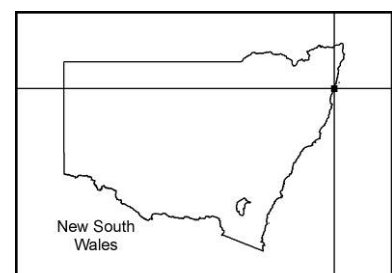




Plan of Management



Moonee Beach Nature Reserve



**MOONEE BEACH NATURE RESERVE
PLAN OF MANAGEMENT**

NSW National Parks and Wildlife Service

February 2012

This plan of management was adopted by the Minister for the Environment on 7th February 2012.

Acknowledgements

This plan of management is based on a draft plan prepared by staff of the North Coast Region of the NSW National Parks and Wildlife Service (NPWS), part of the Office of Environment and Heritage, Department of Premier and Cabinet.

The NPWS acknowledges that these reserves are in the traditional country of the Gumbaynggirr people.

FRONT COVER: Photos of kangaroos on Look At Me Now Headland, Bare Bluff, and *Zieria prostrata* on Bare Bluff by Tom Denman, NPWS.

For additional information or any inquiries about this reserve or this plan of management, contact the NPWS Coffs Coast Area Office, 32 Marina Drive, Coffs Harbour, NSW 2450 or by telephone on (02) 6652 0900.

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FOREWORD

Moonee Beach Nature Reserve is located 15 kilometres north of Coffs Harbour on the North Coast of NSW, and covers an area of 336 hectares. It consists of coastal sand plains and floodplains, dunes and four prominent headlands.

Moonee Beach Nature Reserve conserves seven endangered ecological communities and six threatened plant species, including the only known wild populations of the endangered headland zieria (*Zieria prostrata*). Thirteen threatened animal species have been recorded in the reserve, many of which are shorebirds. The reserve is also home to a range of more common animals, including eastern grey kangaroos, red-necked wallabies and swamp wallabies.

The reserve also contains many significant Aboriginal sites, including middens, axe factories, sacred sites and artefact scatters, which provide evidence of a rich history of the traditional use of the area by the Gumbaynggirr people.

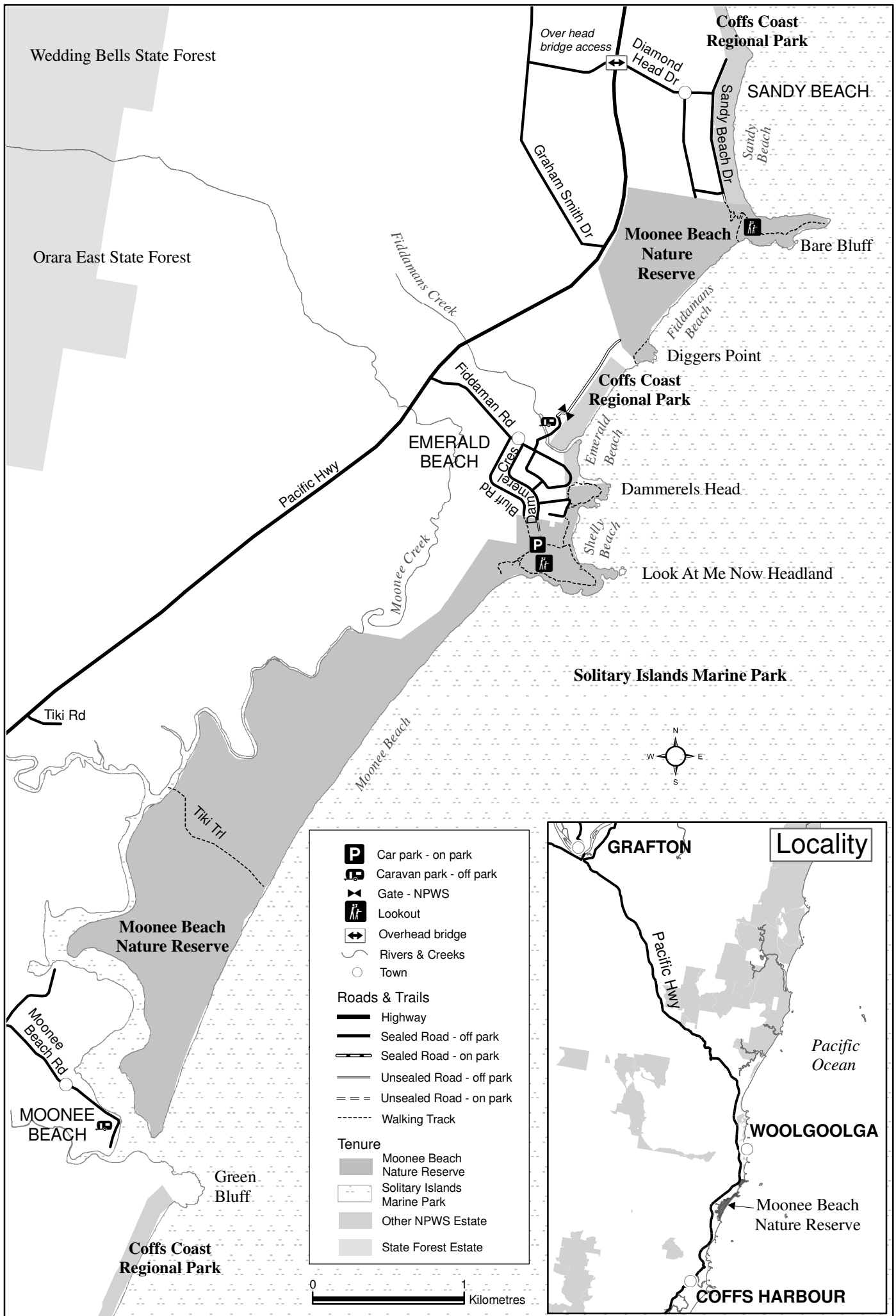
The New South Wales *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each nature reserve. A draft plan of management for Moonee Beach Nature Reserve was placed on public exhibition from 30th January until 11th May 2009. The submissions received were carefully considered before adopting this plan.

