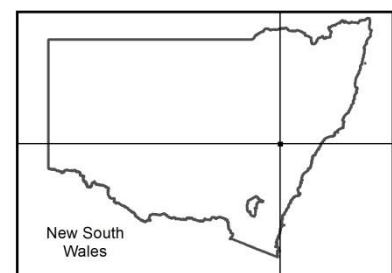


Draft Plan of Management



Mugii Murum-ban State Conservation Area



Mugii Murum-ban State Conservation Area Draft Plan of Management

NSW National Parks and Wildlife Service

September 2015

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This plan of management was prepared by staff of the Blue Mountains Region of NPWS, part of the Office of Environment and Heritage.

For additional information or any inquiries about this park or this plan of management, contact NPWS at the Mudgee Area Office, 27–31 Inglis Street, Mudgee NSW 2850; or by telephone on (02) 6370 9000.

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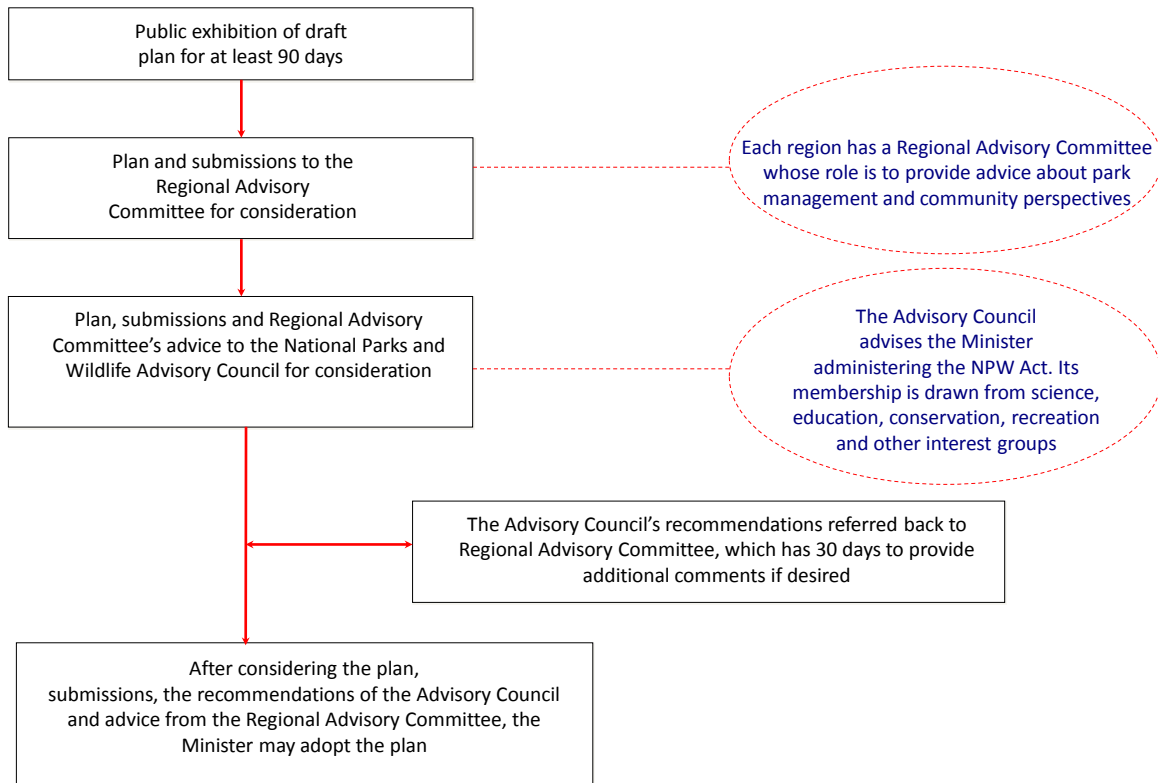
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Invitation to comment

The *National Parks and Wildlife Act 1974* (NPW Act) requires that a plan of management be prepared that outlines how an area will be managed by the NSW National Parks and Wildlife Service (NPWS). The procedures for the exhibition and adoption of plans of management are specified under Part 5 of the NPW Act and involve the following stages:



This draft plan has been developed with input from local community members and key stakeholders and is now being placed on public exhibition for comment. Members of the public, whether as individuals or as members of community interest groups, are invited to comment in writing on this plan of management.

The draft plan is on exhibition until 31 December 2015.

You can provide your written submissions in either of the following ways:

- i) post your submission to The Planning Officer, Mugii Murum-ban SCA, NPWS, 27-31 Inglis Street Mudgee, NSW 2850
- ii) use the online submission form at <https://engage.environment.nsw.gov.au>
- iii) email your comments to npws.mudgee@environment.nsw.gov.au.

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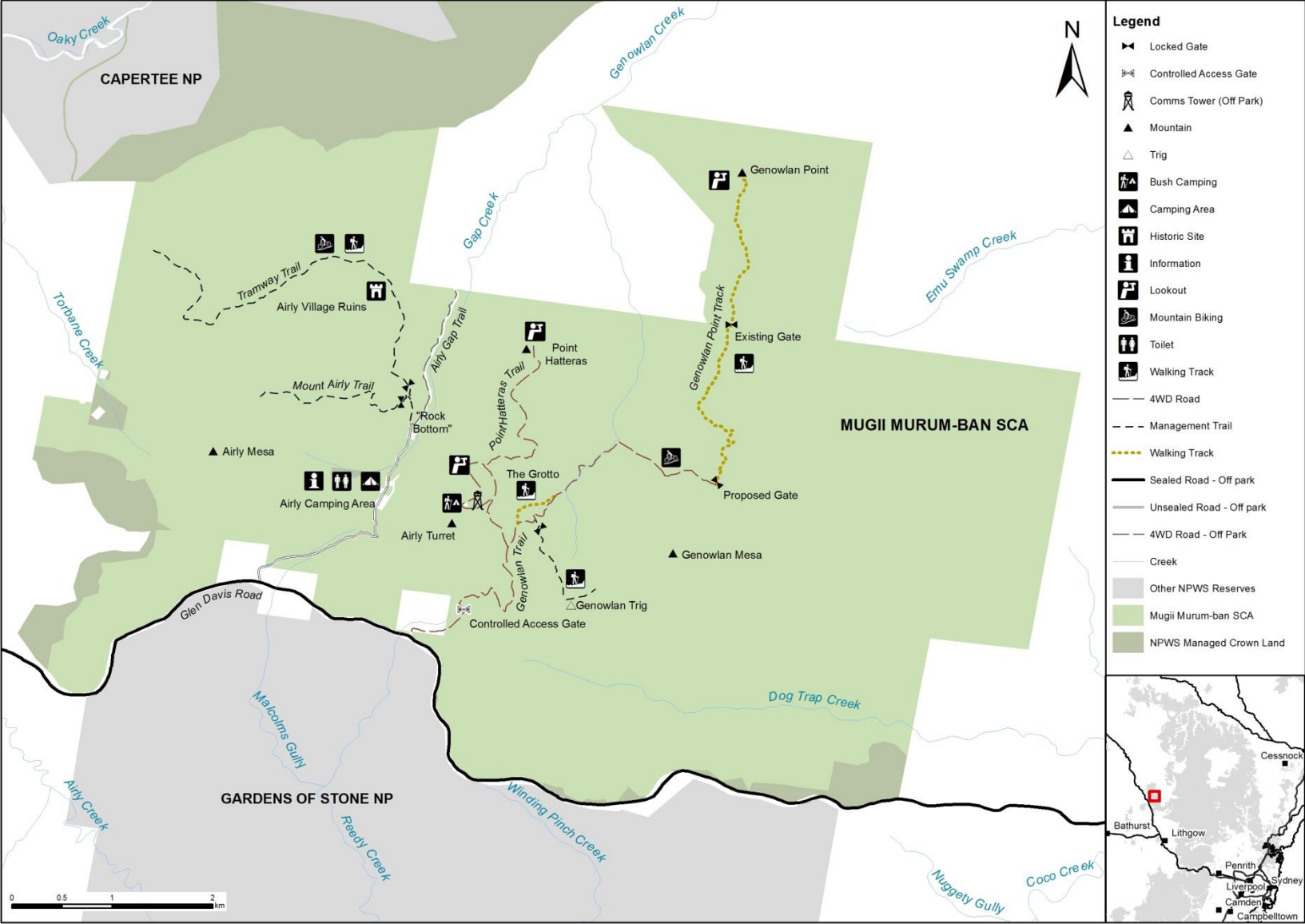
- identify the section heading and number to which your comment relates
- briefly explain the reason for your comment and, if appropriate, suggest other ways to address the issue.

All submissions received by NPWS are a matter of public record and are available for inspection upon request. Your comments on this draft plan may contain information that is defined as 'personal information' under the *NSW Privacy and Personal Information Protection Act 1998*. The submission of personal information with your comments is voluntary.

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Figure 1. Map of Mugii Murum-ban State Conservation Area



1. Introduction

1.1 Location, reservation and regional setting

Features	Description
Location and name	<p>Mugii Murum-ban State Conservation Area (referred to as 'the park' in this plan) is located 40 kilometres north of Lithgow, 3 kilometres north-east of Capertee and 85 kilometres south-east of Mudgee (see Figure 1).</p> <p>Mugii Murum-ban is the Wiradjuri name of Charlie Riley. <i>Mugii</i> (pronounced moogee) means 'a mopoke owl' and <i>murum-ban</i> means 'eldest son'. Charlie continues to be a much respected local Aboriginal man because of his wisdom, cultural knowledge of his Country and pride in his heritage.</p>
Area	<p>The park is 3650 hectares and is bounded to the south by the Glen Davis Road and Gardens of Stone National Park, and to the north by Capertee National Park. Land to the east and west is largely cleared farming land, with some remnant bushland. Lands not included in the park include Airly Gap Trail and a number of partially cleared private properties along Airly Gap Trail and at the base of the Genowlan mesa.</p>
Reservation date	<p>The Mugii Murum-ban State Conservation Area (SCA) was gazetted on 4 March 2011.</p>
Previous tenure	<p>Prior to gazettal, the park was a mixture of Crown reserve, permissive occupancies for grazing and a small area of unsurveyed vacant Crown land. The natural and cultural heritage values of the Mt Airly – Genowlan area have been recognised for many years, and since 1932 the area has been the subject of a number of national park proposals designed to protect its many heritage values.</p>
Regional context	
Biogeographic region	<p>The park lies within the South Eastern Highlands Bioregion. It is part of a large and relatively contiguous system of protected bushland, stretching from the Hunter Valley in the north to the Wollondilly River in the south, and including nearby Capertee, Gardens of Stone and Wollemi national parks.</p>
Surrounding land use	<p>To the north and south of the park the surrounding land is largely naturally vegetated bushland and includes the Capertee National Park and the Gardens of Stone National Park. Land to the east and west of the park is dominated by cleared farming land with some areas of remnant bushland.</p>
Other authorities	<p>The park is located within the areas of Bathurst Local Aboriginal Land Council, Central Tablelands Local Land Services and Lithgow Local Government Area.</p>

1.2 Statement of significance

Mugii Murum-ban SCA is dominated by two prominent mesas which are major visual features of the Capertee Valley. The area is described as having the greatest range and concentration of pagodas within the greater Blue Mountains (Simpson 1993), and is known by some as the 'three hundred sisters' in reference to the number and diversity of pagodas. The park contains a great diversity of ecosystems, supporting several threatened plants and animals and two threatened ecological communities. The area is of particular significance to the Wiradjuri Aboriginal People and also contains numerous significant historic heritage sites. The park also contains important mineral deposits and is recognised in particular as having economically significant deposits of coal.

Geological, landscape and catchment values

The key geological values of the park include prominent mesas, extensive and intricate pagoda clusters, numerous deep gorges, canyons and unusual rock formations. These features combine to create an extremely scenic landscape. In addition, the park contains four relatively pristine subcatchments which are important in maintaining water quality in creek and river systems in the area.

Economic values

The park contains important coal resources, primarily in the Lithgow Seam, and has potential for diamonds.

Biological values

The park contains a high level of botanical diversity, with up to 340 plant species identified on the Mt Airly and Genowlan mesas alone. It supports threatened plants and vegetation communities that are currently under-represented within the NSW park system. The park also supports several threatened animals, including the glossy black-cockatoo (*Calyptorhynchus lathamii*).

Aboriginal heritage values

The park lies within the traditional lands of the Wiradjuri People. Although only four Aboriginal sites have been formally recorded, the park has important cultural values for the local Aboriginal community.

Historic heritage values

Several ruins from past oil shale mining are located within the park, including evidence of roads, cableways, tunnels, railway lines, buildings, steam winches, ventilation chimneys and caves used as houses. There is also evidence of past diamond mining.

Recreation values

The park provides opportunities for self-reliant recreation including four-wheel driving, nature study, camping, mountain biking, bushwalking and birdwatching.

