

Mackay Islands Protected Areas and Adjoining State Waters

Management Statement

2013

The Department of Environment, Science and Innovation acknowledges Aboriginal peoples and Torres Strait Islander peoples as the Traditional Owners and custodians of the land. We recognise their connection to land, sea and community, and pay our respects to Elders past and present.

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 Mackay Islands Protected Areas and Adjoining State Waters Management Statement 2013 has been extended in 2024 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:	<p>Brampton Islands National Park—1,010ha</p> <p>Middle Percy Island Conservation Park—316ha</p> <p>Newry Islands National Park—464ha</p> <p>Northumberland Islands National Park—1,720ha</p> <p>Percy Isles National Park—3,518ha</p> <p>Smith Islands National Park—1,190ha</p> <p>South Cumberland Islands National Park—3,160ha</p> <p>Yuwi Paree-Tooloon National Park—34.1ha</p> <p>Great Barrier Reef Coast Marine Park adjoining QPWS estate</p>
Bioregion:	Central Queensland Coast
QPWS region:	Great Barrier Reef Marine
Local government estate/area:	Mackay Regional Council
State electorate:	Whitsunday, Mirani

Legislative framework

✓	<i>Aboriginal Cultural Heritage Act 2003</i>
✓	<i>Australian Heritage Council Act 2003</i>
✓	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)</i>
✓	<i>Great Barrier Reef Marine Park Act 1975</i>
✓	<i>Native Title Act 1993 (Cwlth)</i>
✓	<i>Nature Conservation Act 1992</i>
✓	<i>Queensland Heritage Act 1992</i>
✓	<i>Historic Shipwrecks Act 1976</i>
✓	<i>Marine Parks Act 2004</i>

Plans and agreements

✓	Bonn Convention
✓	China—Australia Migratory Bird Agreement
✓	Japan—Australia Migratory Bird Agreement
✓	Republic of Korea—Australia Migratory Bird Agreement

Thematic strategies

✓	Whitsunday and Mackay Islands Visitor Management Strategy
✓	Level 1 and Level 2 Pest Management Strategy

Vision

As part of the Great Barrier Reef World Heritage Area, the Mackay Islands will preserve habitat and species of state, national and international conservation significance.

Planning for the Mackay Islands management area is undertaken with consideration to adjoining areas. To the north the Whitsunday Islands are a key tourism destination primarily managed for the commercial tourism industry focused on island resorts. To the south Curtis Island is the centre of industrial development. The Mackay Islands are uniquely placed to provide an alternative natural visitor experience and recreational opportunities that are in keeping with the undeveloped character of the management area.

Traditional Owner aspirations are met by establishing formal agreements to ensure that cultural heritage values are identified, protected and appropriately managed.

Partnerships with local community, neighbours, research institutes and conservation groups are established and contribute to the area's ongoing management.

Conservation purpose

Starting in 1936, islands offshore from Mackay have been regularly dedicated as protected area. The most recent addition to the protected area estate was Middle Percy Island Conservation Park in 2010.

The Great Barrier Reef Coast Marine Park, which surrounds the islands, gives recognition and protection to the area's significant marine values.

The objectives of management for the protected areas of the Mackay Islands and adjoining State waters are to:

- protect and, where possible, enhance ecosystem processes and natural integrity of habitats and species of conservation significance
- incorporate the interests and rights of Traditional Owners by cooperatively protecting and managing cultural heritage and natural resources of significance
- Brampton Island's recreational opportunities will continue to be the management area's premier nature based tourism and visitor attraction
- promote community awareness, understanding and appreciation and provide opportunities for involvement in management and utilise organised community and volunteer groups like Mackay Turtle Watch and Wild Mob, where possible
- continue working with volunteers on Newry Island and encourage the formation of Friends of Parks for other islands
- continue to maintain islands in their natural state by presenting and protecting outstanding values through utilising best practice pest and fire management techniques
- support a range of sustainable recreational experiences for visitors
- continue to build and enhance cooperative relationships with park neighbours
- identify knowledge gaps and encourage scientific research that addresses these gaps and contributes to the understanding and management of the area and utilise this information to provide direction and actions to protect the natural, cultural and social values of the management area.

Protecting and presenting the area's values

Landscape

The Mackay Islands and surrounding waters are part of the Great Barrier Reef World Heritage Area. Mackay Islands are located off the east coast of central Queensland, stretching from St Lawrence to Proserpine, and consist of nine national parks and a conservation park across 77 continental islands and islets. Most of the Mackay Islands are considered semi-remote due to access difficulties and their distance from shore (e.g. Bushy Island is 88km offshore); the inshore Newry Islands are an exception and hold broad visitor appeal due to all weather access by smaller trailer-launch boats.

Natural landscapes and high scenic values are a result of the underlying geology, natural ecosystems and diverse landscapes. Numerous remote islands have stunning geological topography features including steep rugged cliffs, rocky peaks and outcrops. Sheltered bays and quiet sandy beaches, rocky shores, and headlands to estuaries and associated intertidal flats and mangroves of the Mackay Islands form an integral part of the outstanding landscape values of the Mackay region. The Mackay Islands are the result of various sequential geological events and numerous volcanic eruptions. The Mackay Islands are mountain tops and ridges of an old landscape which was inundated by the sea in the last 6,000 to 10,000 years (Willmott 2006).

Percy Isles, South Cumberland Islands and Brampton Islands national parks are noted for their scenic amenity and their protected anchorages. Rocky headlands, windswept slopes, dotted with hoop pines, open grasslands, woodlands, sheltered bays, long sandy beaches and fringing reefs make these islands some of the most scenic along the Queensland coast.

Brampton Peak is the management area's highest point and rises to 214m above sea level. Bushy Islet in South Cumberland National Park is the highest cay in the Great Barrier Reef World Heritage Area at 12m above its surrounding reef flat.

A significant tidal range contributes to the uniqueness of the Mackay Islands. A tidal range of greater than four metres creates strong currents between several islands, notably Egremont Passage (between Keswick and St Bees islands) and between Brampton and Carlisle islands. An erosion prone area is located between Brampton and Carlisle islands and on a low tide it is possible to walk between these islands.

Regional ecosystems

The Mackay Islands are located in the Central Queensland Coast Bioregion and boast an array of high biodiversity values. A range of habitats including dry sclerophyll rainforest to coastal vine thickets, beach scrub communities, complex wetlands and estuaries leading out into marine systems and Great Barrier Reef contribute to these values. Vegetation on the islands has been mapped from aerial photography, but has not been comprehensively ground truthed. Information gaps have been identified and future surveying and research of the area is encouraged. Mackay Islands contain many endemic species, and sub-species worthy of additional research and study.

Mackay Islands conserve 41 regional ecosystems, of which 11 are endangered and 13 have of concern status (Table 1). The area is recognised as being nationally important for shorebirds, in the Directory of Important Wetlands of Australia representing marine and estuarine wetlands of Central Queensland Coast Bioregion.

Of concern regional ecosystems comprising of eucalypt low woodlands, open-forest and *Themeda triandra* grasslands can be exposed on the headlands of the Mackay Islands. Emphasis on maintaining these ecosystems is required given the limited representation on islands and the current threatening processes from feral animal grazing and pest plant encroachment.

South Island located in the Percy Isles National Park is part of the Central Queensland serpentine rock formation. Serpentine vegetation consists of eucalyptus woodlands or open forest dominated by ironbarks and bloodwoods over a grassy ground layer containing many grass trees. This ecosystem is also notable for the presence of grass trees and cycads, particularly *Cycas ophiolitica*. There is a general lack of understanding of the threatened ecosystem, its biological species and different soil properties. In the past the ecosystem, on the mainland, has been cleared due to population expansion and infrastructure development. In some parts it has been adversely affected by inappropriate fire regimes.