The plan contains a number of actions to achieve the NSW 2021 goal to “Protect our natural environment”, including the stabilisation of sand dunes and other eroded areas, the implementation of strategies to assist the recovery of threatened species and communities, and the ongoing control of weeds. The plan also “Enhances recreation opportunities” through the upgrading of walking tracks where necessary, and provision of interpretive and other information.

This plan of management establishes the scheme of operations for Moonee Beach Nature Reserve. In accordance with section 73B of the *National Parks and Wildlife Act 1974*, this plan of management is hereby adopted.



Robyn Parker MP
Minister for the Environment



Wedding Bells State Forest

Orara East State Forest

Coffs Coast Regional Park

SANDY BEACH

Moonee Beach Nature Reserve

Bare Bluff

Coffs Coast Regional Park

EMERALD BEACH

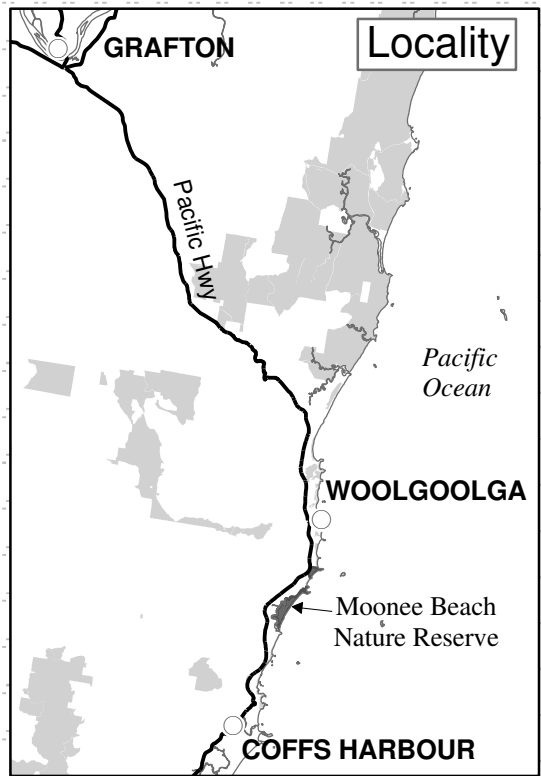
Dammerels Head

Look At Me Now Headland

Solitary Islands Marine Park



- P** Car park - on park
 - P** Caravan park - off park
 - X** Gate - NPWS
 - 👁** Lookout
 - ↔** Overhead bridge
 - ~ Rivers & Creeks
 - Town
- Roads & Trails**
- Highway
 - Sealed Road - off park
 - Sealed Road - on park
 - Unsealed Road - off park
 - == Unsealed Road - on park
 - ⋯ Walking Track
- Tenure**
- Moonee Beach Nature Reserve
 - Solitary Islands Marine Park
 - Other NPWS Estate
 - State Forest Estate



MOONEE BEACH

Moonee Beach Nature Reserve

Green Bluff

Coffs Coast Regional Park

GRAFTON

Locality

Pacific Hwy

Pacific Ocean

WOOLGOOLGA

Moonee Beach Nature Reserve

COFFS HARBOUR

1. MOONEE BEACH NATURE RESERVE

Moonee Beach Nature Reserve (referred to as 'the reserve' in this plan) is located between the villages of Moonee Beach and Sandy Beach, approximately 15 kilometres north of Coffs Harbour (30°18'S, 153°6.6'E). The reserve is divided into two sections (see map). The northern section is directly south of Sandy Beach, encompassing Bare Bluff Headland and Diggers Point and the land between these two headlands west to the Pacific Highway. The southern section includes Dammerels and Look At Me Now headlands and the land south to the mouth of Moonee Creek and west to the eastern bank of Moonee Creek.