2. Management context

2.1 Legislative and policy framework

The management of state conservation areas in NSW is in the context of a legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act) and Regulation, the *Threatened Species Conservation Act 1995* (TSC Act) and the policies of the National Parks and Wildlife Service (NPWS).

Other legislation, strategies and international agreements may also apply to management of the area. In particular, the *Environmental Planning and Assessment Act 1979* (EP&A Act) may require assessment of the environmental impact of works proposed in this plan. The NSW *Heritage Act 1977* may apply to the excavation of known archaeological sites or sites with potential to contain historical archaeological relics. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) may apply in relation to actions that impact matters of national environmental significance, such as migratory and threatened species listed under that Act.

A plan of management is a statutory document under the NPW Act. Once the Minister has adopted a plan, the plan must be carried out and no operations may be undertaken in relation to the lands to which the plan relates unless the operations are in accordance with the plan. This plan will also apply to any future additions to Mugii Murum-ban SCA. Should management strategies or works be proposed in future that are not consistent with this plan, an amendment to the plan will be required.

2.2 Management purposes and principles

State conservation areas are reserved under the NPW Act to protect and conserve areas that:

- contain significant or representative ecosystems, landforms or natural phenomena or places of cultural significance
- 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 the NPW Act (section 30G), 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 NPW 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 preclude reservation as another park category. The NPW Act (section 47M) requires a review of the classification of state conservation areas every five years in consultation with the Minister administering the *Mining Act 1992*. Following review, a state conservation area can be reserved as a national park or nature reserve by the publication of an order in the *NSW Government Gazette* if there are no exploration or mining titles that apply to the area, and with the concurrence of the Minister administering the Mining Act. A review was undertaken in 2013 in which the status of Mugii Murum-ban State Conservation Area remained unchanged.

2.3 Specific management directions

In addition to the general principles for the management of state conservation areas (see Section 2.2) the management framework for the park will focus on the protection of geological and biological values, the protection of significant and/or threatened plants and animals, the identification and protection of Aboriginal heritage sites, and the conservation of European heritage sites. Establishing sustainable recreational use, controlling weeds and feral animals and enabling the operation of approved mining, exploration and associated surface activities will also underpin management of the park.

The principal objectives in support of this management framework are to:

- manage the park as part of a contiguous system of parks, reserves and other protected lands
- apply an adaptive approach to management, based on monitoring and assessment of park values
- protect geological and structural landscape features, including sandstone pagoda formations, cliffs, mesas and gorges
- maintain the park's biodiversity with emphasis on the protection of threatened species, populations and ecological communities
- identify and protect Aboriginal cultural heritage values
- protect and interpret significant ruins of past mining activity
- provide a range of recreational opportunities consistent with the protection of park values
- promote public awareness, appreciation and use of the park
- enable mining and exploration to take place subject to all necessary assessments and approvals as required under environmental and other legislation.

3. Values

Together, the location, landforms and plant and animal communities of an area determine how it is used and valued. Both Aboriginal and non-Aboriginal people place values on natural areas, including aesthetic, social, spiritual and recreational values. 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. This plan of management aims to conserve both natural and cultural values. To make the document clear and easy to use, various aspects of natural heritage, cultural heritage, threats and ongoing use are dealt with individually, but their interrelationships are recognised.

3.1 Geology

The oldest rocks exposed within Mugii Murum-ban SCA are folded and metamorphosed sedimentary rocks and intrusives of Devonian age. They outcrop in the deeper parts of the valleys in the south-east of the park and adjacent areas of the Capertee Valley (Bembrick 1969). These rocks consist mainly of porphyry intrusives, quartzite and slates, with occasional lenses of limestone.

Overlying these basement rocks is a sequence of gently easterly-dipping, flat-lying Permian and Triassic aged sedimentary rocks that were deposited within the Sydney Basin (Yoo et al. 2001; Yoo 1992). These rocks comprise sandstone, conglomerate and shale, with some coal and oil shale. They form the ridges and mesas of the area. The top of the mesas corresponds to the Tertiary land surface, now 900 metres above sea level, with quartz-enriched talus found below the cliff lines (DEC 2006). A talus is a sloping mass of fragmented rocks at the base of a cliff.

In ascending stratigraphic order (i.e. from oldest to most recent, see Figure 2) this sequence consists of the Permian Shoalhaven Group and Illawarra Coal Measures, and the Triassic Narrabeen Group. The Shoalhaven Group, which outcrops on the lower slopes of the mesas and surrounding area, consists of siltstones and lithic sandstone conglomerates.

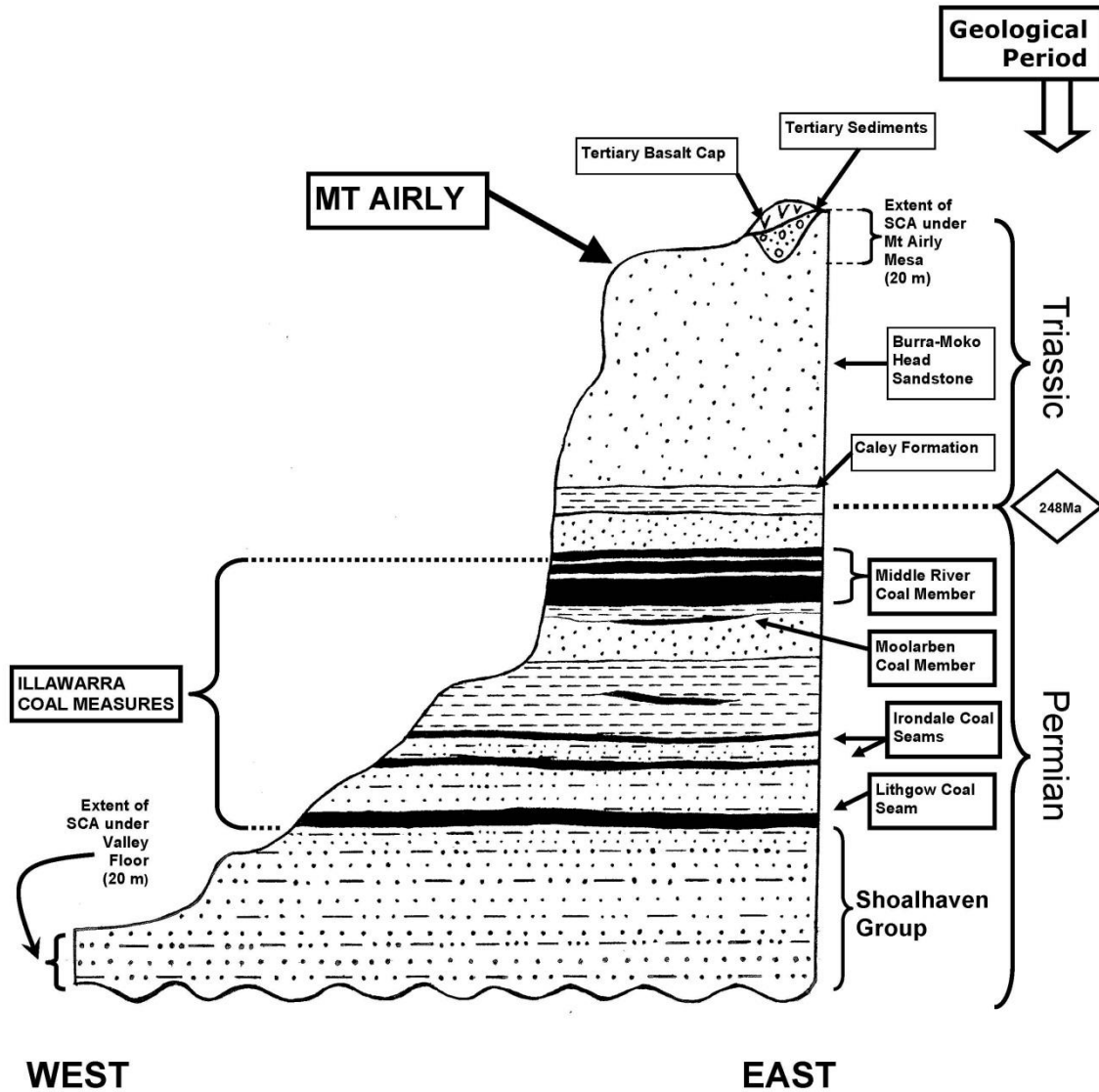
The Illawarra Coal Measures sequence is 100 to 200 metres thick and contains several coal seams. These are the Lithgow, Lidsdale, Irondale, Moolarben and Middle River coal seams. The Lithgow Seam is the only economic seam and is currently mined in Mugii Murum-ban SCA.

The Illawarra Coal Measures are overlain by quartzose sandstones, claystones and shales of the Narrabeen Group. Interbedded shale, claystone and sandstone of the Caley Formation outcrop below the cliff lines, while the overlying Burra Moko Head Sandstone forms the steep cliffs of the mesas. Small remnant cappings of the overlying Mount York Claystone occur on the top of Mount Airly.

Small areas of basalt of Tertiary age occur on some of the higher points on Airly and Genowlan mountains. These basalt caps appear to be erosional remnants of basalt flows that infilled valleys on the Tertiary land surface. Alluvial sediments of Tertiary age (deep leads) are present beneath at least some of the basalts. The sediments are variable in composition, grain size and thickness, but generally consist of gravel, pebbly sand and interbedded layers of sand and clay.

Figure 2: Diagrammatic stratigraphic section of the Mugii Murum-ban SCA

Diagram provided by the NSW Department of Trade and Investment, Regional Infrastructure and Services (Minerals and Energy Division)



Legend:

-  Basalt
-  Gravel and Sand
-  Coal
-  Sandstone
-  Siltstone
-  Interbedded Sandstone and Siltstone

NB: Not to Scale

3.1a Mineral resources

Mugii Murum-ban SCA is underlain by coal resources and an underground coal mine has been established beneath Mount Airly in the west of the park. All infrastructure currently associated with this mine is located off-park, on adjacent lands. The park and surrounding area may also have potential for diamonds.

Coal

The park is located in the southern portion of the Western Coalfield of NSW. The Western Coalfield occupies the north-west and south-west portions of the Sydney and Gunnedah basins respectively. There is increasing coal exploration and mining activity in the Western Coalfield and a number of current exploration licence areas, mining operations and proposals exist within the Lithgow region.

The current coal mining lease (Mining Lease 1331), containing an estimated 115 million tonnes of coal, extends beneath the western part of the park. Additional coal resources are present in Exploration Authorisation 232, which covers much of the eastern portion of the park.

The coal resource within Mining Lease 1331 is suitable for domestic and export thermal supply. Approved underground mining methods include placement of an adit for underground access, and 'bord and pillar'¹ and longwall mining methods for extraction of the resource. The pit top area and a rail loading loop are located to the immediate west of the park.

Petroleum

Petroleum Exploration Licence 460 overlies the entire park. Potential coal seam methane resources also exist within the Illawarra Coal Measures across the Western Coalfield, however, the Minerals and Energy Division of the Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS) consider there is no production potential for coal seam methane in Mugii Murum-ban SCA.

Diamonds

Mugii Murum-ban SCA is also located in an area with known occurrences of alluvial diamonds and established potential for the discovery of primary (hard rock) diamond deposits (Temby 2004). There are currently no non-coal mineral titles within the park.

At the old Airly Diamond Mine, on the south-west margin of the Genowlan mesa (see Figure 1), diamonds occur within an alluvial gravel and sand deposit (deep lead) of Tertiary age underlying a basalt cap (Gibbons et al. 1963). Diamonds were first recorded at this location around the 1930s during the course of gold prospecting activities. Beyond this, there has been intermittent small-scale production of diamonds, primarily since the 1960s. The lack of abrasion on the surface of most of the diamonds suggests that they have been derived from a nearby source (or sources), possibly diatremes (volcanic breccia pipes) of Tertiary to Jurassic age.

Issues

- Significant geological features of the park (notably pagodas) are susceptible to physical damage from a range of human activities.
- Past and future mining activities in the park have the potential to affect geological values. For example, past mining for shale oil under the Mt Airly mesa was predominantly a complete extraction operation (as opposed to present-day bord and

¹ Bord and pillar mining involves dividing the coal seam into regular blocks (or grids) and removing a network of panels (or 'bords') of coal, leaving behind 'pillars' of coal which support the overlying strata. This method generally causes minimal subsidence, which is the vertical movement or 'sinking down' of part of the earth's surface which can occur gradually (over many years) or suddenly (virtually instantly).

pillar mining). Some of the cliffs in the Airly Village precinct show evidence of cracking, although no comprehensive geotechnical survey has been carried out to determine the likely cause or current extent of any structural consequences.

Desired outcomes

- Areas of high geological, scenic and landscape value are protected against damage from human activities.
- Mining and mineral exploration activities have minimal impact on natural and cultural values.