The significant beach scrub communities of microphyll vine forest on the Mackay Islands' sandy beach ridges and dunes are listed as critically endangered under the *Environmental Protection and Biodiversity Conservation Act 1999*. These communities provide critical habitat for birds including the rose-crowned fruit dove *Ptilinopus regina*, and other migratory bird species. This habitat has also been reported to support the coastal sheath-tail bat *Taphozous australis*.

Plants and animals

Species on the Mackay Islands include:

- Moreton Bay ash *Corymbia tessellaris*
- poplar gum *Eucalyptus platyphylla*
- ironbark *Eucalyptus drepanophylla*
- Queensland blue gum *Eucalyptus tereticornis*
- Mackay cedar *Paraserianthes toona*
- tulip oak *Argyrodendron* sp.
- the near threatened *Paspalidium scabrifolium*.

These environments provide habitat for the locally significant southern boobook *Ninox boobook* and koala *Phascolarctos cinereus*. Stands of hoop pine *Araucaria cunninghamii* are characteristic of the islands.

South Island in Percy Islands National Park supports the vulnerable serpentine bloodwood *Corymbia xanthope* and serpentine ironbark *Eucalyptus fibrosa* sub sp *fibrosa*, and the near threatened species *Stackhousia tryonii*.

Mangroves and brackish paperbark swamps occur in lowland areas and provide habitat for the vulnerable water mouse *Xeromys myoides*, crocodile *Crocodylus porosus*, Pacific golden plover *Pluvialis fulva*, the locally rare swamp rat *Rattus lutreolus* and pale field rat *Rattus tunneyi*. Bushy Islet is a unique coral cay with a *Pisonia grandis* forest and along with neighbouring Redbill Island supports a diversity of coastal birds.

Many plant species in the Mackay Islands are at, or near, their distribution limits. *Brachychiton bidwillii* is found close to its northern distribution in the dry vine thickets on Percy Isles National Park. Casuarina closed forests on Percy Isles, Brampton Island and South Cumberland Islands national parks support *Leptospermum anfractum* which is at its southern limits. Cycads are listed as species of global decline in the National Multi-species Recovery plan for Cycads. These species persist in mosaic of unconnected local populations and is under threat from various land management practices. Such threats increase the importance of these island refugia. The diminutive liane *Aristolochia thozetii* occurs on St Bees Island. This species is generally found in Cape York, Rockhampton and on St Bees Island.

Many of the ecosystems present in the Mackay Islands are fire sensitive and require specific fire management regimes to protect the vegetation communities and the animals reliant of these habitats. In addition, fire needs to be excluded from some rainforests to prevent edge damage and reducing the rainforest extent in the islands such as on St Bees Island. Biosecurity and preventative measures to reduce the risk of pest transmission to the islands presents an ongoing management challenge and priority.

There is a high probability that some species on the islands have evolved special genetic characteristics within the existing plant and animal communities (such as *Albizia* sp. and *Berrya rotundifolia* recorded on Percy Isles National Park).

The management area supports a range of species of conservation significance, including migratory species listed under the (Commonwealth) *Environment Protection and Biodiversity Conservation Act 1999* (Tables 2 and 3). Many species are further protected by international conventions, such as the Bonn Convention (Bonn), China-Australia Migratory Bird Agreement (CAMBA), Japan-Australia Migratory Bird Agreement (JAMBA) and Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

A number of islands and rocks in the management area are important for seabirds, shorebirds and several migratory species and provide habitat to birds of state, national, and international conservation significance (Tables 2 and 3). Migratory coastal birds make long annual flights between their international breeding grounds (China, Japan, Korea and northern Russia) and Australia where they spend their non-breeding season (September to April). Threats known to affect migratory coastal birds include coastal development, human disturbance and predation by feral animals. Threatened and migratory shorebirds species such as grey-tailed tattler *Tringa brevipes*, eastern curlew *Numenius madagascariensis*, whimbrel *Numenius phaeopus*, and bar-tailed godwit *Limosa lapponica* and resident coastal birds, such as vulnerable beach stone-curlews *Esacus magnirostris* as well as near threatened eastern curlews *Numenius madagascariensis*, and sooty oystercatchers *Haematopus fuliginosus* inhabit foreshore and beach habitat on the islands. For many coastal birds, protecting nesting, roosting and feeding sites from human disturbance is vital. Disturbance of shorebirds at roost often lead to loss of critical energy and accelerates fatigue which impacts their ability to make the return migration. The impact of disturbance will need to be considered in managing future use, particularly at Bushy Islet coral cay which supports an array of coastal birds.

Bushy Islet is the only wooded cay within a 900km section of the Great Barrier Reef World Heritage Area. Bushy Islet contains a mono-specific stand of *Pisonia grandis* and supports a population of orange-footed scrubfowl *Megapodius reinwardt*. Bushy Islet is an important green turtle *Chelonia mydas* rookery, and supports a small aggregation of nesting loggerhead turtles *Caretta caretta* (Limpus 2008). Bushy Islet is an important seabird roosting area, where thousands of black noddies *Anous minutus* roost overnight. A seasonal closure exists for the beaches and rookeries on the islet from October 1 to March 31 to protect nesting birds. In addition, the Great Barrier Reef Marine Park Authority zoning around the islet is a Marine National Park (Green) zone, supporting the migratory and coastal bird habitat of the area. The Whitsunday and Mackay Islands Visitor Management Strategy identifies the area to be protected, thereby restricting commercial operators to this islet. Due to Bushy Islet's geological and natural values, particularly seabird roosting with minimal introduced pests, it is important to ensure inappropriate visitor and management activities do not compromise the islets natural integrity. The adjoining unallocated State land Redbill Island is an important area for the bridled tern *Onychoprion anaethetus* and white-bellied sea-eagle *Haliaeetus leucogaster* and has a significant population of roosting and nesting eastern reef egrets *Egretta sacra*.

Coral reefs and marine areas around the Mackay Islands provide shelter and food for reef and pelagic animals, and are recognised as ecologically significant. Dugong *Dugong dugon* are found in waters adjoining the management area. Dugong populations in the southern Great Barrier Reef are severely depleted and both dugong and turtles are under pressure from habitat loss and sea grass bed decline, gill netting, illegal or unsustainable hunting, climate change, coastal development and vessel strike (GBRMPA 2009). Newry Islands National Park is located entirely in a Dugong Protection Area—Type A and the Repulse Bay Fisheries Habitat Area. Whales such as

humpback *Megaptera novaeangliae* and the dwarf minke *Balaenoptera acutorostrata* are known to traverse the waters during migration. Cetacean researchers hypothesise that the area off Mackay is an important humpback whale wintering area (Smith *et al.* 2012).

The management area is an important turtle feeding and nesting ground and many species of sea turtle can be found including the vulnerable green turtle *Chelonia mydas*, hawksbill turtles *Eretmochelys imbricata*, flatback turtles *Natator depressus*, and the endangered loggerhead turtle *Caretta caretta*, and leatherback turtle *Dermochelys coriacea*. Beach and dune systems provide critical nesting areas for loggerhead, flatback and green turtles in the management area. Changes in light horizon from vessels and island infrastructure and the potential for increased human disturbance are recognised as impacting upon the success of marine turtle nesting in the region.

Main threats to these turtle species are climate change, coastal development, water pollution, marine debris ingestion, disturbance from recreation activities, predation of eggs by introduced species, entanglement from discarded nets and fishing gear, shark nets, boat strikes, light pollution, and smothering of seagrass beds by sediment (GBRMPA 2009; Limpus 2007). Visitor disturbance is a particular threat in summer and autumn during the nesting and hatching season and seasonal closures apply to some beaches.

Koalas *Phascolarctos cinereus* inhabit St Bees, Brampton, and Newry islands. The koala population on Brampton and St Bees islands were introduced to provide an attraction to tourists visiting the islands. *Eucalyptus tereticornis* is critical to the survival of the koala population. Successful recruitment of this species is critical to the long-term survival of the species.

