

# Mount Etna Caves National Park

**Management Statement**

2013



Prepared by: **Queensland Parks & Wildlife Service (QPWS), Department of Environment and Science**

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*The department is committed to respecting, protecting, and promoting human rights, and our obligations under the Human Rights Act 2019.*

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The Mount Etna Caves National Park Management Statement 2013 has been extended in 2023 in line with the Queensland *Nature Conservation Act 1992* (s120G). Minor amendments have been made. There has been no change to the statement's original management intent and direction.

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Park size:	581ha
Bioregion:	Brigalow Belt North
QPWS region:	Central
Local government estate/area:	Rockhampton Regional
State electorate:	Mirani Keppel

**Legislative framework**

✓	<i>Aboriginal Cultural Heritage Act 2003</i>
✓	<i>Environment Protection Biodiversity Conservation Act 1999 (Cwlth)</i>
✓	<i>Land Protection (Pest and Stock Route Management) Act 2002</i>
✓	<i>Nature Conservation Act 1992</i>
✓	<i>Native Title Act 1993 (Cwlth)</i>
✓	<i>Surveyors Act 2003</i>

**Plans and agreements**

✓	Bonn Convention
✓	China–Australia Migratory Bird Agreement
✓	Japan–Australia Migratory Bird Agreement
✓	National Multi-species Recovery Plan for the cycads, <i>Cycas megacarpa</i> , <i>Cycas ophiolitica</i> , <i>Macrozamia cranei</i> , <i>Macrozamia lomandroides</i> , <i>Macrozamia pauli-guilielmi</i> and <i>Macrozamia platyrhachis</i> 2007
✓	National Recovery Plan for <i>Tectaria devexa</i> 2004
✓	Republic of Korea–Australia Migratory Bird Agreement

**Thematic strategies**

✓	Level 2 Pest Strategy
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## Vision

The limestone karst landforms and palaeoecological features that support significant areas of semi-evergreen vine thicket are conserved.

The roosting site for Australia's most significant breeding population of little bent-wing bats *Miniopterus australis* and the vulnerable ghost bat *Macroderma gigas* are protected.

Partnerships are established with the Traditional Owners, local community, neighbours, research institutes and Rockhampton Regional Council that contribute to the area's ongoing management.

Outdoor recreation activities and commercial tourism opportunities that are in keeping with the area's natural values will be encouraged.

## Conservation purpose

Limestone bedrock, harsh terrain and a dry climate create varied and unusual habitats. The park is biogeographically significant, conserving endangered and rare plants. The park is managed primarily to conserve its values, particularly the karst and cave environments, cave animals and dry rainforest communities.

The only other parks in Queensland with significant cave systems are Undara Volcanic National Park south-west of Cairns, Chillagoe Mungana Caves National Park west of Cairns and Camooweal Caves National Park south of Mount Isa.

## Protecting and presenting the park's values

### Landscape

Mount Etna Caves National Park is 28km north of Rockhampton near the township of 'The Caves'. The park's property description is Lot 117 on Plan NPW821 in the parishes of Barmoya and Fitzroy, county of Livingstone.

Mount Etna Caves National Park is in the Marlborough Plains sub-region of the Brigalow Belt North bioregion. Dry rainforest vegetation (semi-evergreen vine thicket) covers a significant portion of the park and represents a vegetation type once widespread throughout Queensland but now found only in isolated pockets.

Mount Etna was named after the volcano in Sicily by the Archer Brothers who settled in the Rockhampton area in the 1850s. From 1914 to 1939 the caves were mined for guano, a natural fertiliser, and from 1925 limestone was mined. The park was established in 1975 to protect some of the caves. Subsequent efforts to protect other caves led to the park increasing to its current size of 581ha.

Land use near the park includes beef and dairy production, a growing commercial fruit industry, farm forestry and urban development. A limestone mine was adjacent to the Mount Etna sector of the park, quarrying ceased in 2004. Capricorn Caves, a developed tourist venture with limestone show caves, is situated outside the park, adjacent to the Olsen's sector.