Management response

3.1.1 Enable mining and exploration to take place subject to all necessary assessments and approvals as required under environmental and other legislation (see also Section 5.2).

3.2 Landscape and hydrology

Two forested mesas dominate the landscape within Mugii Murum-ban SCA: Mt Airly (1034 metres above sea level) located in the west, and Genowlan Mountain (1037 metres above sea level, the highest point in the park) located in the east. The two mesas form part of a highly dissected sandstone plateau landscape which contains numerous deep gorges, narrow canyons and unusual rock formations, such as Valley of the Kings, The Grotto and Hidden Valley.

Several distinctive rock outcrops and forested peaks occur on the mesas, including Airly Turret, Genowlan Point and Point Hatteras. Gap Creek, running through Airly Gap, separates the two mesas, while Genowlan Creek divides Genowlan Mountain into an eastern and western portion. On the plateaus there are extensive pagoda systems which are a result of different degrees of weathering of sandstone and ironstone bands within the sandstones. Pagodas have a strong visual form and the Pagoda Country, including Mount Airly and Genowlan Mountain, is listed on the Register of the National Estate in recognition of its geomorphological uniqueness.

Surrounding the plateaus are steep talus slopes of around 45 degrees and sheer sandstone cliffs generally ranging in height from 20 to 50 metres, but up to 60–100 metres at Point Hatteras and around Genowlan Mountain. The park has been estimated to contain roughly 20 kilometres of sandstone cliffs (Forsite 1991). The park also contains areas of low elevation, for example areas near Paling Yard Creek (445 metres above sea level).

Soils in Mugii Murum-ban SCA are variable and include relatively infertile, shallow sandy loams derived from the weathering of talus from sandstone cliffs; stony soils derived from finer grades of talus; and deep humic loams with relatively high moisture levels (King 1993). Many of the soils have a low to moderate nutrient status and relatively poor water holding capacity. In some areas, soils are of higher nutrient level, possibly due to the relatively recent erosion of basalts.

Four subcatchments are contained within the park: the Torbane–Oakley creeks catchment; the Airly–Coco creeks catchment; the Gap–Genowlan creeks catchment; and the Emu Swamp Creek catchment. All of these systems drain into the Capertee River (Simpson 1993) which forms part of the Hawkesbury–Nepean River catchment. The park therefore assists with maintenance of water quality in the upper Capertee River catchment and its tributary, the Airly Creek catchment.

Issues

- A number of human activities have the potential to affect the geological, landscape and catchment values of the park. Inappropriate vehicle use, for example, may affect landscape and catchment values given that soils in the park are mainly shallow sandy loams and highly erodible.

- Currently the park contains a network of very steep and minimally constructed four-wheel drive routes, which climb to the plateaus and traverse the pagoda country. Limited drainage works have been completed on these routes, resulting in some erosion and sediment movement into streams.
- Access routes in the park appear particularly susceptible to erosion following rains.

Desired outcomes

- Water quality and flows in creeks and streams are maintained or restored.
- Human-induced soil erosion is minimised and disturbed areas are rehabilitated.

Management response

3.2.1 Identify and where necessary stabilise and/or rehabilitate disturbed areas, particularly along creek lines, to minimise or avoid erosion and soil movement.

3.2.2 Liaise with local councils and other relevant management agencies to minimise the impacts of adjacent developments on the natural and cultural values of the park.

3.3 Native plants

Vegetation in Mugii Murum-ban SCA was mapped in 1991 (Lembit 1991). Since then, the Colo Committee and the Royal Botanic Gardens have conducted regular vegetation surveys in the area, particularly focussing on the Genowlan peninsula. The most comprehensive description of vegetation communities in the park was prepared by the agency in 2006. This project modelled 16 different floristic assemblages in the Mt Airly – Genowlan area (see DEC 2006 and Appendix 1 for details). The park is regarded as a site of high floral diversity, with up to 340 plant species known to occur on the mesas alone (Muir 2005).

Many of the vegetation communities identified within the park contain threatened species, although the exact number of threatened species in the park is yet to be determined. Further detailed ground surveys are needed across the park. Table 1 lists the threatened plant species known to occur in the park.

Table 1. Threatened plants recorded in Mugii Murum-ban SCA

Common name	Scientific name	TSC Act status	EPBC Act status
Capertee stringybark	<i>Eucalyptus cannonii</i>	Vulnerable	
	<i>Grevillea obtusiflora</i>	Endangered	Endangered
Mount Vincent mint bush	<i>Prostanthera stricta</i>	Vulnerable	Vulnerable
	<i>Pultenaea</i> sp. Genowlan Point	Critically endangered	Critically endangered

Strategies for the recovery of threatened species, populations and ecological communities have been set out in a statewide *Threatened Species Priorities Action Statement* (DECC 2007). 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 2013c). Individual recovery plans may also be prepared for threatened species to consider management needs in more detail.

Mugii Murum-ban SCA is particularly important to *Pultenaea* sp. Genowlan Point which is listed as critically endangered on both the TSC Act and EPBC Act. This small shrub is known only from a single small population within a restricted area (250 square metres) on the tip of Genowlan Point. The species was first collected in 1997 and was subject to regular monitoring between 2002 and 2005, over which time a decline of 53 per cent in the number of specimens

was recorded (Washington 2005). The status of *Pultenaea* sp. Genowlan Point is currently regarded as critical, as surveys conducted in 2005 revealed that most specimens had low foliage cover and showed no signs of flowering or fruiting (Washington 2005). The park has been identified as a key management site in the conservation project for *Pultenaea* sp. Genowlan Point (OEH 2013c).

Capertee stringybark (*Eucalyptus cannonii*) is restricted to an area of about 6000 square kilometres in the NSW central tablelands (OEH 2014a). In Mugii Murum-ban SCA it is found on the south-east flanks of Genowlan Mountain (DEC 2006). The species is threatened by loss of habitat due to land clearing, and inappropriate fire regimes, specifically too-frequent fires (OEH 2014a). The Priorities Action Statement identifies a number of actions required to support the recovery of Capertee stringybark across the State, including identifying the location, tenure and threats to extant populations of the species (OEH 2014a).

Mount Vincent mint bush (*Prostanthera stricta*) is present on Genowlan Mountain, Airly Turret and Point Hatteras. Immediate threats to this bush include loss of habitat, inappropriate fire regimes, and grazing and trampling by domesticated and feral animals (OEH 2014a).

In addition to the plants listed in Table 1, the park also contains a number of plants that are close to their distributional limits, including dwarf she-oak (*Allocasuarina nana*), Johnson's grass tree (*Xanthorrhoea johnsonii*) (OEH 2014), *Micromyrtus sessilis* (Washington 1997), and several species which are considered rare in New South Wales. These include *Acacia asparagoides*, *Epacris muelleri*, pagoda rock daisy (*Leucochrysum graminifolium*) and *Pseudanthus divaricatissimus* (Briggs & Leigh 1996).

Two threatened ecological communities listed under the TSC Act are currently known to occur within Mugii Murum-ban SCA. The park is particularly significant for Genowlan Point *Allocasuarina nana* Heathland Endangered Ecological Community, which is a community of dwarf heathland occupying an area of roughly 10 hectares on Genowlan Point. Dwarf she-oak (*Allocasuarina nana*) is dominant in this community which is characterised by 42 species. This community's structure and species composition are distinct from other heathlands in the greater Blue Mountains. The combination of Johnson's grass tree, *Micromyrtus sessilis*, *Pseudanthus divaricatissimus*, *Callitris muelleri* and *Isopogon prostratus* is, as far as is known, unique (OEH 2014a).

White Box – Yellow Box – Blakely's Red Gum Woodland Endangered Ecological Community, commonly referred to as Box-Gum Woodland, is an open woodland community dominated by one or more of the following species: white box (*E. albens*), yellow box (*E. melliodora*) and/or Blakely's red gum (*E. blakelyi*). Box-Gum Woodland has a relatively broad distribution in Australia and within Mugii Murum-ban SCA is found on the southern side of Mt Airly (DEC 2006). Across New South Wales, the main threats to Box-Gum Woodland include clearing, disturbance/grazing of remnants, and harvesting for firewood (OEH 2014a). Actions to support the recovery of this community include protecting existing stands and controlling weeds (OEH 2014a).

Areas within and adjacent to the park are largely unmodified native vegetation. Small areas of partially cleared land occur within the park along Airly Gap Trail around the camping area (see Section 3.7b).

Issues

- The status of *Pultenaea* sp. Genowlan Point is currently regarded as critical, as surveys conducted in 2005 revealed that most specimens had low foliage cover and showed no signs of flowering or fruiting (Washington 2005). The taxonomy of *Pultenaea* sp. Genowlan Point remains unresolved and threats to it could include drought, grazing and disturbance/trampling by vehicles and visitors. The small population size and highly

restricted distribution of the species also presents significant challenges for its recovery.

The Priorities Action Statement identifies several strategies to protect *Pultenaea* sp. Genowlan Point and assist in its recovery, including feral animal control and management of recreational activities in the park (OEH 2014a). All known specimens of *Pultenaea* sp. Genowlan Point in the park currently have some protection from feral animal grazing. In 2003 a gate was installed across the only vehicle access trail to Genowlan Point to reduce vehicle and pedestrian trampling in the peninsula area — see 'Existing gate' in Figure 1. It is proposed to relocate this gate to prevent impacts associated with vehicular use of the trail and to further protect *Pultenaea* sp. Genowlan Point and the Genowlan Point *Allocasuarina nana* Heathland Endangered Ecological Community — see 'Proposed gate' in Figure 1. Restricting vehicle access to the area also has the secondary benefit of reducing the amount of water available to feral goats, as water can accumulate in the ruts and depressions left by vehicles (Washington 2003).

- Immediate threats to Mount Vincent mint bush include loss of habitat, inappropriate fire regimes, and grazing and trampling by domesticated and feral animals (OEH 2014a). The Priorities Action Statement contains several actions required to support the recovery of this bush in New South Wales. One of these is specific to specimens found within Mugii Murum-ban SCA and states that vehicular access, especially recreational four-wheel driving at Genowlan Trig and Genowlan Mountain, should be restricted (OEH 2014a).
- The Genowlan Point *Allocasuarina nana* Heathland Endangered Ecological Community is threatened by degradation from four-wheel drive and trail bike activity. With its limited extent, this community is also considered susceptible to soil-borne pathogens such as *Phytophthora cinnamomi* (OEH 2014a). The Priorities Action Statement includes several actions to assist recovery of this community. These include preventing disturbance from vehicles, implementing regular monitoring, and developing and implementing strategies to manage feral goats and fire (OEH 2014a).

Desired outcomes

- Populations of significant plant species, populations and ecological communities are conserved.
- Negative impacts on threatened species are minimised.
- The habitat and populations of all threatened plant species are protected and maintained.
- Floristic and structural diversity and habitat values are restored in degraded areas.

Management response

- 3.3.1 Implement relevant strategies in the Priorities Action Statement, Saving our Species program and recovery plans for threatened species, populations and ecological communities present in the park.
- 3.3.2 Restrict vehicular access to Genowlan Trig to protect Mount Vincent mint bush (*Prostanthera stricta*) and to Genowlan Point to protect *Pultenaea* sp. Genowlan Point and Genowlan Point *Allocasuarina nana* Heathland.
- 3.3.3 Establish a regular monitoring program for threatened species and ecological communities to determine the size and extent of populations, to detect changes in recruitment and survival, and to determine threats and responses.

3.4 Native animals

Limited information is available on the native animals of Mugii Murum-ban SCA. Preliminary surveys were conducted during the early 1990s (Simpson 1993) and between 1998 and 2000 (see Burcher 1998, 1999, 2000), however, there have been no systematic surveys over a range of seasons and covering the entire park.

The variety of habitats within the park support a diversity of native animals, including macropods such as the common wallaroo (*Macropus robustus*), red-necked wallaby (*M. rufogriseus*) and eastern grey kangaroo (*M. giganteus*); arboreal mammals including the sugar glider (*Petaurus breviceps*) and greater glider (*Petauroides volans*); reptiles such as Lesueur's velvet gecko (*Oedura lesueurii*); plus a variety of birds, amphibians and bats. The park supports populations of at least 30 native mammals, 96 birds and 24 reptiles (OEH 2014; Burcher 1998, 1999, 2000). A number of threatened animals have been recorded in the park (see Table 2).