Percy Isles National Park supports the southern extent for many insects and the Percy Island flying-fox or dusky fruit bat *Pteropus brunneus* is known from a sole specimen collected in 1859, the species is now presumed extinct.

St Bees Island was declared as part of the South Cumberland Islands National Park in 2000 for its conservation values including the koala. The island supports a national significant population of koalas and is being monitored and managed by Queensland Parks and Wildlife Service (QPWS) in partnership with Central Queensland University and Central Queensland Koala Research Centre. The significance of the koala population on St Bees Island is that the population appears to be free of many of the problems often suffered by other isolated koala populations.

The major management activities that will aid in maintaining native species diversity and numbers are upholding strong biosecurity and pest hygiene provisions, the control of existing pest plant and animal species and implementing appropriate fire regimes. By maintaining biosecurity measures to prevent the introduction of feral species such as tramp ants, cane toads, and also soil organisms or other diseases, the risks that threaten native flora and fauna are reduced.

Aboriginal culture

The relationship of Traditional Owners with their country is a special one, the whole landscape having special importance. Traditional Owners are an important part of effectively managing the area with continued involvement in its cultural and sustainable use.

A number of native title claims exist over sections of the management area including the Yuibera people (QC98/37) and the Darumbal people (QC97/21—QUD6131/98—QUD6001/99). Both the Darumbal and Yuibera people have a strong connection with the islands in this area. There is evidence of Indigenous use throughout the area from shell midden, quarry, fish trap and scar tree sites. A possible shell midden and an isolated stone artefact have been observed on Flat Top Island.

The Ngaro people also have a strong connection to the northern islands and were sea country specialists using the rich marine resources of the intertidal zones, fringing reefs, and surrounding seas to support their community. Pre-historic sites including shelters, artefacts, shell and stone scatters, and art sites are found throughout the islands further north. A formal archaeological survey of some of the islands has been conducted and recorded; it is thought many additional sites exist.

Traditional land management practices included regular burning of islands for access across island interiors, hunting for mammals, reptiles and birds, to protect and promote the growth of plants and plant foods and to fulfil customs such as cleansing the land (Brennan 1986). Additional cooperative investigations are required to gain a more comprehensive understanding of Indigenous use in the management area such as walking the country and mapping cultural sites. Given the antiquity of some of the management area's dune formations, it is possible that any archaeological material located may be of considerable age.

Main threats to Indigenous cultural heritage sites in the area include natural coastal erosion processes, inappropriate vehicle or pedestrian access and illegal removal of artefacts. Consultation with Traditional Owners about managing and protecting their heritage will continue. This consultation aims to strengthen cultural connections and ensure appropriate measures are taken to protect known cultural sites. It is anticipated that

Traditional Owners and QPWS will develop and implement measures to manage threats to Indigenous cultural heritage sites through agreements such as a Memorandum of Understanding or Traditional Land Use Agreement.

QPWS and Great Barrier Reef Marine Park Authority will work closely with Traditional Owners, Aboriginal and Torres Strait Islander peoples and other relevant groups to ensure that traditional use of marine resources are managed at sustainable levels.

Shared-history culture

Mackay Islands have a significant historical association relating to tourism and settlement. The Cultural Heritage Information Management System holds data and information to places listed on the Queensland Heritage Register and places of potential cultural heritage significance.

Many historical accounts record a long history of use of the islands dating from European settlement to the present with many of the islands having seen attempts of settlement beginning in the late 1800s for grazing, timber harvesting, homestead and tourism leases.

Shared history of the area in general includes:

- In 1802, Matthew Flinders visited the Percy Islands during his circumnavigation of Australia. Middle Percy Island was used for supplying water and timber to ships.
- Western Bay near Middle Percy Island Conservation Park is an internationally recognised destination for vessels cruising coastal Queensland. Many hundreds of memorabilia items have been left by visitors either in the "A" frame or telephone hut since the early 20th century.
- The Middle Island homestead has been nominated for the Australian Heritage Database and is waiting assessment.
- Settlement history of grazing and pastoral activities on the islands. Brampton, St Bees, Keswick, Percy and Northumberland islands, except Prudhoe and Curlew were grazed (Brennan, 1986).
- Coconut palms on Scawfell, Wigton, Cockermouth, Goldsmith, Carlisle, Brampton and Keswick islands are evidence of the Queensland Government coconut plantation introduced to the islands from 1889-1902 (Brennan 1986).
- Penrith and Flat Top islands and Pine Islet have historic lighthouses of state and commonwealth significance. Flat Top Island lighthouse is no longer operational. However, listed in the Register of National Estate and State significant cultural heritage database. The wharf rock wall and pylons still exist.
- A number of ships have been wrecked in and around the management area and are protected in accordance with *Queensland's Heritage Act 1992* and *Historic Shipwrecks Act 1976*. Shipwrecks including the *Llewellyn*, sunk in 1919 near St Bees Island.

Much of the European settlement history of the area is not represented by tangible remains but many references detail settlement and history of the area such as Brennan 1986, Blackwood 1997 and Colfelt 2012 to preserve this history. Historical sites are generally recorded and left to degrade naturally unless the site has been assessed as highly significant.

Tourism and visitor opportunities

The majority of the Mackay Islands are semi remote due to the distance from shore (e.g. Bushy Island is 88km offshore) and the open sea crossings which inhibits smaller boats from accessing islands. Sheltered anchorages at some of the larger islands (Middle Percy, Scawfell, Brampton and Goldsmith) are enjoyed by the yachting community (including larger motor vessels) whilst transiting the coastline each year. It is possible to access the Newry Islands year round by small boat due to its close proximity to the mainland.

The QPWS *Whitsunday and Mackay Islands Visitor Management Strategy 2007* provides a framework for sustainable tourism and visitor use by applying a system of visitor management settings to island visitor sites to guide management decisions, permit assessments, site planning and facility development. Each visitor site is classified and managed according to these settings.

In general, most sites are under-utilised thus providing scope for increase in visitor use, particularly Refuge Bay, Scawfell Island. There are approximately 30 commercial activity permits already issued with scope for more permits if demand arises.

Visitors can generally expect a remote and natural experience with basic facilities and a small number of walking tracks with highly scenic views. Values of the area are presented to visitors through a number of communication mediums including on-site information shelters, interpretation signs, pre-visit brochures and park guides. Recreational opportunities include picnicking, bushwalking, wildlife and bird watching, camping, photography, along with water-based activities such as reef appreciation, diving, snorkelling, fishing, scenic boating, and yachting.

Access to the management area is primarily by boat; however; aircraft that land on Brampton and Keswick islands provide access to the area. Thirteen camping areas along with additional day-use sites are supported by basic visitor facilities ranging from bush camping to sites with toilets, picnic tables, shelters and visitor information displays. Generally, visitors are to be self-reliant when visiting the area.

Education and science

QPWS works in collaboration with Central Queensland Koala Conservation Association and Central Queensland University in research of the koala population, health and ecology on St Bees, Newry and Brampton islands. This research will assist in QPWS's understanding and management of island koala populations. An authority under the Nature Conservation Regulation 2006 exists for the purpose to establish a temporary koala research facility on St Bees Island until 2022. An environmental management plan will be prepared for the site prior to construction.

Research required to help QPWS manage the Mackay Islands includes: assessments of visitor expectations and experiences; impacts of permitted uses and recreation activities on natural, cultural and social values; the role fire plays in maintaining vegetation communities; cultural sites and relic locations; determining the accuracy of island vegetation mapping; comprehensive fauna and flora surveys for islands including focus on special endemism value of the area; integrated species management, particularly the island based Koala populations; and building resilience of the regionally significant ecosystems such as open forest *Casuarina equisetifolia* on Yuwi Parea-Toolkoon National Park. Indigenous landscapes, places and objects may require research to ensure their protection and understanding in collaboration with Traditional Owners.