During 1999-2000 the Cammoo sector, previously a commercial tourist show cave operation, and a large portion of the Pilkington's sector were added to the park, aided by financial assistance (for the Cammoo sector) from the Central Queensland Speleological Society (CQSS), Pacific Lime, the State and Commonwealth Government National Reserve System Program.

Caves are special environments and easily damaged. Access to some caves is restricted to protect the bats, which are easily disturbed, to protect caves with delicate formations or attributes and for safety reasons.

Limestone karst landform covers a significant part of the park. Karst landform is formed from rock with a high degree of solubility, which has been sculpted by natural waters. This process creates underground drainage caverns and a variety of surface landforms such as enclosed depressions and fluted rock surfaces.

The caves at Mount Etna are of palaeoecological significance with many fossils being found within the caves.

Exceptional geological features of Mount Etna Caves National Park have been recognised with its listing on the Register of the National Estate and include:

- possibly the only tropical pseudo-tower karst system in Queensland
- a very dense cavernous karst landform that contains 46 caves or cave systems in a very small area
- the only recognised example of andesite dyke caves in Australia
- the most easily accessible example of tropical limestone landform in Australia.
- Some areas have suffered landscape alteration from historic activities including limestone mining, guano mining, vegetable growing and storing explosives.

Cement Australia has conducted landscape rehabilitation and revegetation on land adjacent to the Mount Etna sector. QPWS are working to rehabilitate mined areas within the Mount Etna sector.

## Regional ecosystems

Five regional ecosystems are conserved in Mount Etna Caves National Park. Three of these (RE11.11.15, RE11.11.7, RE11.3.1) have low representation in protected estate. There is one endangered regional ecosystem (RE11.3.1), found on the eastern edge of the park. This is described as *Acacia harpophylla* and/or *Casuarina cristata* open forest on alluvial plains. RE11.11.7 is of concern and consists of *Eucalyptus fibrosa* subsp. (Glen Geddes), *E. xanthope* woodland on serpentinite and is found on the southern boundary. The majority of the park consists of *Eucalyptus crebra* woodland on deformed and metamorphosed sediments and interbedded volcanics (RE11.11.15) with some semi-evergreen vine thicket and microphyll vine forest on igneous rocks (RE11.12.4) or old sedimentary rocks (11.11.5). These three regional ecosystems are of no concern at present.

## Native plants and animals

Vegetation communities range from open forest to semi-evergreen vine thicket. Over 260 plant species have been recorded. The most significant vegetation features include:

- *Tectaria devexa* var. *devexa*—a species of cave fern listed as endangered under the *Environmental Protection and Biodiversity Conservation Act 1999*. This is the only known distribution in Australia. The species is reported to occur in Sri Lanka, Thailand, Malaysia and China
- the endangered *Cycas ophiolitica* and near threatened *Graptophyllum excelsum*
- semi-evergreen vine thicket or 'dry rainforest', of which little is conserved in Central Queensland.

In Queensland the principal threat to *Tectaria devexa* var. *devexa* is the concentration of the species in two very small populations, with limited habitat and low numbers of individuals. Habitat degradation, hydrological change and excessive visitation are potential threats (Butz 2005).

The semi-evergreen vine thicket communities on the park (11.11.5 and 11.12.4) are regionally restricted and are both listed as least concern under Queensland legislation.

Many animals are well adapted to Mount Etna National Park's rocky limestone karst and dry rainforest habitats. Renowned within Australia for its population of cave-dwelling bats, the park has five bat species that inhabit its cave systems. The bats use specific caves at certain times of the year for different stages of their life cycles (e.g. as breeding or maternity caves). The caves provide an ideal microclimate for winter roosting and summer breeding.

The park is one of the few places in Australia supporting a year-round colony of the vulnerable ghost bat *Macroderma gigas*. Some caves provide critical breeding and refuge areas (for example, Johannsens Cave from July to January).