Table 2. Threatened animals recorded in Mugii Murum-ban SCA

Common name	Scientific name	TSC Act status	EPBC Act status
Rosenberg's goanna*	<i>Varanus rosenbergi</i>	Vulnerable	
Gang-gang cockatoo*	<i>Callocephalon fimbriatum</i>	Vulnerable	
Turquoise parrot	<i>Neophema pulchella</i>	Vulnerable	
Brown treecreeper	<i>Climacteris picumnus victoriae</i>	Vulnerable	
Regent honeyeater	<i>Anthochaera phrygia</i>	Endangered	Endangered
Swift parrot	<i>Lathamus discolor</i>	Endangered	Endangered
Hooded robin	<i>Melanodryas cucullata</i>	Vulnerable	
Diamond firetail	<i>Stagonopleura guttata</i>	Vulnerable	
Square-tailed kite	<i>Lophoictinia isura</i>	Vulnerable	
Black-chinned honeyeater	<i>Melithreptus gularis gularis</i>	Vulnerable	
Flame robin*	<i>Petroica phoenicea</i>	Vulnerable	
Glossy black-cockatoo*	<i>Calyptorhynchus lathami</i>	Vulnerable	
Grey-crowned babbler	<i>Pomatostomus temporalis temporalis</i>	Vulnerable	
Little eagle	<i>Hieraaetus morphnoides</i>	Vulnerable	
Little lorikeet*	<i>Glossopsitta pusilla</i>	Vulnerable	
Scarlet robin	<i>Petroica boodang</i>	Vulnerable	
Sooty owl*	<i>Tyto tenebricosa</i>	Vulnerable	
Speckled warbler	<i>Chthonicola sagittata</i>	Vulnerable	
Varied sittella	<i>Daphoenositta chrysoptera</i>	Vulnerable	
Powerful owl*	<i>Ninox strenua</i>	Vulnerable	
Barking owl	<i>Ninox connivens</i>	Vulnerable	
Large-eared pied bat*	<i>Chalinolobus dwyeri</i>	Vulnerable	Vulnerable
Eastern false pipistrelle	<i>Falsistrellus tasmaniensis</i>	Vulnerable	
Little bentwing-bat	<i>Miniopterus australis</i>	Vulnerable	
Eastern bentwing-bat*	<i>Miniopterus schreibersii oceanensis</i>	Vulnerable	

Source: * = Atlas of NSW Wildlife (OEH 2014); other records are from Burcher 1998, 1999 and 2000.

Strategies for the recovery of threatened animal species and populations have been set out in a statewide Priorities Action Statement. 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 2013c). Individual recovery plans may also be prepared for threatened species to consider management needs in more detail.

Desired outcomes

- Populations of significant animal species are conserved.
- Negative impacts on threatened species and populations are minimised.
- The habitat and populations of all threatened animals species are protected and maintained.
- Structural diversity and habitat values are restored in degraded areas.

Management response

3.4.1 Implement relevant strategies in the Priorities Action Statement, Saving our Species program and recovery plans for threatened species and populations present in the park.

3.5 Aboriginal heritage

Mugii Murum-ban SCA lies within the traditional lands of the Wiradjuri People. Aboriginal communities have an association and connection to Country. The land and water within a landscape are central to Aboriginal spirituality and contribute to Aboriginal identity. 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 nature are inseparable from each other and need to be managed in an integrated manner across the landscape.

The significance of Mugii Murum-ban SCA to Aboriginal people is poorly documented. Aboriginal presence in the Capertee area is known to date back to 12–14,000 years ago. There is much evidence of stone tool traditions in the area, and it appears that major valley floors were regularly occupied and the creek lines and valleys were possibly used as major access routes from the west into the Capertee Valley. It is thought that the Mt Airly and Genowlan mesas may have been used sporadically for hunting trips and may also have been of great spiritual significance (Brayshaw 1990). The park contains a large shelter with artefacts, while a smaller shelter with an earth floor and ochre deposits is regarded as a potential archaeological site. Stone artefacts have also been found within open sites and are described as being typical of the 'small tool tradition', which places occupation within the past 3000 years (Brayshaw 1991).

Mugii Murum-ban SCA also has contemporary significance for Aboriginal people as it helps maintain a tangible link between the past and present, and contributes to cultural identity. Several Aboriginal groups and individuals have an interest in the park's ongoing management, including measures instigated to identify and protect significant sites.

Mugii Murum-ban is the Wiradjuri name of Charlie Riley. *Mugii* (pronounced moogee) means 'a mopoke owl' and *murum-ban* means 'eldest son'. Charlie continues to be a much respected local Aboriginal man because of his wisdom, cultural knowledge of his Country and pride in his heritage. In 1954 he was one of the first Aboriginal men indentured for an apprenticeship in New South Wales and was the first in his region. His apprenticeship commenced in Dubbo and later finished in Lithgow. He was a tradesman who was much respected because of the skills he acquired which were partly attributed to his cultural skills and knowledge. Charlie Riley was the eldest son of the eldest son of 'Tracker' Riley who was a respected Aboriginal tracker and was decorated for outstanding service in the NSW Police Force between 1911 and 1950.

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

Issues

- Limited knowledge of the significance of the park to Aboriginal people.
- Limited archaeological survey work has been completed to identify significant sites and places. Archaeological surveys conducted in the area during the early 1990s involved only a small number of field days and only those areas with the highest potential to be impacted by proposed mining activity were surveyed (Brayshaw 1990, 1991).
- Aboriginal sites can be subject to irreversible damage from fires, wind erosion and interference from humans and feral animals (e.g. goats).
- Vehicle trails in close proximity to Aboriginal sites have the potential to cause accelerated damage to sites by direct impact from vehicles, dust, damage to vegetation and the increased potential for graffiti and rubbish dumping.

Desired outcomes

- Significant Aboriginal places and values are identified and protected.
- Aboriginal people are involved in the identification, interpretation, protection, restoration and management of Aboriginal heritage and cultural values of the park.
- Impacts on Aboriginal heritage values are minimised.
- Understanding of the cultural values of the park is improved.

Management response

- 3.5.1 Continue to consult, encourage and involve relevant Aboriginal community organisations and custodial families in the management of their Country, including the management of Aboriginal sites, places and cultural and natural values.
- 3.5.2 Ensure that any activities which have the potential to damage Aboriginal sites and places are preceded by a site survey carried out in consultation with the Aboriginal community. Consult the Aboriginal community on likely impacts arising from proposed activities and, where possible, modify or relocate works to protect sites and places of cultural significance.
- 3.5.3 Work with the local Aboriginal community to survey the park for Aboriginal sites and places, and assess significance and threats to sites and places. Where necessary, facilitate site restoration and/or protection works.
- 3.5.4 Protect the Aboriginal heritage site near Genowlan Point by restricting vehicle access to the area. Vehicles will not be permitted beyond the proposed locked gate at the start of the Genowlan Point Track.
- 3.5.5 Discuss suitable opportunities for Aboriginal cultural practice within the park with Aboriginal people.
- 3.5.6 Encourage research activities in the park that are considered appropriate by the local Aboriginal community and that contribute to understanding, assessing and managing Aboriginal sites, places and cultural values.

3.6 Historic heritage

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

There are many places and objects within Mugii Murum-ban SCA that are associated with early European use of the area, particularly oil shale mining. Prospecting for oil shale commenced in the Capertee district in the 1890s and three of these mines — Airly Mine, Genowlan Mine and New Hartley Mine — are located in what is now Mugii Murum-ban SCA (Mills 1998). The richest deposits of oil shale were located on the eastern side of Mt Airly within the talus slopes, a feature that significantly complicated extraction. Shale was transported from mine adits to the railway for distribution using horse and bullock, ropeways, narrow gauge rail lines, tunnels and skipways (Mills 1998). Oil shale deposits in the area were depleted by 1912. The ruins from past oil shale mining are of considerable interest to the local and regional community and represent opportunities for historic heritage tourism.

Two villages were established in the area during the mining boom: one along Tramway Trail (referred to in this plan as 'Airly Village' and shown on Figure 1 as 'Airly Village Ruins'); and another along Airly Gap Trail.

At their peak in 1898, the villages supported up to 200 miners and comprised a post office, school, several stores and a small inn. Numerous ruins from the villages can still be found along Tramway Trail, including a church, bakery, post office, hotel, and a small number of houses which were built within and around rock overhangs using local stone (Mills 1998). Miners often wore protective breast boards which were made from the bark of mature trees, and evidence of scarred trees can still be found within the park (Mills 1998). Other remnants of past mining activities include retorts, ventilation chimneys and steam engines (Muir 2005). A characteristic of oil shale sites at the time was the removal and re-use of equipment at other mine sites and, as a result, much of the plant equipment from past mining is no longer present in the park (Mills 1998). There is evidence of damage to and souveniring of relics and, in some areas, vegetation control may be required to minimise further degradation of ruins caused by plant growth. Heritage items at Airly Village are of local significance (Mills 2008). In order to determine the most appropriate management for Airly Village, a conservation management plan will be prepared.

Mugii Murum-ban SCA also contains relics of past gold and diamond mining. Gold and diamonds were first discovered on the top of Genowlan mesa during the early 1900s, however, the logistical challenges of establishing a workable mine on a mountain summit were not overcome until the 1960s when the Ribaux family started working the deposits (Jefferys 1996). The family showed considerable ingenuity and perseverance, constructing the tracks that are still used today to access the Genowlan mesa. During their association with the area, the Ribaux family established the walking tracks still found around The Grotto (see Figure 1), in addition to a dam, accommodation hut, cooking hut/shelter and pit toilet all located in the vicinity of the old Airly Diamond Mine.

Issues

- Ruins from past oil shale mining require assessment and protection from damage.
- Underground coal mining has the potential to damage old oil shale mining tunnels where these occur above coal seams targeted for mining (Mills 1998).

- A number of disused mine shafts from past diamond mining are located on Genowlan mesa. The entrances to these adits have collapsed and require assessment in relation to safety and the preservation of any historic heritage values.

Desired outcomes

- Negative impacts on historic heritage values are minimised.
- Understanding of the cultural values of the park is improved.
- Significant historic features are appropriately conserved, interpreted and managed in consultation with relevant community members.

Management response

3.6.1 Assess and record all historic features and complexes and manage according to current guidelines.

3.6.2 Assess and manage vegetation, geotechnical stability and any other immediate threats to mining ruins to ensure impacts on historic heritage are minimised. Ensure that the structural integrity of cliffs above Airly Village is considered in the assessment of any mining proposals or works in the vicinity of Airly Village.

3.6.3 Prepare and implement a conservation management plan for the Airly Village area.

3.6.4 Develop interpretive material for the Airly Village area.

3.6.5 Work with Derelict Mines Board to close any open shafts and disused oil shale tunnels that present a threat to public safety.

3.6.6 Assess structures and relics located around the old Airly Diamond Mine and determine appropriate ongoing management and use of the site. Remove rubbish not of heritage value. Where necessary for safety purposes, close disused adits and install appropriate signage to improve visitor safety.

3.7 Visitor use

NPWS parks provide a range of visitor opportunities. NPWS aims to ensure that visitors enjoy, experience and appreciate parks at the same time as conserving and protecting park values.

Prior to gazettal, the area now encompassing Mugii Murum-ban SCA had no formal visitation management and therefore there are minimal visitor facilities. The park is currently used for four-wheel driving, bushwalking, heritage tourism, picnicking, birdwatching, camping and cycling. Information on park visitation is limited, but suggests up to 200 four-wheel drive vehicles may enter the park each year. The main public entry point to the park is via the Airly Gap Trail, a two-wheel drive public road off Glen Davis Road. Public vehicle access is also provided to the park via the four-wheel drive Genowlan Trail which will be gated to control access (see Figure 1).

Important factors that influence the current and likely future recreational opportunities offered in Mugii Murum-ban SCA include:

- its relative distance to large population centres
- recreational opportunities that exist in other nearby parks and areas within the greater Blue Mountains that are a similar distance from Sydney
- tourism and recreation preferences and trends
- protection of natural and cultural values including threatened species and historic ruins

- trail conditions and public safety, particularly during and immediately after wet weather
- the need to minimise conflict between user groups, including potential conflicts between recreational use and approved mining, exploration and monitoring activities.

In planning for recreation opportunities in Mugii Murum-ban SCA, activities that are considered appropriate will be those that are ecologically sustainable and which directly contribute to visitor understanding and appreciation of the park's values. In this sense, the park is considered most suitable for dispersed, self-reliant, nature-based recreation utilising existing visitor nodes and routes. Provision for visitation must also be considered in a regional, cross-tenure context, taking into account recreational opportunities in surrounding public lands that are managed by NPWS or other agencies. Mugii Murum-ban SCA is adjacent to Gardens of Stone National Park and Capertee National Park, and is within 15 kilometres of Wollemi National Park and 10 kilometres of Turon National Park. These parks offer a broad range of recreational activities, including four-wheel driving, camping, bushwalking, caving, fishing, horse riding, cycling, canyoning and rock climbing.

3.7a Bushwalking

Mugii Murum-ban SCA is popular with bushwalkers, who make use of existing four-wheel drive roads, management trails and walking tracks (see Table 3 and Figure 1). The park is highly scenic, however, particular features and areas of the park (e.g. threatened species, ecological communities and pagodas) require protection from the potential impacts of bushwalking such as trampling and physical damage.