Ongoing research and monitoring programs are valuable to establish and incorporate into adaptive park management. Research has been limited by logistics of access to the area; however, participation and information sharing with research institutions is highly encouraged. Projects and working groups that develop strategic priorities such as biosecurity protection, migratory species research and island koala management can strengthen QPWS relationship with local government, community, tourism groups, universities, GBRMPA, Traditional Owners and scientists will be investigated and enhanced.

Partnerships

Efficiencies in resource sharing, improved communications, decision making and enhanced on-ground outcomes is to be facilitated, where possible, through working partnerships. To achieve effective management of the area, QPWS strives to work closely with other government departments in undertaking joint compliance patrols, and maintaining a strong communication network with the tourism industry and natural resource management groups. Effectively managing the area also requires cooperation with neighbours to address issues of common concern, such as fire, pests and infrastructure.

A working relationship with the Traditional Owners, Ngaro, Darumbal, and Yuibera peoples, is essential so that their views and aspirations for the land and surrounding waters can be included in planning and management.

A successful pest plant management program at Newry Islands National Park has been in place for many years. The Newry Islands Volunteer Group provides valuable support and on-site management, enabling and encouraging people to become actively involved in conservation work. This program will continue and its replication in other areas will be encouraged.

A working partnership with the GBRMPA presently assists with unifying operational management of the adjoining Great Barrier Reef Coast Marine Park, Great Barrier Reef Marine Park (Commonwealth) and Great Barrier Reef World Heritage Area.

The koalas on St Bees, Newry and Brampton islands are being monitored and managed by QPWS in partnership with Central Queensland University and Central Queensland Koala Research Centre.

Other key issues and responses

Pest management

Pests have been introduced to the islands through; historic grazing and resort developments, later day garden escapees, by wind and birds, by incidental transport by visitors and barge materials. The management area is significant for seabirds, turtles and unique *Pisonia grandis* forests (on Bushy Islet). Invasive species such as cane toads *Rhinella marina*, mice *Mus musculus*, rats *Rattus* spp, invasive ants and pest plants such as cobblers pegs, *Bidens pilosa* and Mossman river grass, *Cenchrus echinatus* threaten these natural ecosystems.

Pest management strategies have been developed to prioritise regional pest plant and animal controls, guide operational work plans and evaluate program effectiveness. A Level 1 pest management strategy for the Central Queensland Region (Marine Parks) guides pest management programs across the region. A Level 2 pest

management strategy provides more detailed direction for scheduling pest management activities across the Mackay Islands. Mackay and Isaac regional councils' pest management plans will also assist in prioritising pest plant and animal control actions. Ongoing monitoring is a recognised a key component determining pest management effectiveness, as is education to park users and neighbours in reducing the spread of pests.

Cooperation with neighbours, other agencies and community groups is considered vital to achieve effective and integrated pest management across the Mackay Islands. Lessees and other authority holders on QPWS estate also have responsibility for the implementation of pest management actions.

Pest plant species include Weeds of National Significance Class 3 lantana *Lantana camara*, Class 2 prickly pear *Opuntia* sp., harrisia cactus *Eriocereus* spp., painted spurge *Euphorbia cyathophora*, Class 3 Singapore daisy *Sphagneticola triobata* and cobbler's peg and other locally significant species such as caltrop *Tribulus* spp., and Mossman River grass. Recently rubbervine *Cryptostegia grandiflora* has been located on Brampton Island and is of urgent concern. Rubbervine is a vigorous woody climber that can smother vegetation, form dense thickets and alter vegetation structure. These pest plants compete with and often eventually displace native species.

Of particular management and operational interest are campgrounds, tracks and lease areas such as Brampton and Middle Percy islands. Here many pest species are present due to historic uses. Many pest plant species found on these islands' lease areas pose a significant threat to adjacent park areas and neighbouring islands through translocation by wind, water, visitors or birds. Pest plants impact on bird and turtle nesting habitat on the islands, and alter native vegetation communities. QPWS aims to develop and maintain a cooperative working relationship with neighbours and stakeholders aimed at controlling pest species. Additionally, pest management will focus on controlling and eradicating where possible emerging pest species particularly grasses, woody and shrub species such as rubbervine, mission grass *Pennisetum polystachion*, grader grass *Themeda quadrivalvis*, giant rat's tail grass *Sporobolus pyramidalis* and *S. natalensis*.

Myrtle rust is a fungal disease that affects plants in the Myrtaceae family, such as tea tree and bottle brush. Myrtle rust is widely spread in South East Queensland and has been confirmed on the Fraser Coast, in Bundaberg, Gladstone and Rockhampton. Myrtle rust has also been detected at nurseries in Cairns, Townsville, Airlie Beach and Chinchilla, and its occurrence has been confirmed in Mackay. Myrtle rust cannot be eradicated and will continue to spread because it produces thousands of spores that are easily spread by wind, human activity and animals. Australian Pesticides and Veterinary Medicines Authority can issue a permit for the control of myrtle rust on plants in or near locations where infection is present. Quarantine and hygiene practices are important considerations in managing potential threats such as myrtle rust.

Through a long history of grazing, agriculture, and tourism several introduced animal species currently pose a threat on a few of the Mackay Islands. Middle Percy Island has a long history of European occupation and was used for stock grazing (sheep and goats). Feral goats *Capra hircus* (Class 2) are found on St Bees and Middle Percy islands. Feral goats impact upon native vegetation communities, in particular beach and vine scrubs, hoop pine and sclerophyll forests. Additionally, goats can impact on cultural sites and values. Goats threaten biodiversity by influencing the variety and abundance of native plant species, spread pest plants, and cause erosion. Goat management is ongoing but remains difficult due to the access constraints and extremely rough terrain.

Past pest management efforts have proven successful with the eradication of several species from the islands in recent times. In 1979 a goat eradication program started on Percy Isles National Park to reduce the significant natural impacts and ecosystem modification caused by over grazing by goats. This program has been successful, with goats eradicated in 1995 off north-east Percy Island and in 2010 from south Percy Island. Goats are still present on Middle Percy Island. Goat grazing is negatively affecting koala habitat and beach scrub communities by grazing and spreading lantana into the vegetation systems particularly the Glen Geddes bloodwood woodlands. Pest and fire strategies aim to promote regeneration of *E. tereticornis* and *E. platyphylla* on St Bees Island through reduction of feral goat numbers and eventual eradication. Feral goat eradication program exists at St Bees. QPWS plan to expand the goat program to Middle Percy Islands Conservation Park.

Grazing from an over population of introduced macropods, feral goats and koala's and associated land management practices have resulted in significant vegetation changes in terms of community structure, composition and distribution and fire intensity at Brampton, Newry, Middle Percy and St Bees islands.

Research indicates that grasslands have been displaced by encroaching woodlands and the composition of grasslands may be changing and as a result of high grazing pressure and a lack of fire. The high grazing pressure can be attributed to the introduced feral goats, eastern grey kangaroo *Macropus giganteus* and wallabies.

Impacts of grazing on vegetation are now being monitored by QPWS, Central Queensland University and Central Queensland Koala Research Centre on Brampton Islands National Park, Percy Isles National Park and Middle Percy Island Conservation Park. Goat, kangaroo and koala numbers are monitored by direct counts.

Eastern grey kangaroos on Brampton Islands and Percy Isles national parks pose a threat to humans such as congregating on the airstrip (three recorded collisions) and displaying aggressive behaviour towards visitors.

Kangaroos were originally introduced by the resort decades ago; low natural predation has ensured a stable to increasing population. An eastern grey kangaroo management strategy was developed in 2005 for Brampton Islands National Park. Control actions that deal with the threat to visitors and site degradation were implemented and it is anticipated to continue in cooperation with resort lease holder.

To be most effective, an integrated pest management program for Mackay Islands will be implemented that identifies a range of control measures in addition to the establishment of cooperative arrangements with lease and authority holders. Intensive management of goats and kangaroos will be needed to maintain the islands diverse habitats and fauna species.