The park provides roosting habitat for more than 80% of Australia's breeding population of little bent-wing bats *Miniopterus australis*. 'Bat Cleft' is the largest known maternity cave for this species. The emergence of these bats from this cave each summer, is recognised as an internationally significant natural phenomenon.

Other vertebrate fauna representative of dry rainforest communities includes over 60 bird species, rock wallabies, echidnas, possums and a diverse variety of lizards and snakes. Caves and surrounding calcium-rich soils provide habitat for many specialised invertebrates including spiders, centipedes and snails. Many species depend on bat guano (droppings) as their principal food source and are often highly specialised to the microclimate within their particular cave system. These animals may be sensitive to human disturbance although there is little available information in relation to human impact on and the behaviour and management of animals within cave systems.

Known threats include:

- visitor use (Duncan et al. 1999).

Suspected threats include:

- reduction in prey populations (insects and vertebrates, predominantly birds and small mammals) related to predation from cats and foxes, or resulting from changed fire regimes (Duncan et al. 1999).

The status of bat populations in the management area is poorly known.

## Aboriginal culture

Mount Etna Caves National Park is within an area subject to a native title claim by the Darumbal people (QC2012/008). There is also an Indigenous Land Use Agreement (QI2012/059).

There is little available information regarding human activity on the park before 1900.

## Shared-history culture

Guano was mined from some caves for fertilizer from 1914 to 1939. Limestone was mined in some areas from 1925 until 2004. Old limestone mine equipment including kilns remain at Pilkington's Quarry. In Cammoo sector, Chandelier Cave was previously a commercial tourist show cave.

Other historic interests include:

- the Archer brothers naming Mount Etna after its namesake in Italy
- popularity as a sightseeing destination from Rockhampton
- military use during World War II (commando training and munitions storage)
- organized recreational caving since the early 1960's
- community significance with resolution of conflict between industry, conservation and recreation.
- Some mining artefacts are now kept in local museums, while others remain on the park.
- Structures are of historical interest but may have considerable visitor safety risks (e.g. Pilkington's Quarry).

## Tourism and visitor opportunities

Recreational opportunities available for park visitors include:

- adventure caving—attractions include adventure and cave decorations or speleothems. These caves vary widely in their difficulty to access and traverse
- the Cammoo sector day-use area
- seasonal tours to observe the little bent-wing bats emerging from Bat Cleft
- birdwatching, bushwalking, nature study, photography and sightseeing.

The caves and cave wildlife, in particular the little bent-wing bats at Bat Cleft, are an internationally significant natural phenomenon. Access to Bat Cleft is only available through guided tours conducted by Queensland Parks and Wildlife Service (QPWS) between the months of November and February. Other caves also have seasonal closures to protect breeding colonies of ghost bats.

There is an opportunity to increase the profile of the park as one of the significant tourist attractions in the Central Queensland area. There is a developed day use area in the Cammoo sector of the park containing a carpark, toilets, barbeques and an information shelter. The area provides a location for groups gathering to undertake activities on the park (e.g. Bat Cleft tours). A short Class 3 (see Australian Walking Track Standards manual) walking track circuit from the Cammoo day use area introduces visitors to the parks habitats and natural values.

Mount Etna is one of the few places in Queensland where people can go recreational caving and abseiling. Managing these areas presents unique challenges such as visitor safety and particular visitor etiquette. Access to some caves is restricted due to fragile formations and for safety reasons. These caves are gated but visitor can gain access through a permit system.

A private tourist development with limestone show caves is situated outside the park.

## Education and science

Mount Etna Caves National Park has attracted the interest of natural science researchers from a number of fields. Research interest and activities on the park have tended to focus on the life cycles and conservation status of various species of cave dwelling bats, in particular the ghost bat and little bent-wing bat. Research has also been conducted on the palaeoecological significance of fossil deposits. The study of these fossils is revealing information about past climates and ecosystems and the climatic changes that have shaped the present day environment.

The park offers significant opportunities to conduct nature based and ecologically sustainable research into other natural phenomena on the park such as:

- physical processes that have formed the limestone karst landform and cave environments
- specialised cave animals that inhabit many of the caves, in particular invertebrates
- dry rainforest vegetation that occurs on the park
- landform rehabilitation and revegetation.