Table 3. Bushwalking tracks in Mugii Murum-ban SCA

Track name	Description	Length	Track grade*
The Grotto Track	Located on Genowlan mesa, this track offers a short return walk through a small canyon. The track has been roughly constructed over the past decades and requires formalisation, safety works and signposting to ensure public safety.	1 km return	4
Genowlan Point Track	(Previously a vehicle trail) From the proposed gate at the start of the track to Genowlan Point. The track passes through the Genowlan Point <i>Allocasuarina nana</i> Heathland Endangered Ecological Community.	7.5 km return	4

* The Australian Walking Track Grading System, derived from the Australian Standard for walking tracks (AS156.1-2001), has been used as the basis for this track classification system. Refer to this standard for the complete details for each class of track.

Other than the walking tracks described in Table 3, a number of the park's management trails also provide opportunities for bushwalking in the park, in particular, Tramway Trail and Genowlan Trig Trail. Tramway Trail starts at Rock Bottom in Airly Gap and follows the historic tramway associated with past oil shale mining. This 10-kilometre return walk passes through Airly Village and the numerous ruins associated with mining and village life. The trail also gives visitors access to the north-west talus slopes of Mt Airly. Genowlan Trig Trail provides a 2.5-kilometre return walk to the old Genowlan Trig. The trail runs off Genowlan Trail, the four-wheel drive road which provides access to the eastern part of the park.

A number of natural vantage points (see Figure 1, Lookouts) provide walkers with views across the park, pagoda country and surrounding landscapes. There are no visitor facilities or infrastructure at these sites and no new works are proposed.

3.7b Picnicking and camping

At present, there are no facilities for picnicking and no formal camping areas within the park. Car-based camping occurs, most often at Airly Camping Area on Airly Gap Trail, and on top of Airly Turret around the old Airly Diamond Mine infrastructure (see Figure 1). The Airly Camping Area will be formalised for car-based camping and signage and facilities will be provided to encourage visitors to camp at this location. Car-based camping will continue to be allowed on Airly Turret, subject to the controlled vehicle access system to ensure safety during wet weather and prevent damage to park roads and trails.

Elsewhere in the park, walk-in bush camping may occur, except within 100 metres of trails, walking tracks, creek lines or historic ruins. Camping is not permitted beyond the proposed locked gate at the start of the Genowlan Point Track (see Figure 1).

In a regional context, a range of vehicle-based and/or walk-in bush camping opportunities are provided, including walk-in camping in Gardens of Stone National Park, and car-based camping with basic facilities at Turon National Park and Coorongoboa Camping Area in Wollemi National Park. In addition, car-based camping and caravan facilities are available in a public reserve at Glen Davis (30 kilometres away), where flushing toilets, hot showers, barbecue facilities and fireplaces are provided.

In managing picnicking and camping in Mugii Murum-ban SCA, the intention will be to maintain the nature of existing use while ensuring park values are protected and visitor safety is ensured. Some areas of the park are suitable for dispersed bush camping, while at other sites, camping is not considered appropriate due to the potential for irreversible impacts to significant natural and cultural heritage values.

Group size and group behaviour greatly influence the impact that visitors have on natural areas, and can influence the quality of the experience that visitors enjoy. In order to ensure camping is sustainable within the park and that the same opportunities for a 'natural' experience remain for future generations, camping will require some regulation, particularly in relation to group size. The use of the park by large groups has the greatest potential to impact on park values through trampling and the need to manage human waste and litter. Only certain parts of the park are therefore suitable for large group activities.

3.7c Cycling

Cycling, including mountain biking, is a rapidly growing recreational activity in New South Wales. Some mountain biking currently occurs within the park. In accordance with NPWS policy and the *Sustainable Mountain Biking Strategy* (OEH 2011) cycling is permitted on park roads and management trails (see Figure 1). Trails including the Tramway Trail, Mount Airly Trail, Genowlan Trail and Point Hatteras Trail are suitable for mountain biking by cyclists with some skill and experience as the routes provide a variety of challenging terrain, with features such as steep slopes, exposed rocks and drops. Cycling is not permitted on walking tracks or off trail surfaces. Cycling is not permitted beyond the proposed locked gate at the start of the Genowlan Point Track, due to the potential for damage to threatened species and ecological communities.

3.7d Horse riding

Horse riding is a popular recreational activity that has cultural associations for many Australians. The NPWS *Strategic Directions for Horse Riding in NSW National Parks* (OEH 2012b) provides a process for providing riding opportunities in eight priority regions in New South Wales — including the Blue Mountains Region. Horse riding opportunities in a number of other national parks in the region are being progressed in accordance with the *Blue Mountains Region Horse Riding Work Plan 2013* (OEH 2013a). Horse riding opportunities exist in nearby Gardens of Stone, Turon and Capertee national parks and along the Bicentennial National Trail.

Mugii Murum-ban SCA has no existing horse riding use. The park does not provide access for horse floats, horse riding into the park is unsafe due to the terrain, and there are potential safety risks resulting from recreational user conflict. As such, horse riding is not permitted within Mugii Murum-ban SCA.

3.7e Four-wheel driving and motorcycling

Mugii Murum-ban SCA is a popular destination for four-wheel driving and attracts club and private outings. Many of the existing four-wheel drive routes have tight turns, steep slopes, ruts, and steps and require a high level of proficiency and vehicle capacity. Four-wheel drive users are attracted to the park because the landscape is dramatic and picturesque and because it offers technically challenging driving. Many trips are undertaken by registered clubs and include overnight camping. This use will continue to be allowed, subject to the controlled vehicle access system which will ensure safety during wet weather and prevent damage to park roads and trails.

Due to the potential for unacceptable impacts on natural and cultural heritage, motorcycle riding is not appropriate on any walking tracks, management trails or four-wheel drive roads within the park and is therefore not permitted.

3.7f Adventure recreation and competitive activities

Mugii Murum-ban SCA is not currently a popular destination for adventure recreation activities such as abseiling and rock climbing. Opportunities for adventure recreation exist in several nearby parks, including Gardens of Stone and Wollemi national parks. As these activities grow in popularity, new areas may be identified, although the relative difficulty in accessing cliff faces within Mugii Murum-ban SCA means its use for adventure recreation is likely to remain minimal.

The park has previously been used for a competitive rogning event and at least one organised cycling event. Adventure activities have the potential to damage fragile rock formations, particularly pagodas. In Mugii Murum-ban SCA, management of adventure activities will therefore focus on protecting natural features, minimising conflicts between user groups, maintaining the quality of visitor experience, and encouraging safety principles and self-sufficiency.

3.7g Commercial recreation

Commercial tourism increases the opportunity for public participation in nature-based activities and provides opportunities for professional instruction in the safety and minimal impact aspects of various recreational pursuits. All commercial activities within NPWS parks require an operating licence with conditions that aim to minimise potential adverse impacts.

The Capertee Valley is recognised as an important destination for a growing number of local, interstate and international tourists, and as a result there is a substantial tourism industry in the valley. The natural and cultural heritage of the area, including the land within the park, provides a significant contribution to the local tourism market. Mugii Murum-ban SCA is not currently a common destination for commercial tour operators, however, the park has some potential for small-scale, sustainable, self-reliant commercial recreational opportunities

As with other recreational activities within Mugii Murum-ban SCA, commercial tourism will be managed in a regional context, taking into account opportunities that exist elsewhere in the greater Blue Mountains region. Interest in commercial recreation within the park is anticipated to be low due to the relative ease of access to other nearby locations offering similar recreational activities opportunities.

Visitor use issues

- The park currently has limited visitor and recreation facilities, yet it is regularly used for a range of recreational activities. Some management of recreational activities is required.
- Vehicle tracks have the potential to cause habitat fragmentation, vegetation damage, soil erosion and sedimentation of waterways. Temporary closure of park four-wheel drive roads may be imposed during and following wet weather to ensure there is no risk to public safety or unnecessary damage to trails. Trails may also be closed if the park is impacted by wildfire or hazard reduction burning, a total fire ban is declared, mining exploration activities are undertaken, or management operations such as aerial shooting are undertaken.
- In some areas, notably on Genowlan Point, the unregulated use of existing vehicle routes has caused damage to vegetation, impacted threatened species and threatened ecological communities, increased erosion and potentially damaged Aboriginal sites. In order to minimise damage to important environmental and cultural values, reduce risks to public safety (including other users) and minimise damage to road surfaces, public vehicle access to some existing routes within the park will be restricted by closing and rehabilitating trails and/or controlling access arrangements (via gates).
- Some existing vehicle routes in the park are steep and difficult to negotiate safely. Considerable reconstruction and maintenance would be required to enable unregulated public use of these vehicle routes.
- Approved mining, exploration and monitoring activities may, from time to time, create potential conflict with other park users and visitor safety will need to be maintained during some mining related works.

Desired outcomes

- A variety of low-key recreational opportunities are available for park visitors.
- Visitor opportunities encourage appreciation and awareness of the park's values and their conservation.
- Visitor use of the park is appropriate and ecologically sustainable.
- Negative impacts of visitors on park values are minimised.
- Visitation is formalised and managed to ensure public safety, protection of natural and cultural values and to minimise conflict between user groups and stakeholders.

Management response

- 3.7.1 Promote the park as a destination for sustainable, low-impact recreation. Promote best practice, responsible use of the park by all recreational user groups.
- 3.7.2 Install information signage regarding the sensitivity of the environment and the requirement for responsible, minimal impact four-wheel driving and other use of the park. Promote responsible use of the park and encourage all users to follow minimal impact practices and codes.
- 3.7.3 Develop a precinct plan for The Grotto to address the walking track route, public safety, signage, vehicle access, parking and interpretation.
- 3.7.4 Large group and competitive activities such as orienteering, running and cycling events may be permitted in the park. Such events will require consent from the Regional Manager and will be subject to controls to minimise impacts and maximise safety.

- 3.7.5 Establish procedures for monitoring the level and types of recreational use and any impacts arising from recreational use of the park. Restrictions on visitor use may be implemented in response to results of monitoring programs.
- 3.7.6 Consult and involve peak user groups, local recreation groups/clubs, neighbours and members of the public in the ongoing management of recreation in the park.
- 3.7.7 Rubbish bins will not be provided in the park. Visitors will be required to remove all of their rubbish when leaving.
- 3.7.8 Recreational horse riding is not permitted in the park.

Vehicle access

- 3.7.9 Allow public vehicles on the four-wheel park drive roads shown on Figure 1, subject to a controlled access system to be implemented beyond the gate at the southern end of Genowlan Trail.
- 3.7.10 Restrict vehicle access to the Genowlan Point peninsula by relocating the existing gate to the start of the Genowlan Point Track (as shown on Figure 1).
- 3.7.11 Temporary closure of areas of the park, including four-wheel drive roads and management trails, may be imposed during park management operations and mining related activities to ensure public safety and permit the safe completion of essential works.
- 3.7.12 No new roads will be constructed within the park.

Bushwalking

- 3.7.13 Bushwalking tracks will be maintained in accordance with Table 3.

Camping

- 3.7.14 Establish a designated camping area, to be known as Airly Camping Area, to the south of Rock Bottom and provide signage, fire rings and a toilet.
- 3.7.15 Allow remote, self-reliant, walk-in camping within the park, except within 100 metres of walking tracks, management trails, four-wheel drive roads, Airly Camping Area, creek lines and historic ruins. Camping will not be permitted beyond the proposed locked gate at the start of the Genowlan Point Track.
- 3.7.16 Vehicle-based camping is permitted on Airly Turret, subject to the controlled access system. No further facilities will be provided at Airly Turret.
- 3.7.17 Open campfires are permitted in designated fireplaces only (at Airly Camping Area). Collection of firewood in the park is prohibited in order to reduce risk of fire and minimise environmental damage. The use of portable fuel and gas stoves is permitted throughout the park.

Cycling

- 3.7.18 Permit cycling on park roads and management trails as shown in Figure 1. Cycling will not be permitted on walking tracks or off the road or trail surface.

3.8 Research, education, promotion and information

The majority of research undertaken in Mugii Murum-ban SCA has been associated with environmental assessments for mining activities. Groups such as the Colo Committee and the Royal Botanic Gardens have also undertaken several botanical and threatened species monitoring projects, particularly on the Genowlan mesa. The park offers a broad range of research opportunities, particularly in relation to threatened species management, fire ecology, cultural history, geology and the mitigation and/or management of impacts associated with underground coal mining. Ruins from past oil shale mining potentially have high research value, providing information about the mining technology used at the time and the domestic and social activities taking place around the mines during their operation. Other important research topics are described elsewhere in this plan (e.g. see Section 3.3).

Promoting the park and providing visitors with information about the park are both vital to park management because such engagement makes potential visitors aware of what an area offers, directs them to appropriate locations and services, informs them about management policies, and promotes support for conservation of the natural and cultural values of a park.

