based camping within the park at the existing clearing adjacent to Grassy Gully Road in the Grassy Gully precinct as depicted on Figure 2. Do not provide facilities. With the cooperation of Shoalhaven City Council, close the area to camping if impacts become unacceptable.	Ongoing
3.6.9 Allow walk-in camping at locations more than 150 metres from public roads and park roads except within the historic Grassy Gully mining precinct as depicted on Figure 2. Restrict or prohibit camping in locations where impacts become unacceptable.	Ongoing
3.6.10 Monitor the impacts of wood fires within the park, in particular at the Forestry Hut area and where camping is allowed at Grassy Gully. Prohibit the use of wood fires in specific areas where impacts become unacceptable.	Ongoing
3.6.11 Allow public vehicle access on Old Burrier Fire Trail, Three Peaks Lookout Trail and Coolendel Access Road. Old Burrier Fire Trail may be closed to public vehicle access during periods of wet weather.	Ongoing

Management response	Priority
3.6.12 Allow cycling and horse riding on park roads and on Historic Road and Flying Fox management trails, but not on walking tracks.	Ongoing
3.6.13 Liaise with Shoalhaven Council to install 'Caution Horses' signage on Grassy Gully Road to manage potential conflicts between horse riders and cars.	Medium
3.6.14 Allow rock climbing and abseiling within the park for groups of up to eight participants without requiring consent, as long as <ul style="list-style-type: none"> • it occurs at sites where impacts on walking tracks or risks to other visitors will not occur • permanent bolts are not used. 	Ongoing
3.6.15 Require any non-commercial climbing and abseiling groups larger than eight participants to obtain prior written consent from NPWS, and all commercial climbing and abseiling activities to be conducted by licensed operators.	Ongoing
3.6.16 Monitor the impacts of rock climbing and abseiling and introduce temporary closures or other controls if needed.	Ongoing
3.6.17 Ensure that orienteering and rogaining activities are only conducted in suitable locations that will not impact on natural and cultural values and other visitors.	Ongoing
3.6.18 Make information about the park, its values and recreation opportunities available at nearby private campgrounds, in conjunction with managers of those camping areas.	Low
3.6.19 Develop visitor information about natural and cultural values and visitor safety for inclusion on the NPWS website and other media as facilities are developed.	Medium
4.1 Pests and weeds	
4.1.1 Manage introduced species in accordance with the pest management strategy and where appropriate in association with Shoalhaven City Council, South East Local Land Services and park neighbours.	Ongoing
4.1.2 Work with neighbours to update the weed management plan for the Shoalhaven River Corridor between Tallowa Dam and Coolendel.	Medium
4.1.3 Control weed infestations around the historic Grassy Gully mining precinct to prevent their spread.	Medium
4.1.4 As resources allow, progressively reduce the extent of weeds in lower Grassy Gully, beginning at the upstream end.	Medium
4.1.5 Control wild dogs as required by the Shoalhaven Wild Dog Management Plan.	Ongoing
4.2 Fire	
4.2.1 Implement the fire management strategy for the park. Regularly review the strategy and update as required.	Ongoing
4.2.2 Use prescribed fire to achieve fuel management as needed in strategic areas, to achieve a range of appropriate ages for each vegetation community and to protect threatened species and ecological communities. Where appropriate, carry out fuel management in cooperation with neighbours for mutual protection.	Ongoing

Management response		Priority
4.2.3	Seek to avoid fires in rainforest and riparian forest, and in areas adjacent to mining relics and adits used by bats.	Ongoing
4.2.4	Avoid use of heavy machinery for fire suppression in areas around Grassy Gully that contain mining and other remains.	Ongoing
4.2.5	Rehabilitate areas disturbed by fire suppression operations as soon as practical after the fire.	Ongoing
4.2.6	Continue to actively participate in the Shoalhaven Bushfire Management Committee. Maintain close contact and cooperation with the NSW Rural Fire Service.	Ongoing
4.3 Climate change		
4.3.1	Continue fire, pest and erosion management programs and adapt where required to minimise climate change–induced threats. Encourage maintenance of connectivity with nearby parks and other vegetated areas.	Ongoing
5.1 Access		
5.1.1	Maintain the park road and management trail network as shown on Figure 2. Install gates, barriers or signs to prevent unauthorised public vehicle access to management trails and, where necessary, walking tracks.	Medium
5.2 Other uses		
5.2.1	Continue to authorise and manage the existing apiary sites within the park in accordance with NPWS policy and consent conditions. Where necessary, and in conjunction with apiarists, seek to relocate sites or vary their operations in order to minimise environmental impacts and any impacts on park visitors.	Ongoing
5.2.2	Ensure that applications for mining or mineral exploration are subject to environmental assessment in accordance with the memorandum of understanding between NPWS and Department of Industry – Resources and Energy.	Ongoing
5.2.3	Continue to permit vehicle access to the flying fox site by Water NSW or its contractors via Flying Fox Management Trail.	Ongoing

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