Information gathered through research may not only benefit ecosystem management in the park but also, if that information is made publicly available, it will improve visitor experience. QPWS wishes to encourage this interaction.

Mount Etna Caves National Park has long been a destination for school groups from the local area wanting to learn about cave environments. The park is an ideal subject for environmental education. Teaching children and students about the park's special features can help to develop community awareness of the area's ecological significance and may also encourage more commitment to park conservation and management. The inclusion of Cammoo Caves into the park provides new opportunities to encourage use of the park for environmental education.

## Partnerships

The Commonwealth Government National Reserve System Program, the State Government, Central Queensland Speleological Society (CQSS) and Pacific Lime, demonstrated long-term commitment to the park by providing financial assistance for the addition of the Cammoo sector. Over the last 30 years (1970–2000) caving enthusiasts and members of the local community have encouraged and facilitated expansion of the park to cover most of the karst landform in the vicinity of The Caves township. The park has potential to make significant contributions to the local economy of The Caves by encouraging visitors to the area.

QPWS employees have undertaken community consultation prior to commencing programs on the park.

## Other key issues and responses

### Fire management

A fire management system has been adopted statewide by QPWS which is the primary agency for fire management on protected areas and State forests. Fire strategies provide the overall framework and direction for fire management and are the foundation from which planned burn programs are developed. A fire management strategy needs to be developed for Mount Etna National Park.

Long-term fire management aims to maintain the current diversity of native plant and animal species while allowing for natural change to ensure the conservation of fire sensitive ecosystems. Fire influence on dry rainforest areas is a major concern. Fire destroys the edges of dry rainforest plant communities and leads to pest plants (mostly lantana *Lantana camara*) invasion in karst areas.

### Pest management

The park has an approved pest management strategy. Pest plants on the park include madeira vine *Anredera cordifolia*, rubber vine *Cryptostegia grandiflora*, lantana *Lantana camara* and collar grass (fountain grass) *Cenchrus setaceus*. All four pest plants are listed as Class 2 or Class 3 pest plants under the *Land Protection (Pest and Stock Route Management) Act 2002*. The former three are also listed as Weeds of National Significance (WONS).

Pest plant management programs have been implemented in Mount Etna, Pilkington's and Cammoo sectors requiring significant pest plant control and landscape and vegetation rehabilitation.

The impact of herbicides on the biota within caves is unknown.

Pest animals include red foxes *Vulpes vulpes*, wild dogs *Canis lupus familiaris* and cats *Felis catus*. These threaten wildlife, particularly wallabies, bettongs and other small species.

The park is partially fenced, which helps to prevent stock damaging habitat.

### Management capability

Managing a park where caves are the primary focus for conservation and visitor use requires specialised knowledge and skills. This applies both to understanding how to manage cave environments and also having the skills, fitness and experience to access caves on the park for management, monitoring and rescue purposes.

Assistance and advice on cave management is regularly sought from community organisations such as the Central

Queensland Speleological Society (CQSS), or from persons with caving expertise and advice in the local community.

The limestone mining operation adjacent to the park ceased in 2004.

## References

Australian Caver No 151 May 2000, Commemorative Edition, The Mount Etna Story.

Butz M 2004, National Recovery Plan for *Tectaria devexa*, Department of Environment and Heritage, Canberra.

Duncan A, Baker G.B. and Montgomery N 1999, The Action Plan for Australian Bats, Environment Australia, Canberra.

Environmental Protection Agency 2004, Procedure for entry and working in a confined space, Environmental Protection Agency, Brisbane.

Queensland Herbarium 2007, National Multi-species Recovery Plan for the cycads, *Cycas megacarpa*, *Cycas ophiolitica*, *Macrozamia cranei*, *Macrozamia lomandroides*, *Macrozamia pauli-guilielmi* and *Macrozamia platyrhachis*, Report to Department of the Environment and Water Resources, Canberra, Queensland Parks and Wildlife Service, Brisbane.