Island communities are fragile, isolated and particularly susceptible to pests. The inadvertent transport of unwelcome plant and animal pests, and maintaining biosecurity provisions is an ongoing concern owing to the close proximity of some of the islands to the mainland and frequency of use of resort and visitor areas. Mackay islands are a valuable natural resource. Many endangered, vulnerable or near threatened species (Tables 1, 2, and 3) survive due to the isolated remote island habitat. The majority of our breeding seabirds nest only on remote islands where visitor use is low; therefore providing a secure and safe location to breed and roost is essential. Similarly sea turtles breed on islands where predation from feral animals and disturbance by people and vehicles is significant less than on the mainland coastline. Islands are particularly vulnerable to the impact of invasive pests but such impacts can be prevented through quarantine or through eradication or control (Reef Catchments 2011).

Ongoing monitoring as part of the pest management strategy enables evaluation of the control effectiveness and extent of damage to threatened species, ecosystems or habitats. Education of park visitors, resorts and lease holders, and commercial operators on reducing the threat of spreading and introducing pest species is essential to protecting the integrity of the national parks. Emerging risks include tramp ants, soil organism introductions, and myrtle rust. QPWS and partners are working towards development of an island bio-security communication strategy to support a reef-wide program.

Fire management

A fire management system has been adopted state-wide by QPWS which is the primary agency for fire management on protected areas. Fire strategies provide the overall framework and direction for fire management and are the foundation from which planned burn programs are developed. St Bees and Keswick islands have a Level 1 fire management strategy and some islands have Level 2 (interim) fire management strategies that require review and consolidation into a Level 1 Mackay Islands fire management strategy. In general the main objective of these fire management strategies is to minimise the risk of wildfire entering or leaving the protected area, protect fire sensitive vegetation, and maintain the natural role of fire as an ecological process in fire adapted vegetation communities. On islands where national park abuts freehold or leasehold property the primary objective will be protection of life and property. Additional fire protection zones will surround areas where cultural sites are found, or visitor facilities and infrastructure exist. Fire is also used for control of certain pest plants in some areas.

A draft Planned Burn Guideline, Central Queensland Coast Bioregion has been prepared. The bioregional planned burn guidelines will be integral to QPWS fire management system to support the formation of the management areas fire management strategy, burn proposals and on ground planned burn implementation activities.

The management area contains a diverse range of regional ecosystems which vary in their fire management requirements. Planned burns are used to minimise the risk of wildfire, manage conservation values, to maintain suitable habitats, and meet the ecological requirements of fire-dependant species. Over the years planned burn programs in the Mackay Islands have been implemented to protect fire-sensitive vegetation communities, such as *Casuarina equisetifolia* and *Sporobolus virginicus* communities, and to promote biological diversity among woodlands and grassland communities. Inappropriate fire regimes could threaten the long-term integrity of these vegetation communities.

Hazard reduction burning has been done on a regular basis with the cooperation of the neighbouring lessees where there is a threat of wildfire entering or coming from the leased area. While the responsibility for maintaining fire breaks lies with the lease holders, QPWS readily provides technical advice. The parks are also under threat of wildfire from campfire escape.

Authorities

Authorities may be issued under the *Nature Conservation Act 1992* to allow certain types of infrastructure on protected area estate. These authorities can be used for public service facilities and they are most commonly used to enable infrastructure to be built or remain on a protected area.

Authorities over national park usually provide for service infrastructure which supports the operation of resorts and leased areas (e.g. access roads, power, telephone, and water utilities). Brampton, Middle, Keswick and St Bees islands have State leases under the *Land Act 1994*, as well as authorities under the ss. 34 and 35 of the *Nature*

Conservation Act. These authorities largely provide for infrastructure such as communication towers and their ancillary buildings. This third party infrastructure is authorised and managed so as to not significantly impact on the management area's natural and cultural values. It is desirable to minimise visual intrusions on the islands to ensure they retain their remote and isolated setting.

There are a number of authorities for specific activities occurring on the management area.

Middle Percy Island homestead on Middle Percy Island Conservation Park has a s. 34 authority under the *Nature Conservation Act* for the operation and maintenance of the homestead. The lease has a homestead and other infrastructure which includes an airstrip, buildings, domestic animals, information site, communication tower, memorial, walking tracks, campsites, garden for food production and water infrastructure. An Environmental Management Plan for the authority exists.

Located on Prudhoe Island, Northumberland Islands National Park is a navigational aid and helipad facility managed by the Australian Maritime Safety Authority. The agreement is part of the Australian Maritime Safety Authority's large network of navigation aids that exist along the inner shipping route of the Great Barrier Reef.

A marine navigation use is prescribed in the Nature Conservation (Protected Areas Management) Regulation 2006 Schedule 3 for Percy Isles National Park, part of Pine Peak Island; and part of Vernon Rocks.

The Australian Maritime Safety Authority and Maritime Safety Queensland have authority under s. 35 of the *Nature Conservation Act* to operate and maintain a lighthouse and radar system and radio communication facility on Penrith Island on South Cumberland Islands National Park.

A s. 35 authority under the *Nature Conservation Act* for a radio/ telephone building exists for Brampton Island National Park, Brampton Island (CENAP052); and is prescribed in the Nature Conservation (Protected Areas Management) Regulation 2006 schedule 3.

The Department of Transport and Main Roads has a permit under the *Marine Parks Act 2004* and *Great Barrier Reef Marine Park Act 1975* to maintain the jetty at Brampton Island.

On Keswick Island, South Cumberland Islands National Park adjoins a *Lands Act* lease for a residential subdivision that is in place until 16 February 2096. The island infrastructure consists of residential sub divisions and dwellings, bed and breakfast, airstrip, water, sewage treatment works and electricity supply. QPWS has been in negotiations with the lease holder in regards to access and island maintenance support.

There are a number of authorities required for specific activities occurring on the management area.

Telstra Corporation Limited has a communication tower located on Brampton Island. Authority under s. 35 of the *Nature Conservation Act* provides the mechanism to allow Telstra access for establishing, operating and maintaining a communication tower.

The Bureau of Meteorology automatic weather monitoring station and a Queensland Police Service radio repeater station exists on Percy Island Conservation Park. A s. 35 authority under the *Nature Conservation Act* will provide authority to maintain an automatic weather monitoring station and radio repeater.

A s. 35 authority under the *Nature Conservation Act* is required for a communications tower, repeater station that exist on Prudhoe Island (Lot 404 CP NPW689).

QPWS has been consulting with the Brampton Resort lease owners to appropriately authorise private structures such as the tramline from the jetty to the resort, sections of the airstrip and buildings that have been built on Brampton Island, some of which were part of a former Special Lease under the *Lands Act*.

Marine infrastructure

Facilities associated with marine activities in the management area include: reef protection marker buoys at Keswick and St Bees islands, private moorings at Keswick and Brampton islands, public jetty at Brampton Island, and associated shipping and navigational aids. Many of the Mackay Islands lie within or close to the main shipping channel with coal ships accessing Hay Point and Dalrymple Bay coal terminals also using Hydrographers Passage.

To protect coral reefs and sensitive marine habitats from impacts, a series of reef protection markers which delineate 'no anchoring areas' are being maintained throughout the region. As the number of vessels operating in the area is likely to increase, the need to strategically review the reef protection measures including increasing the no anchoring areas and manage moorings is required.

Reef water quality protection

Reef Rescue Marine Monitoring Program monitors the condition of water quality and the health of key marine ecosystems such as coral reefs and seagrass. The Reef Water Quality Protection Plan (Reef Plan) is a joint commitment of the Australian and Queensland governments. The Marine Monitoring Program is a key component in the assessment of long-term improvements in inshore water quality and marine ecosystem health that are expected to occur with the adoption of improved land management practices in the reef catchments under Reef Plan and Reef Rescue.