As a new park (gazetted in 2011), the location and values of Mugii Murum-ban SCA will not be well known to the public. It is anticipated that the historic heritage associated with past oil shale mining and the spectacular landscape features of the area will be of primary interest to visitors. Park promotion and information programs for the park will therefore concentrate on making visitors aware of the area's natural and cultural values and the ways in which management of the area aims to protect those values.

There is strong local community interest in Mugii Murum-ban SCA. An important aspect of park management will therefore be to promote the importance and purpose of management programs relating to the park to the local community and to neighbours of the park.

Park promotion and information will aim to provide the following:

- information to increase awareness of the status of the park, its conservation importance and appropriate visitor opportunities
- orientation and regulatory information to enable visitors to find their way around the park and adjoining areas, introduce them to the landscape and advise them about opportunities and restrictions
- interpretation of individual components of the park in order to increase visitor understanding and appreciation of park values and to promote minimal impact use of the park.

Issues

- The location and values of the park are not well known by the general public.
- The high level of community interest in the park presents opportunities for promotion.

Desired outcomes

- There is widespread community understanding and appreciation of the park's natural and cultural values.
- Visitors are aware of the park's recreation opportunities, appropriate use and park management programs.

Management response

3.8.1 Facilitate research which directly benefits park management, including projects to:

- determine the distribution and requirements of threatened plants, animals and communities
- clarify the role of fire and drought in the ecology of threatened plants and ecological communities within the park
- understand and manage any negative effects associated with mining and exploration within the park.

3.8.2 Install park entry signs at key locations.

3.8.3 Provide interpretive, safety, regulatory and minimal impact use information signs within the park.

3.8.4 Promote the park to visitors and the general community with emphasis on scenic and landscape values, historic shale mining sites, vegetation communities and nature-based recreational opportunities. Promote the park within the context of other parks and reserves within the region which offer complementary recreational opportunities.

3.8.5 Promote community involvement in management of the park by engaging with local community and special interest groups.

4. Threats

4.1 Pests

Pest species are plants and animals 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 impacts on biodiversity, cultural heritage, catchment and scenic values.

NPWS prepares regional pest management strategies which identify pest species across each region's parks and priorities for control, including actions listed in the Priorities Action Statement, threat abatement plans, and other strategies such as the NSW *Biodiversity Priorities for Widespread Weeds* (NSW DPI & OEH 2011) and the NSW Biosecurity Strategy (DPI 2013).

The NPWS *Regional Pest Management Strategy 2012–17, Blue Mountains Region – A new approach for reducing impacts on native species and park neighbours* (OEH 2012a) identifies pest species and priority programs in this park. The overriding objective of the pest management strategy is to minimise adverse impacts of introduced species on biodiversity and other park and community values while complying with legislative responsibilities. The strategy also identifies where other site- or pest-specific plans or strategies need to be developed to provide a more detailed approach.

The pest management strategy identifies the following significant weed species as occurring in the park: pampas grass (*Cortaderia selloana*), blackberry (*Rubus fruticosus* agg.), St John's wort (*Hypericum perforatum*), serrated tussock (*Nassella trichotoma*) and tree of heaven (*Ailanthus altissima*).

In relation to pest animals, Muggii Murum-ban SCA is known to contain populations of feral goats (*Capra hircus*), European red foxes (*Vulpes vulpes*), rabbits (*Oryctolagus cuniculus*) and cats (*Felis catus*). The park is also highly likely to support populations of wild dogs (*Canis familiaris* ssp.), black rats (*Rattus rattus*) and house mice (*Mus musculus*). Introduced animals can impact the natural environment through competition, replacement, predation and disturbance of native animals, and the introduction and spread of disease. Predation by feral cats and foxes and competition and grazing by rabbits have all been listed as key threatening processes under the TSC Act. Grazing by feral goats is recorded as a threat to *Pultenaea* sp. Genowlan Point.

Weed and pest animal issues within the park require ongoing assessment (through survey, mapping and research) so that appropriate control methods can be determined and implemented.

Priority for controlling weeds and pest animals in the park will be consistent with the regional pest management strategy, and as such priority will be given to plant and animal species that:

- have the potential to spread to neighbouring properties
- are a threat to biodiversity, threatened species, critical habitat or significant plant communities
- are having a detrimental impact on Aboriginal or historic places
- are subject to current neighbouring control programs
- have a high capacity for dispersal
- are new, isolated occurrences
- are declared noxious plants or are identified as key threatening processes under the TSC Act.

NPWS supports a policy of cooperating with other land management agencies (e.g. Central Tablelands Local Land Services, regional noxious weeds committees) and neighbouring land holders to develop and implement effective weed and pest animal control programs. Community education about the impacts of and control measures for introduced plants and animals will also be an important aspect of park management.

Competition and habitat/land degradation by feral goats has been listed as a key threatening process under both the TSC Act and EPBC Act. The impact of feral goats on conservation values is substantial because they graze native plants, compete with native animals for shelter, spread weeds, trample vegetation and damage Aboriginal heritage sites. The congregation of goats in favoured locations can result in erosion and impacts on amenity. Feral goats have been identified as having a significant impact on threatened plant species and threatened ecological communities within the park.

Desired outcomes

- Pest plants and animals are controlled and where possible eliminated.
- Negative impacts of introduced species on park values are minimised.
- Negative impacts of pest animals on park values are minimised.

Management response

- 4.1.1 Manage pest species in accordance with the regional pest management strategy and other strategies as relevant.
- 4.1.2 Undertake or encourage research regarding the impacts of introduced species on the conservation values of the park and any developments in appropriate control techniques.
- 4.1.3 Implement pest and weed control programs in cooperation with the Central Tablelands Local Land Services, other relevant agencies and neighbouring landholders.

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 2013).

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

The use of fire within Mugii Murum-ban SCA prior to the arrival of European Australians and more recent fire history is not well known. Two fires have been recorded in the park in 1993 and 2002. In 2013 NPWS undertook a large hazard reduction burn encompassing the eastern and southern escarpment of the Genowlan mesa.

A fire management strategy which defines the fire management approach for the Mugii Murum-ban SCA has been prepared. The fire management strategy outlines the recent fire history of the park, 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 conservation of the park's

vegetation communities. The fire management strategy for the park has been prepared in consultation with local fire management authorities and other relevant groups and individuals.

NPWS maintains cooperative arrangements with surrounding landowners and the Rural Fire Service and is actively involved with the Lithgow Bush Fire Management Committee. Cooperative arrangements include fire planning, fuel management and information sharing. Hazard reduction programs, ecological burning proposals and fire trail works are submitted annually to the bush fire management committee.

A number of important plant species within Mugii Murum-ban SCA are likely to have specific requirements with respect to fire and these are considered in the fire management strategy for the park (OEH 2013). For example, frequent fires may kill seedlings and weaken mature specimens of Capertee stringybark, while fire intervals of greater than eight years are thought to be appropriate to maintain populations of Mount Vincent mint bush. It is also considered critical that unburnt 'refuge' areas be maintained for the mint bush, to ensure the survival of the as yet unknown pollinator for this species (OEH 2014a). *Pultenaea* sp. Genowlan Point is considered sensitive to fire, with recruitment occurring from a persistent soil-stored seed bank following fire (OEH 2014a).

Several of the priority actions for threatened species found within the park, and for the Genowlan Point *Allocasuarina nana* Heathland Endangered Ecological Community, specifically relate to fire management. The requirements of threatened species and communities in relation to fire will need to be considered in determining the optimal combination of fire frequency, fire intensity, season of burning and the spatial distribution of fire within Mugii Murum-ban SCA.

Desired outcomes

- Negative impacts of fire on life, property and the environment are minimised.
- The potential for spread of bushfires on, from, or into the park is minimised.
- Fire regimes are appropriate for conservation of native plant and animal communities.

Management response

4.2.1 Implement the fire management strategy for Mugii Murum-ban SCA and update as required.

4.2.2 Develop and implement, as required, an annual program of bushfire management and hazard reduction works consistent with the fire management strategy.

4.2.3 Continue to be involved in the Lithgow Bush Fire Management Committee and maintain cooperative arrangements with local Rural Fire Service brigades and other fire authorities and surrounding landowners in regard to fuel management and fire suppression.

4.2.4 Promote research that will contribute to optimal fire management regimes within the park, with priority given to identifying the requirements of threatened species and ecological communities in relation to fire.

4.3 Climate change

Anthropogenic climate change has been listed as a key threatening process under the TSC Act. Projections of future changes in climate for the western region of New South Wales include higher temperatures, more intense but possibly reduced annual average rainfall, increased temperature extremes and higher evaporative demand (DECCW 2010).

These changes are likely to lead to greater intensity and frequency of fires, more severe droughts, reduced river runoff and water availability, regional flooding and increased erosion.

Climate change may significantly affect biodiversity by changing population size and distribution of species, modifying species composition, and altering the geographical extent of habitats and ecosystems. The potential impact of climate change is difficult to assess since it depends on the compounding effects of other pressures, particularly barriers to migration and pressure from feral animals. Species most at risk are those unable to migrate or adapt, particularly those with small population sizes or with slow growth rates.

Programs to reduce the pressures arising from other threats, such as habitat fragmentation, invasive species, bushfires and pollution will help reduce the severity of the effects of climate change on ecosystems and species within Mugii Murum-ban SCA.

Desired outcomes

- The effects of climate change on natural systems are reduced.

Management response

4.3.1 Continue existing fire, pest and weed management programs to increase the park's ability to cope with future disturbances, including climate change, and encourage research into appropriate indicators to monitor the effects of climate change.

5. Management operations and other uses

5.1 Management facilities and operations

In order to protect the values of Mugii Murum-ban SCA, to provide opportunities for visitors, and to facilitate management operations it is necessary to formalise current visitor uses and rationalise the walking track and park road / management trail system (see Section 3.7).

Figure 1 identifies the management trails and four-wheel drive park roads that are available for park management and other authorised purposes such as mining and exploration.

No other NPWS management facilities will be provided in Mugii Murum-ban SCA.

Issues

- Current access to the Genowlan Trail from Glen Davis Road (east of the Reedy Creek Crossing) crosses private property (owned by Centennial Coal).

Desired outcomes

- Management facilities adequately serve management needs and impacts on park values are minimised.
- Practical legal access to the park from Glen Davis Road to Genowlan Trail is secured.

Management response

5.1.1 Secure practical legal access from Glen Davis Road to Genowlan Trail for management and visitation purposes.

5.1.2 Maintain park roads, four-wheel drive roads and management trails shown in Figure 1.

5.2 Non-NPWS uses/operations

5.2a Existing interests

Some uses in the park pre-date the park's reservation and may be considered to be an existing interest under the NPW Act. There is private infrastructure present at the old Airly Diamond Mine site on Airly Turret, including a dam, two huts, small sheds and a toilet structure. The presence and use of the structures needs to be considered and formalised, if appropriate, as 'existing interests' under section 39 of the NPW Act.

5.2b Telecommunications tower

A telecommunications tower exists near the old diamond mine site on Airly Turret. It is located on a small Crown land inholding under lease to Lithgow Council. Access to the site is via the Point Hatteras Trail.

5.2c Exploration and mining

Exploration for minerals and petroleum, as well as mining and petroleum production, are permissible uses within state conservation areas. Mugii Murum-ban SCA is currently covered by a coal mining lease (Mining Lease 1331), containing an estimated 115 million tonnes of coal, which extends beneath the western part of the park. Exploration Authorisation 232 covers much of the eastern portion of the SCA and Petroleum Exploration Licence 460 overlies the entire SCA. There are currently no non-coal mineral titles within the park.

The principal authority for exploration, mining and mine site rehabilitation in New South Wales is the Minerals and Energy Division of DTIRIS. The exercising of rights under an exploration

licence or mining title in a state conservation area requires approvals under a range of NSW legislation.

The environmental effects of mining and exploration in the park, including the operation of the underground coal mine that is currently approved, are managed under relevant NSW legislation, including the *Mining Act 1992*, EP&A Act and the *Protection of the Environment Operations Act 1997*. Future mining and exploration activities will be subject to appropriate environmental assessment and approval processes under NSW legislation. Thus, exploration and mining activities may be subject to numerous approvals outside of the NPW Act and the scope of this plan of management. As a general principle, where there is conflict, legislation will take precedence over this plan.

As a state conservation area, further mining and exploration titles can be granted in the future and further mining for coal, petroleum or other minerals may be approved and associated surface works may be located within the park. Such surface works may include, but are not limited to, subsidence monitoring sites for baseline and repeated survey, ventilation shafts and exploration drill holes.

Routine access by those holding mining and/or exploration titles may be required in order to maintain assets and to undertake exploration and environmental monitoring activities. While the network of vehicle routes and trails proposed in this plan of management is considered adequate for existing public uses and park management, provision may need to be made from time to time for emergency and/or other exploration and mining related access. Temporary access routes may be considered and will require approval by the NPWS Regional Manager in consultation with DTIRIS and completion of appropriate environmental assessments.