Queensland Parks and Wildlife Service 1993, Shades of Green, Exploring Queensland's Rainforests, Queensland Parks and Wildlife Service, Brisbane.

Queensland Parks and Wildlife Service 1994, Introducing Dry Rainforests. A Guide to the vine thickets and forests of Queensland's central coast and hinterland, Queensland Parks and Wildlife Service, Brisbane.



## Management directions

Desired outcomes	Actions and guidelines
<p><b>Landscape</b></p> <p>Landscape integrity, including visual amenity, is retained.</p> <p>Public use and management practices have no impact on fossil sites.</p> <p>Disturbed landscapes are restored to their natural condition.</p>	<p>Minimise visual impact from infrastructure.</p> <p>Regularly assess landscapes on the park (particularly caves) to monitor natural condition.</p> <p>Minimise impacts on the cave systems from rehabilitation works.</p> <p>Co-operate with other organisations in the rehabilitation of mined areas within and adjacent to the park.</p>
<p><b>Regional ecosystems</b></p> <p>Regional ecosystems are maintained and where necessary rehabilitated.</p>	<p>Maintain the diversity of regional ecosystems and improve the health of degraded areas through appropriate pest and fire management.</p>
<p><b>Native plants and animals</b></p> <p>Populations of <i>Tectaria devexa</i> var. <i>devexa</i> are secure.</p> <p>Extent of semi-evergreen vine thicket is maintained to at least the area mapped in 1991.</p> <p>Revegetation programs do not adversely impact the integrity of native plant communities.</p> <p>Bat roosting and breeding populations remain free from adverse human impact.</p> <p>Tours continue and have no adverse impacts on bats and other park values.</p> <p>Impact on specialised cave dwelling animals is limited and sustainable.</p>	<p>Map and monitor the distribution of <i>T. devexa</i> var. <i>devexa</i> in accordance with the National Recovery Plan.</p> <p>Map and monitor the extent of semi-evergreen vine thicket on the park. Seek assistance from the Ecological Assessment Unit for this project.</p> <p>Restrict collection of propagation material for use in revegetating the park or adjacent areas and ensure resultant impact on native plant communities is minimised.</p> <p>Develop and implement a landscape rehabilitation and revegetation program for disturbed sites on the park.</p> <p>Implement the Action Plan for Australian Bats (Action Plan) which discusses recovery outlines and taxon summaries for Australian bats, including the ghost bat and little bent-wing bat.</p> <p>Use the Action Plan to guide management, particularly in relation to ghost bat.</p> <p>Monitor bat populations, particularly the little bent-wing and ghost bats to enable early detection of declines and implementation of the Action Plan.</p> <p>Prevent disturbance to bat roosting and breeding sites by: restricting visitor access to caves inhabited by bats during critical breeding periods (particularly Johannsens Cave and Bat Cleft)</p> <p>permanent or seasonal restrictions (see Appendix 1—Classes for cave protection and cave hazard/risk ratings).</p> <p>Collate information from bat research projects into formats useful for management.</p> <p>Monitor the groups and identify any negative impacts that may eventuate from repeated tours.</p> <p>Encourage and allow access for the implementation of research programs that will benefit management. Incorporate new information into plans and strategies and WildNet.</p>
<p><b>Aboriginal culture</b></p> <p>Indigenous use and significance of the area is understood and acknowledged.</p> <p>Traditional Owners participate in management of the park.</p>	<p>Continue to develop and maintain working relationships with Traditional Owners regarding joint management of protected areas within their country.</p>