One successful outcome from these programs has been the requirement for island tourism operations to manage their sewage to tertiary level. Accordingly QPWS has implemented a range of sewage treatment options for the campground facilities to ensure nil discharge to the marine environment.

Coastal and industrial development in areas adjacent to the management area is occurring and planned to increase in the near future such as Dudgeon Point coal terminal, Hay Point coal terminal and the mining boom in the inland basins. Shipping traffic will increase in the management area and the Great Barrier Reef in general resulting in increased disturbance to wildlife from dredging plumes and increased water turbidity, increased risk of boat strikes from vessel speed and increased number of vessels, dredging turbidity and water noise effecting whale migration patterns. Corals and seagrass areas are under threat, the risk of an oil and/ or chemical spill or shipping accident holds particularly high impact potential to rocky coasts, corals, and marine areas in the management area. Management aims to proactively plan effective responses and have contingency measures in place for incidents.

References

- Blackwood R. 1997 *The Whitsunday Islands an Historical Dictionary*. Central Queensland University Press.
- Brennan P. 1986 *Anthropogenic Modification of Vegetation on Continental Islands: Southern Section Great Barrier Reef*. A dissertation presented as part requirement for Bachelor of Arts (Honours in Geography). University of Queensland.
- Colfelt D. 2012 *100 Magic Miles of the Great Barrier Reef the Whitsunday Islands 9th edition*. Windward Publications Pty Ltd.
- Great Barrier Reef Marine Park Authority 2009 *Great Barrier Reef Outlook Report*. Great Barrier Reef Marine Park Authority, Australia.
- Limpus C. 2008 *A biological review of Australian marine turtle species. 2. Green Turtle Chelonia mydas (Linnaeus)*. The State of Queensland, Environmental Protection Agency.
- Limpus C. 2007 *A biological review of Australian marine turtle species. 5. Flatback turtle, Natator depressus (Garman)*. The State of Queensland. Environmental Protection Agency.
- Limpus C. 2008 *A biological review of Australian marine turtles: 1. Loggerhead Turtle Caretta Caretta (Linnaeus)*. The State of Queensland. Environmental Protection Agency.
- Limpus C. 2009 *A biological review of Australian marine turtles: 6. Leatherback Turtle Dermochelys coriacea (Vandell)*. The State of Queensland. Environmental Protection Agency.
- Queensland Parks and Wildlife Service 2007 *Whitsunday and Mackay Islands Visitor Management Strategy*. Queensland Parks and Wildlife Service, Brisbane.
- Reef Catchments Mackay Whitsunday Inc. 2011 *A National Island Biosecurity Initiative: A proposal to build ecosystem health and resilience on Australia's islands through improved biosecurity*. World Wildlife Fund, Mackay.
- Smith J.N. Grantham, H.S., Gales, N., Double, M.C., Noad, M.J. and Paton, D. 2012. Identification of humpback whale breeding and calving habitat in the Great Barrier Reef. *Marine Ecology Progress Series*, 447: 259 – 272.
- Willmott W. 2006 *Rocks and landscapes of the national parks of central Queensland*. Geological Society of Australia, Queensland Division.

Management directions

Desired outcomes	Actions and guidelines
<p>Landscape</p> <p>The landscape is protected, particularly areas of high scenic quality or cultural significance, while allowing natural processes to continue.</p>	<p>A1. Monitor the impacts from natural processes, pests, fire and recreational use. Use the information to guide management and amend current and future plans and strategies.</p> <p>A2. Manage recreational and commercial activities, site planning, and facility development for consistency with the high scenic landscape values and the Whitsunday and Mackay Islands Visitor Management Strategy.</p>
<p>Plants and animals</p> <p>Communities, plant and animal species of significance are protected.</p> <p>The full range of naturally occurring biological diversity, ecological processes and landscape dynamics are maintained.</p>	<p>A3. Continue to implement and regularly review the pest and fire management strategies for the Mackay Islands in consultation with interested parties.</p> <p>A4. Eradicate or reduce pest's rate of spread where the pest is posing a significant threat to the natural environment.</p> <p>A5. Continue to provide information to lessees, neighbours, commercial operators and visitors that encourage best practice prevention in spreading pests and protect the Mackay Islands, to ensure visitors do not adversely impact the Mackay Islands.</p> <p>A6. Work with partners to develop and implement an appropriate quarantine strategy to prevent introductions of potential pest plants and animal species, or diseases, particularly for leased areas.</p> <p>A7. Continue to monitor established long-term fire monitoring plots to determine optimum fire regimes and the response of species of conservation significance.</p> <p>A8. Undertake monitoring to evaluate management actions, including impact of fire on plant and animal populations and diversity, and the appropriateness of regimes recommended in the fire strategy.</p> <p>A9. Implement research programs and natural integrity assessments (including the reef health and impact surveys, coastal birds and turtle monitoring, pest monitoring) and incorporate findings into plans and strategies.</p> <p>A10. Continue to support research and monitoring on island condition and habitat for significant species such as koala.</p> <p>A11. In partnership with research institutions, continue to monitor koala populations and health, and prepare a koala management strategy for the islands that identifies monitoring standards, habitat condition and long term management objectives for introduced koala populations on islands.</p>
<p>Partnerships</p> <p>Strong community programs exist that restore and protect the island's natural and cultural values.</p> <p>Information on natural resources and cultural information is enhanced over time.</p>	<p>A12. Continue to support Traditional Owner and other community groups in natural projects that enhance the islands habitats such as rehabilitation of beach scrubs on Brampton Island and shorebird monitoring.</p> <p>A13. Continue to build relationships and encourage strategic and holistic landscape management through partnerships with the Traditional Owners, local community, organisations, visitors and interest groups to improve knowledge of the management area, and to highlight its significance to the region and broader Great Barrier Reef World Heritage Area.</p> <p>A14. Encourage, support and guide the activities of volunteer interest groups that help protect and enhance the management area. Continue to liaise, negotiate and initiate cooperative arrangements with Great Barrier Reef Marine Park Authority and other government agencies.</p> <p>A15. Continue current survey programs such as sea bird counts, reef health impact surveys, visitor monitoring and incorporate community capacity into programs.</p> <p>A16. Formalise partnerships and encourage participation and information sharing with research institutions, Traditional Owners, NRM groups, and ensure information is shared and provides for adaptive park management responses.</p>
<p>Cultural management</p> <p>Cultural sites of Indigenous and historical significance are identified and protected.</p>	<p>A17. Establish protocols, procedures and agreements, in collaboration with the Traditional Owners, to maintain the confidentiality and integrity of cultural places, materials and information.</p> <p>A18. Continue to liaise with the Traditional Owners to encourage participation in managing the cultural values and natural resources of significance.</p> <p>A19. Continue to identify, record, and document, where appropriate, and protect identified places of historic significance in the Mackay Islands management area.</p>

Desired outcomes	Actions and guidelines
<p>Tourism and visitor opportunities</p> <p>The management area offers a diverse range of sustainable outdoor recreation and tourism opportunities and settings that meet and adapt to visitor needs with minimal impact on the area's natural and cultural values.</p> <p>The management area's values are promoted.</p>	<p>A20. Continue to manage Newry and Brampton Island's walking tracks and park facilities to be the area's premier nature based visitor attraction.</p> <p>A21. Retain visitor access and activities that are environmentally and culturally appropriate to protect the area's values and is in keeping with a remote, self-reliant experience.</p> <p>A22. Continue to implement the Visitor Management Strategy (VMS), providing facilities and interpretive signs accordingly.</p> <p>A23. Liaise, consult and negotiate with Mackay and Isaac regional councils, tourism organisations, commercial operators, local business and the local community to manage and promote the area's values and recreation opportunities.</p> <p>A24. Work with commercial tourism operators to ensure information provided to visitors is correct and includes messages that enhance and support the management area's values.</p>
<p>Fire management</p> <p>Fire management programs are undertaken in a planned, cooperative and strategic manner to protect life and property, conserve natural and cultural values and minimise associated impacts.</p>	<p>A25. Develop and implement a Level 1 fire strategy for the Mackay Islands in collaboration with interested parties including neighbours and lease holders and Traditional Owners, with consideration given to the ecological requirements of species of conservation significance.</p>
<p>Infrastructure authorisation</p> <p>Facilities on the management area are correctly authorised under the relevant legislation and do not significantly impact on the Mackay Island's values.</p>	<p>A26. Review infrastructure in the management area and authorise, if appropriate, under the <i>Nature Conservation Act</i> and <i>Marine Park Act</i>.</p>