Infrastructure relating to mineral exploration and mining or other appropriate uses may be provided in the park by other authorities or for other purposes authorised under the NPW Act. There are currently a number of environmental monitoring stations located within the park which are associated with mining and exploration leases over the park.

Desired outcomes

- Non-NPWS uses, including mining and mineral exploration activities, have minimal impact on natural and cultural values.

Management response

- 5.2.1 Ensure all works, facilities and operations by other authorities are subject to a lease, licence, easement or agreement under the NPW Act.
- 5.2.2 Determine use and license any appropriate structures or uses that are 'existing interests' under the NPW Act.
- 5.2.3 Applications for mining or mineral exploration in the park will be subject to environmental impact assessment and approvals.
- 5.2.4 Exploration and mining related activity make use of the existing vehicle trails and walking tracks described in this plan.
- 5.2.5 In conjunction with DTIRIS (Minerals and Energy), contribute to the development of environmental management plans to minimise impacts on natural and cultural heritage values of the park.
- 5.2.6 Apply a risk management approach to those surface works required to support mining and exploration activities, including monitoring.

- 5.2.7 Ensure operators stabilise and rehabilitate areas disturbed by mining to assist restoration to a pre-disturbance condition. Rehabilitation measures are to include ongoing protection from soil erosion and control of any noxious and environmental weeds.
- 5.2.8 Work cooperatively with agencies, industry and relevant experts to ensure best practice monitoring and management of mining and exploration related activities within the park.
- 5.2.9 Management trails and four-wheel drive roads within the park will be maintained cooperatively with other users of the park, including mining and exploration leaseholders and communication tower operators.

6. Implementation

This plan of management establishes a scheme of operations for the Mugii Murum-ban State Conservation Area. Implementation of this plan will be undertaken within the annual program of the NPWS Blue Mountains Region.

Identified activities for implementation are listed in Table 4. Relative priorities are allocated against each activity as follows:

- **High priority** activities imperative to achieving the objectives and desired outcomes. They must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources.
- **Medium priority** activities are those that are necessary to achieve the objectives and desired outcomes but are not urgent.
- **Low priority** activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.
- **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 that arises.

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

Table 4. List of management responses

Action no.	Management response	Priority
3.1 Geology		
3.1.1	Enable mining and exploration to take place subject to all necessary assessments and approvals as required under environmental and other legislation (see also Section 5.2).	Ongoing
3.2 Landscape and hydrology		
3.2.1	Identify and where necessary stabilise and/or rehabilitate disturbed areas, particularly along creek lines, to minimise or avoid erosion and soil movement.	Medium
3.2.2	Liaise with local councils and other relevant management agencies to minimise the impacts of adjacent developments on the natural and cultural values of the park.	Ongoing
3.3 Native plants		
3.3.1	Implement relevant strategies in the Priorities Action Statement, Saving our Species program and recovery plans for threatened species, populations and ecological communities present in the park.	High
3.3.2	Restrict vehicular access to Genowlan Trig to protect Mount Vincent mint bush (<i>Prostanthera stricta</i>) and to Genowlan Point to protect <i>Pultenaea</i> sp. Genowlan Point and Genowlan Point <i>Allocasuarina nana</i> Heathland.	High
3.3.3	Establish a regular monitoring program for threatened species and ecological communities to determine the size and extent of populations, to detect changes in recruitment and survival and to determine threats and responses.	Medium

Action no.	Management response	Priority
3.4 Native animals		
3.4.1	Implement relevant strategies in the Priorities Action Statement, Saving our Species program and recovery plans for threatened species and populations present in the park.	High
3.5 Aboriginal heritage		
3.5.1	Continue to consult, encourage and involve relevant Aboriginal community organisations and custodial families in the management of their Country, including the management of Aboriginal sites, places and cultural and natural values.	High
3.5.2	Ensure that any activities which have the potential to damage Aboriginal sites and places are preceded by a site survey carried out in consultation with the Aboriginal community. Consult the Aboriginal community on likely impacts arising from proposed activities and where possible, modify or relocate works to protect sites and places of cultural significance.	High
3.5.3	Work with the local Aboriginal community to survey the park for Aboriginal sites and places, and assess significance and threats to sites and places. Where necessary, facilitate site restoration and/or protection works.	High
3.5.4	Protect the Aboriginal heritage site near Genowlan Point by restricting vehicle access to the area. Vehicles will not be permitted beyond the proposed locked gate at the start of the Genowlan Point Track.	High
3.5.5	Discuss suitable opportunities for Aboriginal cultural practice within the park with Aboriginal people.	Medium
3.5.6	Encourage research activities in the park that are considered appropriate by the local Aboriginal community and that contribute to understanding, assessing and managing Aboriginal sites, places and cultural values.	Medium
3.6 Historic heritage		
3.6.1	Assess and record all historic features and complexes and manage according to current guidelines.	Medium
3.6.2	Assess and manage vegetation, geotechnical stability and any other immediate threats to mining ruins to ensure impacts on historic heritage are minimised. Ensure that the structural integrity of cliffs above Airly Village is considered in the assessment of any mining proposals or works in the vicinity of Airly Village.	Medium
3.6.3	Prepare and implement a conservation management plan for the Airly Village area.	Medium
3.6.4	Develop interpretive material for the Airly Village area.	Medium
3.6.5	Work with Derelict Mines Board to close any open shafts and disused oil shale tunnels that present a threat to public safety.	High
3.6.6	Assess structures and relics located around the old Airly Diamond Mine and determine appropriate ongoing management and use of the site. Remove rubbish not of heritage value. Where necessary for safety purposes, close disused adits and install appropriate signage to improve visitor safety.	Medium
3.7 Visitor use		
3.7.1	Promote the park as a destination for sustainable, low-impact recreation. Promote best practice, responsible use of the park by all recreational user groups.	Ongoing

Action no.	Management response	Priority
3.7.2	Install information signage regarding the sensitivity of the environment and the requirement for responsible, minimal impact four-wheel driving and other use of the park. Promote responsible use of the park and encourage all users to follow minimal impact practices and codes.	High
3.7.3	Develop a precinct plan for The Grotto to address the walking track route, public safety, signage, vehicle access, parking and interpretation.	Medium
3.7.4	Large group and competitive activities such as orienteering, running and cycling events may be permitted in the park. Such events will require consent from the Regional Manager and will be subject to controls to minimise impacts and maximise safety.	Ongoing
3.7.5	Establish procedures for monitoring the level and types of recreational use and any impacts arising from recreational use of the park. Restrictions on visitor use may be implemented in response to results of monitoring programs.	Medium
3.7.6	Consult and involve peak user groups, local recreation groups/clubs, neighbours and members of the public in the ongoing management of recreation in the park.	Medium
3.7.7	Rubbish bins will not be provided in the park. Visitors will be required to remove all of their rubbish when leaving.	Ongoing
3.7.8	Recreational horse riding is not permitted in the park.	Ongoing
Vehicle access		
3.7.9	Allow public vehicles on the four-wheel drive park roads shown on Figure 1, subject to a controlled access system to be implemented, beyond the gate at the southern end of the Genowlan Trail.	High
3.7.10	Restrict vehicle access to the Genowlan Point peninsula by relocating the existing gate to the start of the Genowlan Point Track (as shown on Figure 1).	High
3.7.11	Temporary closure of areas of the park, including four-wheel drive roads and management trails, may be imposed during park management operations and mining related activities to ensure public safety and permit the safe completion of essential works.	Ongoing
3.7.12	No new roads will be constructed within the park.	Ongoing
Bushwalking		
3.7.13	Bushwalking tracks will be maintained in accordance with Table 3.	Ongoing
Camping		
3.7.14	Establish a designated camping area, to be known as Airly Camping Area, to the south of Rock Bottom and provide signage, fire rings and a toilet.	Medium
3.7.15	Allow remote, self-reliant walk-in camping within the park, except within 100 metres of walking tracks, management trails, four-wheel drive roads, Airly Camping Area, creek lines and historic ruins. Camping will not be permitted beyond the proposed locked gate at the start of the Genowlan Point Track.	Ongoing
3.7.16	Vehicle-based camping is permitted on Airly Turret, subject to the controlled access system. No further facilities will be provided at Airly Turret	Ongoing
3.7.17	Open campfires are permitted in designated fireplaces only (at Airly Camping Area). Collection of fire wood in the park is prohibited in order to reduce risk of fire and minimise environmental damage. The use of portable fuel and gas stoves is permitted throughout the park.	Ongoing

Action no.	Management response	Priority
Cycling		
3.7.18	Permit cycling on park roads and management trails as shown in Figure 1. Cycling will not be permitted on walking tracks or off the road or trail surface.	Ongoing
3.8 Research, education, promotion and information		
3.8.1	Facilitate research which directly benefits park management, including projects to: - determine the distribution and requirements of threatened plants, animals and communities - clarify the role of fire and drought in the ecology of threatened plants and ecological communities within the park - understand and manage any negative effects associated with mining and exploration within the park.	Low
3.8.2	Install park entry signs at key locations.	High
3.8.3	Provide interpretive, safety, regulatory and minimal impact use information signs within the park.	High
3.8.4	Promote the park to visitors and the general community with emphasis on scenic and landscape values, historic shale mining sites, vegetation communities and nature-based recreational opportunities. Promote the park within the context of other parks and reserves within the region which offer complementary recreational opportunities.	Medium
3.8.5	Promote community involvement in management of the park by engaging with local community and special interest groups.	Ongoing
4.1 Pests		
4.1.1	Manage pest species in accordance with the regional pest management strategy and other strategies as relevant.	High
4.1.2	Undertake or encourage research regarding the impacts of introduced species on the conservation values of the park and any developments in appropriate control techniques.	Medium
4.1.3	Implement pest and weed control programs in cooperation with the Central Tablelands Local Land Services, other relevant agencies and neighbouring landholders.	High
4.2 Fire		
4.2.1	Implement the fire management strategy for Mugii Murum-ban Sate Conservation Area and update as required.	High
4.2.2	Develop and implement, as required, an annual program of bushfire management and hazard reduction works consistent with the fire management strategy.	High
4.2.3	Continue to be involved in the Lithgow Bush Fire Management Committee and maintain cooperative arrangements with local Rural Fire Service brigades and other fire authorities and surrounding landowners in regard to fuel management and fire suppression.	High
4.2.4	Promote research that will contribute to optimal fire management regimes within the park, with priority given to identifying the requirements of threatened species and ecological communities in relation to fire.	Medium

Action no.	Management response	Priority
4.3 Climate change		
4.3.1	Continue existing fire, pest and weed management programs to increase the park's ability to cope with future disturbances, including climate change, and encourage research into appropriate indicators to monitor the effects of climate change.	Medium
5.1 Management facilities and operations		
5.1.1	Secure practical legal access from Glen Davis Road to Genowlan Trail for management and visitation purposes.	High
5.1.2	Maintain park roads, four-wheel drive roads and management trails shown in Figure 1.	Ongoing
5.2 Non-NPWS uses/operations		
5.2.1	Ensure all works, facilities and operations by other authorities are subject to a lease, licence, easement or agreement under the NPW Act.	High
5.2.2	Determine use and license any appropriate structures or uses that are 'existing interests' under the NPW Act.	High
5.2.3	Applications for mining or mineral exploration in the park will be subject to environmental impact assessment and approvals.	High
5.2.4	Exploration and mining related activity makes use of the existing vehicle trails and walking tracks described in this plan.	High
5.2.5	In conjunction with DTIRIS (Minerals and Energy), contribute to the development of environmental management plans to minimise impacts on natural and cultural heritage values of the park.	High
5.2.6	Apply a risk management approach to those surface works required to support mining and exploration activities, including monitoring.	High
5.2.7	Ensure operators stabilise and rehabilitate areas disturbed by mining to assist restoration to a pre-disturbance condition. Rehabilitation measures are to include ongoing protection from soil erosion and control of any noxious and environmental weeds.	High
5.2.8	Work cooperatively with agencies, industry and relevant experts to ensure best practice monitoring and management of mining and exploration related activities within the park.	High
5.2.9	Management trails and four-wheel drive roads within the park will be maintained cooperatively with other users of the park, including mining and exploration leaseholders and communications tower operators.	Ongoing