Desired outcomes	Actions and guidelines
<p><b>Shared-history culture</b>  Historic artefacts are conserved.  Historic artefacts do not pose an injury threat.  Use of the park has no adverse impact on historical remains and artefacts.</p>	<p>Conserve historic artefacts in accordance with the Protection and Management of Archaeological Heritage and the Burra Charter.  Exclude visitors from areas with historical artefacts that may pose a safety risk.</p>
<p><b>Tourism and visitor opportunities</b>  A range of nature-based recreation opportunities highlight the park's special character and complement other local and regional opportunities.  Recreation and tourism use of the park increases in a sustainable manner.  Visitor experience is of high quality.  No unsafe recreational or tourism activities occur.  Biologically sensitive areas are protected from recreation and tourism.  Community is aware of park values and broader conservation messages.</p>	<p>Maintain visitor services and facilities that are appropriate for the desired recreational setting.  Minimise the impact of visitors undertaking caving and ensure they are aware of safety issues and appropriate behaviour in caves (for example, provide covers with relevant interpretive material).  Ensure warnings at the entrances to Johannsens Cave, the Bat Cleft track and the Cammoo sector indicate the dangerous landscape and recommend visitors obtain further information at the Cammoo day use area.  Manage recreational and adventure caving:  by monitoring the level of activity and impacts in accordance with the Classes for cave protection and cave hazard/risk ratings, shown in Appendix 1  by maintaining an updated register of cave classes and caves hazard/risk ratings (which will be available for public viewing upon request). Caves may be in more than one class and may change classes subject to new information on the cave, its wildlife, level of visitor use or the impacts resulting from visitor use.  Continue the declaration of the Mount Etna sector of the park as a restricted access area between November and February each year to protect the little bent-wing bats at Bat Cleft. During this period, access will only be available to those people undertaking the seasonal guided tour to Bat Cleft or, on rare occasions, those who have been granted a restricted access permit.  Restrict Bat Cleft group sizes to a maximum of 15.  Develop 'cave profiles' for Class C Conservation Caves. These profiles will set conditions for visitors as well as management and monitoring requirements for QPWS employees.  Existing access arrangements will be maintained.  Review the strategies for cave classification and adventure caving as required to establish whether public use of the caves is: <ul style="list-style-type: none"> <li>• causing excessive damage to cave formations and natural values</li> <li>• resulting in public safety incidents or concerns.</li> </ul> Alternative management strategies for adventure caving on the park may be developed and implemented subject to this review.  Prohibit surface abseiling or rock climbing as recreational activities.  Consider applications for commercial activity permits for adventure caving on a case-by-case basis. Access to a cave for a commercial activity will not be permitted unless a 'cave profile' has been developed by QPWS. This cave profile will set limits and conditions of use and assist QPWS staff to</p>

Desired outcomes	Actions and guidelines
	<p>monitor visitor impacts from commercial activities.</p> <p>Establish strong links between recreation, environmental education and research to promote conservation messages to a diversity of visitors.</p> <p>Maintain and enhance opportunities for safe and ecologically sustainable recreation and tourism including adventure caving, day use recreation, bat emergence tours and nature study that are significant in a regional context.</p>
<p><b>Education and science</b></p> <p>QPWS encourages and facilitates use of the park for environmental education.</p> <p>QPWS develops close relationships with local schools and encourages sustainable use of the park as a location for outdoor nature based education activities.</p> <p>Environmental education and interpretation is promoted under appropriate safety guidelines.</p> <p>QPWS encourages and facilitates nature based and ecologically sustainable research.</p> <p>Information collected by researchers using the park is communicated to QPWS managers to improve park management.</p> <p>Research information is communicated to visitors to promote conservation of the park's natural and cultural resources.</p> <p>Interaction occurs between researchers, schools and visitors to the park.</p>	<p>Encourage partnerships with organisations and individuals who wish to conduct education and nature based and ecologically sustainable research on the park.</p> <p>Promote the interaction of research, education and interpretation activities on the park.</p>
<p><b>Partnerships</b></p> <p>There are long-term opportunities for community participation in QPWS management of the park.</p> <p>The local community is informed about QPWS activities on the park that may affect them.</p> <p>Recreational and tourist use of the park benefits the local community.</p> <p>Recreation and tourism facilities developed on the park complement rather than compete with the adjacent commercial tourist cave operation.</p>	<p>Continue to consult with the local community over management issues or programs that may impact on neighbours and the local township.</p> <p>Investigate opportunities for the local community to maintain park facilities.</p> <p>Foster and maintain relationships to encourage long-term opportunities for community participation in park management.</p>
<p><b>Fire management</b></p> <p>There is an active and well managed fire program.</p>	<p>A fire management strategy will be developed for Mount Etna.</p> <p>Exclude fire from karst and dry rainforest areas.</p> <p>Planned burning is conducted in accordance with the approved fire management strategy.</p> <p>Maintain fire control lines along the park boundary.</p>