Tables – Conservation values management

Table 1: Endangered and of concern regional ecosystems

Regional ecosystem number	Description	Biodiversity status
8.1.2	Samphire open forbland to isolated clumps of forbs on salt pans and plains adjacent to mangroves	Of concern
8.1.3	<i>Sporobolus virginicus</i> grassland on marine sediments	Of concern
8.1.4	<i>Paspalum</i> spp. and <i>Fimbristylis ferruginea</i> sedgeland/grassland (estuarine wetland). Includes areas of deep open water with clumps of <i>Schoenoplectus littoralis</i> +/- <i>Eleocharis dulcis</i>	Endangered
8.2.1	<i>Casuarina equisetifolia</i> open-forest to woodland with <i>Ipomoea pes-caprae</i> and <i>Spinifex sericeus</i> dominated ground layer, on foredunes	Of concern
8.2.2	Microphyll vine forest on coastal dunes	Endangered
8.2.6a	<i>Corymbia tessellaris</i> +/- <i>Acacia leptocarpa</i> +/- beach scrub species open-forest on parallel dunes	Of concern
8.2.7e	<i>Melaleuca leucadendra</i> and/or <i>M. quinquenervia</i> and/or <i>M. dealbata</i> and/or <i>M. sp.aff. viridiflora</i> open-forest in near -coastal wetlands and swales associated with parabolic dunes (all coastal subregions)	Endangered
8.2.9	<i>Heteropogon triticeus</i> , <i>Imperata cylindrica</i> and <i>Themeda triandra</i> grassland on coastal dunes	Endangered
8.3.1a	Semi deciduous (complex) notophyll/mesophyll vine forest fringing or in vicinity of watercourses on alluvial plains	Endangered
8.3.2	<i>Melaleuca viridiflora</i> woodland to open-forest, often with emergent eucalypts and grassy/herbaceous ground layer, on seasonally inundated alluvial plains with impeded drainage	Endangered
8.3.4	Freshwater wetlands with permanent water and aquatic vegetation including <i>Phragmites australis</i> , <i>Nymphaea gigantea</i> , <i>Nymphoides indica</i> , <i>Eleocharis</i> spp., <i>Cyperus</i> spp. and <i>Juncus</i> spp	Endangered
8.3.6a	<i>Eucalyptus tereticornis</i> , <i>Corymbia intermedia</i> (or <i>C. clarksoniana</i>) and <i>Lophostemon suaveolens</i> open-forest on river and creek terraces and alluvial fans	Endangered
8.3.11	<i>Melaleuca</i> sp. aff. <i>viridiflora</i> closed-forest to woodland in broad drainage areas	Endangered
8.3.13a	Mixed <i>Melaleuca</i> spp. woodlands on marine plains or alluvial plains, usually adjacent to estuarine areas	Endangered
8.11.10	<i>Lophostemon confertus</i> and/or <i>Acacia</i> spp. and/or <i>Allocasuarina littoralis</i> +/- <i>Corymbia</i> spp. +/- <i>Eucalyptus</i> spp. +/- <i>Melaleuca viridiflora</i> low woodland to open-forest on exposed hillslopes of islands, on metamorphosed sediments	Of concern
8.11.2	Notophyll microphyll vine forest +/- <i>Araucaria cunninghamii</i> on low ranges on Permian sediments +/- volcanic	Of concern
8.11.3a	<i>Corymbia intermedia</i> and/or <i>Eucalyptus portuensis</i> and/or <i>C. clarksoniana</i> and/or <i>E. platyphylla</i> and/or <i>E. drepanophylla</i> open-forest to woodland on low hills on metamorphosed sediments	Of concern
8.11.9a	Grassland, or <i>Xanthorrhoea latifolia</i> subsp. <i>latifolia</i> shrubland/heathland with <i>Themeda triandra</i> , on exposed rocky headlands on metamorphosed sediments, subject to strong sea-breezes and salt-laden winds	Of concern
8.12.11a, c	Semi-deciduous microphyll vine forest/thicket with emergent <i>Araucaria cunninghamii</i> on Mesozoic to Proterozoic igneous rocks and Tertiary acid to intermediate volcanic and granite, in coastal areas including islands	Of concern

Regional ecosystem number	Description	Biodiversity status
8.12.13a, 8.12.13b	Grassland, or <i>Xanthorrhoea latifolia</i> subsp. <i>latifolia</i> shrubland, on slopes of islands and headlands on Mesozoic to Proterozoic igneous rocks, and Tertiary acid to intermediate volcanics <i>Timonius timon</i> +/- <i>Pittosporum ferrugineum</i> shrubland to closed-scrub on slopes of islands and headlands on Mesozoic to Proterozoic igneous rocks, and Tertiary acid to intermediate volcanics	Of concern
8.12.20a	<i>Eucalyptus drepanophylla</i> and <i>E. platyphylla</i> +/- <i>Melaleuca viridiflora</i> woodland on low gently undulating landscapes (grading into land zone 3) on Mesozoic to Proterozoic igneous rocks	Of concern
8.12.25	<i>Eucalyptus tereticornis</i> +/- <i>E. platyphylla</i> x <i>E. tereticornis</i> woodland to open-forest on hill slopes of islands on Mesozoic to Proterozoic igneous rocks	Of concern
8.12.26	<i>Corymbia tessellaris</i> and/or <i>Eucalyptus tereticornis</i> open-forest +/- vine thicket understorey on hill slopes of islands and near coastal areas, on Mesozoic to Proterozoic igneous rocks, and Tertiary acid to intermediate volcanics	Endangered
8.12.29a, 8.12.29b	<i>Allocasuarina littoralis</i> closed-scrub to closed-forest on hill slopes of islands on Mesozoic to Proterozoic igneous rocks, and Tertiary acid to intermediate volcanics <i>Lophostemon</i> spp. and/or <i>Acacia</i> spp. and/or <i>Allocasuarina littoralis</i> +/- <i>Eucalyptus</i> spp. +/- <i>Melaleuca viridiflora</i> closed-scrub to open-forest, on islands and headlands, on Mesozoic to Proterozoic igneous and Tertiary acid to intermediate rock	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
Plants				
<i>Berrya rotundifolia</i>	no common name	Vulnerable	-	Low
<i>Cassia</i> sp. (<i>Paluma Range G.Sankowsky+ 450</i>)	no common name	Near threatened	-	Low
<i>Cerbera dumicola</i>	no common name	Near threatened	-	Low
<i>Corymbia xanthope</i>	Glen Geddes bloodwood	Vulnerable	Vulnerable	Low
<i>Macropteranthes fitzalanii</i>	no common name	Near threatened	-	Low
<i>Paspalidium scabrifolium</i>	no common name	Near threatened	-	Low
<i>Samadera bidwillii</i>	no common name	Vulnerable	Vulnerable	-
<i>Stackhousia tryonii</i>	no common name	Near threatened	-	Medium
<i>Xylosma ovatum</i>	no common name	Near threatened	-	Low
Animals				
<i>Accipiter novaehollandiae</i>	grey goshawk	Near threatened	-	Low
<i>Aerodramus terraereginae</i>	Australian swiftlet	Near threatened	-	Low
<i>Calyptorhynchus lathami</i>	glossy black-cockatoo	Vulnerable	-	High
<i>Caretta caretta</i>	loggerhead turtle	Endangered	Endangered	Critical
<i>Chelonia mydas</i>	green turtle	Vulnerable	Vulnerable	Critical
<i>Crocodylus porosus</i>	estuarine crocodile	Vulnerable	-	Low
<i>Delma labialis</i>	striped-tailed delma	Vulnerable	Vulnerable	Medium
<i>Dermochelys coriacea</i>	leatherback turtle	Endangered	Endangered	Critical
<i>Dugong dugon</i>	dugong	Vulnerable	-	Critical