References

- Bembrick, C S 1969, *Glen Alice 1:50,000 Geological Sheet 8931 IV (Provisional)* Geological Survey of New South Wales, Sydney.
- Brayshaw, H 1990, *Archaeological Reconnaissance within Airly Authorisation [A232], near Capertee, NSW*, a report prepared for Sinclair, Night and Partners on behalf of Novacoal Pty Ltd.
- Brayshaw, H 1991, *Airly Authorisation [A232] near Capertee, NSW, Additional Archaeological Survey for Aboriginal Sites*, a report prepared for Sinclair, Night and Partners on behalf of Novacoal Pty Ltd.
- Briggs, JD & Leigh, JH 1996, *Rare or Threatened Australian Plants*, CSIRO, Collingwood, Victoria.
- Burcher, P 1998, *Fauna Surveys Mount Airly Coal Mine: Autumn and Summer 1998*, prepared for International Environmental Consultants Pty Ltd.
- Burcher, P 1999, *Fauna Surveys Mount Airly Coal Mine: Autumn and Summer 1999*, prepared for International Environmental Consultants Pty Ltd.
- Burcher, P 2000, *Fauna Surveys Mount Airly Coal Mine: Autumn 2000*, prepared for International Environmental Consultants Pty Ltd.
- DEC 2006, 'The Vegetation of the Western Blue Mountains (including the Capertee, Cox's, Jenolan and Gurnang Areas)', unpublished report funded by the Hawkesbury – Nepean Catchment Management Authority, Department of Environment and Conservation, Hurstville, www.environment.nsw.gov.au/resources/nature/vegBlueMntnsVol101.pdf.
- DECC 2007, *Introducing the NSW Threatened Species Priorities Action Statement (PAS)*, Department of Environment and Climate Change, Sydney, NSW, www.environment.nsw.gov.au/resources/threatenedspecies/threatspecpas07168.pdf.
- DECCW 2010, *NSW Climate Impact Profile: The impacts of climate change on the biophysical environment of New South Wales*, Department of Environment, Climate Change and Water NSW, Sydney, www.environment.nsw.gov.au/climateChange/20100171ClmtChngNSW.htm.
- DPI 2013, *NSW Biosecurity Strategy 2013–2021*, Department of Primary Industries, a division of NSW Department of Trade and Investment, Regional Infrastructure and Services, Orange, www.dpi.nsw.gov.au/data/assets/pdf_file/0005/467699/NSW-biosecurity-strategy-2013-2021.pdf.
- Forsite 1991, *Visual Impact Assessment Airly Authorisation A232 – Proposed Airly Colliery, Capertee NSW*, a report prepared by EDAW Australia.
- Gibbons, GS, Webster, SS & Pogson, DJ 1963, *Investigations of Airly Mountain Diamond Prospect*, geological Survey of New South Wales Report GS 1963/064 (unpubl.)
- Jefferys, B 1996, *The Story of Capertee*, Capertee Progress Association.
- King, DP 1993, *Soil landscapes of the Wallerawang 1:100,000 sheet*, Department of Conservation and Land Management.
- Lembit, R 1991, *Flora Survey of the Proposed Airly Colliery*, report prepared for Novacoal Ltd.

- Mills, R 1998, *A Preliminary Heritage Assessment of Airly Shale Oil Mining Complex*, a report commissioned by International Environment Consultants for Centennial Coal.
- Muir, K 2005, *The Gardens of Stone Park Proposal: Stage Two*, The Colong Foundation for Wilderness Ltd.
- NSW DPI and OEH 2011, *Biodiversity priorities for widespread weeds*, report prepared for the 13 Catchment Management Authorities (CMAs) by NSW Department of Primary Industries and Office of Environment and Heritage, Orange.
- OEH 2011, *Sustainable Mountain Bike Strategy*, Office of Environment and Heritage, Sydney, <http://www.environment.nsw.gov.au/parkmanagement/SustainableMtBStrategy.htm%20>
- OEH 2012a, *Regional Pest Management Strategy 2012–17, Blue Mountains Region: a new approach for reducing impacts on native species and park neighbours*, Office of Environment and Heritage, Sydney, www.environment.nsw.gov.au/resources/pestsweeds/20120370bmrpms.pdf
- OEH 2012b, *Strategic Directions for Horse Riding in NSW National Parks*, Office of Environment and Heritage, Sydney, <http://www.environment.nsw.gov.au/policies/HorseRideStrat.htm>
- OEH 2013a, *Blue Mountains Region Horse Riding Work Plan 2013*, Office of Environment and Heritage, Sydney, <http://www.environment.nsw.gov.au/policies/Horseplans.htm>
- OEH 2013b, *Living with Fire in NSW National Parks: A strategy for managing bushfires in national parks and reserves 2012–2021*, revised edition, Office of Environment and Heritage, Sydney, www.environment.nsw.gov.au/resources/firemanagement/120690LiveFire.pdf
- OEH 2013c, *Saving our Species*, Office of Environment and Heritage, Sydney, www.environment.nsw.gov.au/savingourspecies/about.htm.
- OEH 2014, *Atlas of NSW Wildlife*, Office of Environment and Heritage, Sydney.
- OEH 2014a, *Saving NSW threatened species*, Office of Environment and Heritage, Sydney. www.environment.nsw.gov.au/threatenedspecies/
- Simpson, W 1993, Report to the Honourable Robert Webster, Minister for Planning and Minister for Housing, Underground Coal Mine Proposed by Novacoal Australia Pty Ltd. Mounts Airly and Genowlan Area, Capertee Valley, City of Greater Lithgow.
- Temby, PA 2004, *Review of Diamond Potential in NSW*, Geological Survey of New South Wales Report GS 2004/015.
- Washington, H 1997, *Nomination of dwarf Allocasuarina nana heathland community, Genowlan Point, Capertee Valley*.
- Washington, H 2003, 'Population Assessment of the endangered pea Pultenaea 'Genowlan Point', Capertee Valley, Year 2', unpublished Report submitted to NSW NPWS.
- Washington, H 2005, 'Population Assessment of the endangered pea Pultenaea sp. 'Genowlan Point', Capertee Valley, Year 4', unpublished report by Ecosolution Consulting, November 2005.

Yoo, EK 1992, Western Coalfield (Southern Part) Geological Series 1:100,000 Sheet 8931 and part of 8830,8831,8832,8930and 8932, New South Wales Geological Survey, Sydney.

Yoo, EK, Tadros, NZ & Bayly, KW 2001, 'A Compilation of the geology of the Western Coalfield', Geological Survey of New South Wales, Report GS2001/204 (unpublished).

GLOSSARY

Adit	Entrance
Devonian age	A geological period of the Paleozoic era approximately 420–360 million years
Mesa	Elevated area of land with a flat top and sides that are usually steep cliffs
Pagoda	A rock formation consisting of ironstone bonding in sandstone subject to weathering such that tall features resembling sculptures or temples are formed.
Permian	The last geological period of the Paleozoic era approximately 300–250 million years ago
Triassic	The first geological period of the Mesozoic era approximately 250–200 million years ago

Appendix 1 - Vegetation communities modelled as likely to occur within Mugii Murum-ban SCA (DEC 2006)

Vegetation community	Description and possible locations within park
Mountain Gully Grey Myrtle Dry Rainforest	Dry rainforest closely associated with drainage lines and sheltered escarpment slopes. Dense canopy cover of Grey Myrtle (<i>Backhousia myrtifolia</i>). Community is well conserved in NSW. Contains the threatened species <i>Prostanthera stricta</i> .
Hillslope Talus Mountain Grey Gum – Brown Stringy Bark – Grey Gum Broadleaved Hickory Moist Forest	Tall, moist forest, forming an open canopy of eucalypts (<i>Eucalyptus cypellocarpa</i> , <i>E. punctata</i> , <i>E. polyanthemos</i>) and Brown Stringybark (<i>E. blaxlandii</i>) above a broken, uneven canopy of wattles. Reservation status likely to be poor in NSW. Community contains the threatened species <i>E. cannonii</i> and <i>P. stricta</i> .
Sheltered Gully Brown Barrel Ferny Forest	Tall to very tall forest, with main canopy usually dominated by Brown Barrel (<i>E. fastigata</i>). Within park occurs in the deeper sandstone grottoes. Relatively large areas protected in NSW. Community contains the threatened species <i>Derwentia blakelyi</i> .
Newnes Sheltered Peppermint – Brown Barrel Shrubby Forest	Tall forest with moderately dense mid stratum of shrubs and small trees occupying steep protected slopes and gorges. Within park is found on Mt Genowlan. Community contains the threatened species <i>D. blakelyi</i> and <i>P. stricta</i> .
Capertee Residual Basalt Brittle gum – Stringybark Layered open Forest	Open forest or woodland associated with shallow, residual soils within the Tertiary basalt areas. Within park is found on the Mt Airly and Genowlan mesas. Reservation levels currently low in NSW. Community contains <i>E. cannonii</i> and <i>P. stricta</i> .
Tableland Gully Ribbon Gum – Blackwood – Apple Box Forest	Grassy forest with open canopy found along water courses and in gullies. Community contains the threatened species <i>E. cannonii</i> and possibly <i>D. blakelyi</i> and <i>Persoonia marginata</i> .
Capertee Rough-barked Apple – Redgum – Yellow Box Grassy Woodland	Woodland/forest community with diverse, grassy groundcover and canopy dominated by Rough-barked Apple (<i>Angophora floribunda</i>), Yellow Box (<i>E. melliodora</i>) and Blakely's Red Gum (<i>E. blakelyi</i>). Falls within the definition of the <i>White Box – Yellow Box – Blakely's Red Gum Woodland</i> EEC, and may form part of the <i>Grassy White Box Woodlands</i> EEC listed under the EPBC Act. Within the park it is found on the south side of Mt Airly. Community contains the threatened <i>E. cannonii</i> .
Capertee – Wolgan Slopes Red Box – Grey gum – Stringybark Grassy Woodland	Dry sclerophyll forest generally found on the slopes below sandstone cliffs. The main species is Grey Gum (<i>E. punctata</i>), with variable grassy/shrubby understorey. Limited areas are formally protected. Community contains the threatened species <i>E. cannonii</i> and <i>Grevillea obtusiflora</i> .
Mount Airly Sydney Peppermint – Narrow-leaved Stingy bark – Grey Gum Shrubby Open Forest	Woodland to open forest community with a canopy dominated by Sydney Peppermint (<i>E. piperita</i>), narrow-leaved stringybark (<i>E. sparsifolia</i> / <i>E. tenella</i>) and Grey Gum (<i>E. punctata</i>). Generally found on drier and lower areas of Narrabeen Sandstone. Within park found on the Mt Airly and Genowlan mesas. Community contains the threatened species <i>Apatophyllum constablei</i> , <i>Pultenaea</i> sp. (Genowlan Point), <i>E. cannonii</i> and <i>P. stricta</i> .
Sandstone Slopes Sydney Peppermint Shrubby Forest	Relatively tall forest that occurs on Narrabeen sandstones around ridges and upper slopes. Community is well protected in Wollemi and Blue Mountains National Parks. Within park found on the Mt Airly and Genowlan mesas. Community contains the threatened <i>Acacia flocktoniae</i> and <i>Persoonia hindii</i> .
Exposed Blue Mountains Sydney Peppermint – Silvertop Ash Shrubby Woodland	Moderately tall forest with a dense shrubby understorey, common on sandstone ridges across the Blue Mountains. Community contains the threatened species <i>A. flocktoniae</i> , <i>P. hindii</i> and <i>Pultenaea</i> sp. 'Genowlan Point'.
Capertee Grey Gum – Narrow-leaved Stringybark – Scribbly Gum – <i>Callitris</i> – Ironbark Shrubby Forest	Shrubby, dry forest to woodland community with generally open canopy found mainly on stony soils. Community is currently protected in Gardens of Stone National Park. Within the park community is found on the south-eastern flanks of Genowlan Mtn. Community contains the threatened <i>E. cannonii</i> , <i>G. obtusiflora</i> , <i>P. marginata</i> , <i>Phebalium bifidum</i> , <i>Prostanthera cryptandroides</i> and <i>P. stricta</i> .
Capertee Slopes Red Ironbark – Red Stringybark – Narrow-leaved Stringybark Shrubby Woodland	Open forest or woodland characterised by red ironbark (<i>E. fibrosa</i>), found on very dry, exposed escarpment slopes of Mt Airly mesa. Possibly contains the threatened species <i>A. constablei</i> , <i>Astrotricha crassifolia</i> , <i>G. obtusiflora</i> , <i>P. cryptandroides</i> , <i>P. stricta</i> , <i>Persoonia hirsuta</i> and <i>Pultenaea glabra</i> , however, in the Mt Airly area further sampling is required.
Pagoda Rock Sparse Shrubland	Heath community growing in and around pagodas. Protected within Gardens of Stone National Park and found on Mt Airly and Genowlan mesas. Contains the threatened species <i>P. stricta</i> , <i>Boronia deanei</i> and <i>Philotheca ericifolia</i> .
Sandstone Plateaux Tea Tree – Dwarf Sheoak – Banksia Rocky Heath	Low heath community growing on rock plates and rock terraces. Found extensively in the park system of the Blue Mountains.

Genowlan Point Dwarf She-oak Heathland	A dense, low heath occupying roughly 15 ha on the Genowlan peninsula. The primary heath species is Dwarf She-oak (<i>Allocasuarina nana</i>). Community is a recognised EEC and is not currently protected within the NSW park system.
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