Desired outcomes	Actions and guidelines
<p><b>Pest management</b></p> <p>Cave biota is unaffected by herbicides.</p> <p>The impact of pests on native plants and animals is minimised.</p> <p>Local community supports and where possible assists in feral animal control.</p>	<p>Regularly inspect potential infestation sites e.g. track network and visitor use areas for new weed infestations and control as required. Monitor for reinfestation of cats claw creeper <i>Macfadyena unguis-cati</i> at sites of previous infestation.</p> <p>Herbicides used are restricted to those with minimal residual effect and leaching capacity.</p> <p>Monitor research into herbicide impacts on cave biota.</p> <p>Implement any pest animal control programs in cooperation with neighbours where appropriate.</p> <p>Consult with the local community prior to undertaking baiting programs.</p> <p>Implement an education program for neighbours including 'The Caves' residents to reduce the number of domestic animals entering the park.</p>
<p><b>Management capability</b></p> <p>QPWS employees will be encouraged to improve their knowledge in caves and karst management.</p> <p>QPWS employees apply workplace health and safety procedures when entering and working within caves.</p> <p>QPWS, in partnership with emergency service groups and CQSS, have current coordinated cave rescue procedures and undertake regular cave rescue training exercises.</p>	<p>Regularly monitor impacts from visitor use.</p> <p>QPWS employees will abide by regional procedures developed for entry and working in a cave.</p> <p>Park employees will develop coordinated cave rescue procedures using available emergency services and volunteer groups.</p>

## Tables – Conservation values management

**Table 1: Endangered and of concern regional ecosystems**

Regional ecosystem number	Description	Biodiversity status
11.3.1	<i>Acacia harpophylla</i> and/or <i>Casuarina cristata</i> open forest on alluvial plains.	endangered
11.11.7	<i>Eucalyptus fibrosa</i> subsp. (Glen Geddes), <i>E. xanthope</i> woodland on serpentinite.	of concern

**Table 2: Species of conservation significance**

Scientific name	Common name	Nature Conservation Act 1992 status	Environment Protection and Biodiversity Conservation Act 1999 status	Back on Track status
<b>Plants</b>				
<i>Corchorus hygrophilus</i>	-	vulnerable	-	medium
<i>Cycas ophiolitica</i>	Marlborough blue	endangered	endangered	critical
<i>Graptophyllum excelsum</i>	-	near threatened	-	low
<i>Tectaria devexa</i> var. <i>devexa</i>	-	endangered	endangered	low
<b>Animals</b>				
<i>Dasyurus hallucatus</i>	northern quoll	least concern	endangered	medium
<i>Lophoictinia isura</i>	square-tailed kite	near threatened	-	low
<i>Macroderma gigas</i>	ghost bat	vulnerable	-	critical

**Table 3: Species listed in international agreements**

Scientific name	Common name	Bonn	CAMBA	JAMBA	ROKAMBA
<i>Merops ornatus</i>	rainbow bee-eater	-	-	✓	-
<i>Monarcha melanopsis</i>	black-faced monarch	✓	-	-	-
<i>Rhipidura rufifrons</i>	rufous fantail	✓	-	-	-
<i>Symposiarchus trivirgatus</i>	spectacled monarch	✓	-	-	-

Bonn – Bonn Convention; CAMBA – China–Australia Migratory Bird Agreement; JAMBA – Japan–Australia Migratory Bird Agreement; ROKAMBA – Republic of Korea–Australia Migratory Bird Agreement