Scientific name	Common name	Nature Conservation Act 1992 status	Environment Protection and Biodiversity Conservation Act 1999 status	Back on Track status
<i>Eulamprus amplus</i>	no common name reptile	Near threatened	-	Low
<i>Eretmochelys imbricata</i>	hawksbill Turtle	Vulnerable	Vulnerable	Critical
<i>Esacus magnirostris</i>	beach stone-curlew	Vulnerable	-	High
<i>Haematopus fuliginosus</i>	sooty oystercatcher	Near threatened	-	Low
<i>Megaptera novaeangliae</i>	humpback whale	Vulnerable	Vulnerable	Medium
<i>Natator depressus</i>	flatback turtle	Vulnerable	Vulnerable	Critical
<i>Taphozous australis</i>	coastal sheath-tail bat	Vulnerable	-	High
<i>Haematopus fuliginosus</i>	sooty oystercatcher	Near Threatened	-	Low
<i>Numenius madagascariensis</i>	eastern curlew	Near threatened	-	Low
<i>Orcaella heinsohni</i>	Australian snubfin dolphin	Near threatened	-	Critical
<i>Pteropus brunneus</i>	Percy Island flying fox	Extinct in the wild	Extinct	-
<i>Pteropus poliocephalus</i>	grey-headed flying-fox	Common	Vulnerable	Critical
<i>Sternula albifrons</i>	little tern	Endangered	-	High
<i>Tadorna radjah</i>	Radjah shelduck	Near threatened	-	Low
<i>Taphozous australis</i>	coastal sheath-tail bat	Vulnerable	-	High
<i>Sousa chinensis</i>	Indo-Pacific humpback dolphin	Near threatened	-	Critical

Table 3: Species listed in international agreements

Scientific name	Common name	CMS	CAMBA	JAMBA	ROKAMBA
<i>Actitis hypoleucos</i>	common sandpiper	✓	✓	✓	✓
<i>Anous stolidus</i>	common noddy	-	✓	✓	-
<i>Apus pacificus</i>	fork-tailed swift	-	✓	✓	✓
<i>Ardea ibis</i>	cattle egret	✓	-	✓	-
<i>Arenaria interpres</i>	ruddy turnstone	✓	✓	✓	✓
<i>Calidris acuminata</i>	sharp-tailed sandpiper	✓	✓	✓	✓
<i>Calidris alba</i>	sanderling	✓	✓	✓	✓
<i>Calidris canutus</i>	red knot	✓	✓	✓	✓
<i>Calidris ferruginea</i>	curlew sandpiper	✓	✓	✓	✓
<i>Calidris ruficollis</i>	red-necked stint	✓	✓	✓	✓
<i>Calidris subminuta</i>	long-toed stint	✓	✓	✓	✓
<i>Calidris tenuirostris</i>	great knot	✓	✓	✓	✓
<i>Caretta caretta</i>	loggerhead turtle	✓	-	-	-
<i>Charadrius bicinctus</i>	double-banded plover	-	✓	✓	✓
<i>Charadrius leschenaultii</i>	greater sand plover	-	✓	✓	✓
<i>Charadrius mongolus</i>	lesser sand plover	✓	-	✓	✓
<i>Charadrius veredus</i>	oriental plover	✓	✓	✓	✓
<i>Chelonia mydas</i>	green turtle	✓	-	-	-
<i>Crocodylus porosus</i>	estuarine crocodile	✓	-	-	-
<i>Cuculus optatus</i>	oriental cuckoo	✓	-	✓	-
<i>Dermochelys coriacea</i>	leatherback turtle	✓	-	-	-
<i>Diomedea exulans</i>	wandering albatross	✓	-	-	-
<i>Dugong dugon</i>	dugong	✓	-	-	-
<i>Egretta sacra</i>	eastern reef egret	-	✓	-	-
<i>Eretmochelys imbricata</i>	hawksbill turtle	✓	-	-	-
<i>Fregata ariel</i>	lesser frigatebird	-	✓	✓	-
<i>Fregata minor</i>	great frigatebird	-	✓	✓	-
<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	-	✓	-	-
<i>Hirundapus caudacutus</i>	white-throated needletail	-	✓	✓	✓
<i>Hydroprogne caspia</i>	Caspian tern	-	✓	✓	-
<i>Limicola falcinellus</i>	broad-billed sandpiper	✓	✓	✓	✓
<i>Limosa lapponica</i>	bar-tailed godwit	✓	✓	✓	✓
<i>Limosa limosa</i>	black-tailed godwit	✓	✓	✓	✓
<i>Megaptera novaeangliae</i>	humpback whale	✓	-	-	-
<i>Natator depressus</i>	flatback turtle	✓	-	-	-
<i>Numenius madagascariensis</i>	eastern curlew	✓	✓	✓	✓
<i>Numenius minutus</i>	little curlew	✓	✓	✓	✓
<i>Numenius phaeopus</i>	whimbrel	✓	✓	✓	✓
<i>Onychoprion anaethetus</i>	bridled tern	-	-	✓	-
<i>Orcaella heinsohni</i>	Australian snubfin dolphin	✓	-	-	-

Scientific name	Common name	CMS	CAMBA	JAMBA	ROKAMBA
<i>Pluvialis fulva</i>	Pacific golden plover	✓	✓	✓	✓
<i>Pluvialis squatarola</i>	grey plover	-	✓	✓	✓
<i>Phoebastria fusca</i>	sooty albatross	✓	-	-	-
<i>Sterna dougallii</i>	roseate tern	-	-	✓	✓
<i>Sterna hirundo</i>	common tern	✓	✓	✓	✓
<i>Stercorarius maccormicki</i>	South Polar skua	-	-	✓	✓
<i>Stercorarius parasiticus</i>	Arctic jaeger	-	✓	✓	-
<i>Stercorarius pomarinus</i>	pomarine jaeger	-	-	✓	✓
<i>Stenella longirostris</i>	spinner dolphin	✓	-	-	-
<i>Sousa chinensis</i>	Indo-Pacific humpback dolphin	✓	-	-	-
<i>Sternula albifrons</i>	little tern	✓	✓	✓	✓
<i>Sula dactylatra</i>	masked booby	-	-	✓	✓
<i>Sula leucogaster</i>	brown booby	-	✓	✓	-
<i>Sula sula</i>	red-footed booby	✓	-	✓	-
<i>Thalassarche melanophris</i>	black-browed albatross	-	✓	✓	✓
<i>Tringa brevipes</i>	grey-tailed tattler	✓	✓	✓	✓
<i>Tringa glareola</i>	wood sandpiper	✓	✓	✓	✓
<i>Tringa incana</i>	wandering tattler	✓	✓	✓	✓
<i>Tringa nebularia</i>	common greenshank	✓	✓	✓	✓
<i>Tringa stagnatilis</i>	marsh sandpiper	✓	✓	-	✓
<i>Tringa totanus</i>	common redshank	✓	✓	-	✓
<i>Tursiops aduncus</i>	Indo-Pacific bottlenose dolphin	✓	-	-	-
<i>Xenus cinereus</i>	terek sandpiper	✓	✓	-	✓

BONN (CMS) – Bonn Convention

CAMBA – China–Australia Migratory Bird Agreement

JAMBA – Japan–Australia Migratory Bird Agreement

ROKAMBA – Republic of Korea–Australia Migratory Bird Agreement