To the north along the coastal strip, the reserve adjoins Coffs Coast Regional Park. The northern and southern sections of the reserve between Diggers Point and Dammerels Head are also linked by a small section of the regional park, although a thin portion of Crown land separates the reserve from the regional park near Diggers Point. Part of the western boundary north of Moonee Creek also adjoins Crown land.

The reserve is bounded to the east and along Moonee Creek by the Solitary Islands Marine Park, which extends to the reserve boundary at the mean high water mark. The interface between the reserve and the marine park provides important habitat for threatened shore bird species and adds to the overall protection of estuarine and inter-tidal habitats.

The reserve was first gazetted in 1976, in response to growing concerns about the impacts of sandmining in the area. In 1995 approximately 100 hectares, including the four headlands, were added to the reserve resulting in its current size of 336 hectares. These headlands contain a number of significant threatened species, including the only known wild populations of headland zieria (*Zieria prostrata*). Following addition of the headlands, interim management guidelines for the reserve were produced (NPWS 1999) to direct the urgent program of works to limit visitor impacts on the reserve.

The name of the reserve is taken from the adjoining beach, and is derived from the Gumbaynggirr name for the area, Munim-Munim. This name means 'rocky' and reflects the original importance of the area for axe making, with rocks collected from the area being used for axe heads (Morelli 2008).

The reserve currently sits within a landscape of semi-rural lands and coastal villages. With the lifting of the moratorium on development following the completion of the Coffs Harbour northern beaches sewerage infrastructure project in 2005, there will be a significant increase in residential development adjoining the reserve, especially north west of the village of Moonee Beach (CHCC 2004), and this will lead to increased use and pressures on the reserve.

The reserve is located within the Coffs Harbour City Local Government Area and the areas of the Northern Rivers Catchment Management Authority and the Coffs Harbour Local Aboriginal Land Council. This plan is consistent with the Estuary Management Plan for Moonee Creek, prepared for Coffs Harbour City Council (WBM Oceanics Australia 2006).

2. MANAGEMENT CONTEXT

2.1 Legislative and Policy Framework

The management of nature reserves in NSW is in the context of a legislative and policy framework, primarily the *National Parks and Wildlife Act 1974* (NPW Act), the NPW Regulation, the *Threatened Species Conservation Act 1995* (TSC Act) and the policies of the National Parks and Wildlife Service (NPWS). The policies are based on the legislative background and internationally accepted principles of park management, and relate to nature conservation, Aboriginal and historic heritage conservation, recreation, research and communication.

Other legislation, international agreements and charters also apply to management of the area. In particular, the *Environmental Planning and Assessment Act 1979* (EPA Act) may require the assessment and mitigation of the environmental impacts of works proposed in this plan. The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) also applies in relation to actions that may have significant impacts on migratory species and threatened species listed under that Act.

A plan of management is a statutory document under the NPW Act. Once the Minister has adopted a plan, no operations may be undertaken within Moonee Beach Nature Reserve except in accordance with this plan. This plan will also apply to any future additions to Moonee Beach Nature Reserve. Should management strategies or works be proposed for the Moonee Beach Nature Reserve or any additions that are not consistent with the plan, an amendment to the plan will be required.

2.2 Management Purposes and Principles

Nature reserves are reserved under the NPW Act to protect and conserve areas containing outstanding, unique or representative ecosystems, species, communities or natural phenomena.

Under the Act (section 30J), nature reserves are managed to:

- conserve biodiversity, maintain ecosystem functions, and protect geological and geomorphological features and natural phenomena;
- conserve places, objects, features and landscapes of cultural value;
- promote public appreciation, enjoyment and understanding of the reserve's natural and cultural values; and
- provide for appropriate research and monitoring.

Nature reserves differ from national parks in that they do not have the provision of visitor use as a management principle.

2.3 Specific Management Objectives

Moonee Beach Nature Reserve will be managed to achieve the following objectives:

- the protection of habitat and populations of threatened species and endangered ecological communities;
- increased visitor and community appreciation of the biodiversity and heritage values of the reserve;
- involvement of the Aboriginal community in the appropriate management of their heritage and sites of cultural importance;
- management of increasing recreational pressures to limit impacts on the values of the reserve;
- rehabilitation of degraded areas;
- fostering community involvement in rehabilitation and other management projects; and

- management of the reserve in the context of its surrounding environments through working cooperatively with Coffs Harbour City Council, the Marine Parks Authority, the Crown Lands Division of the Department of Primary Industries and other reserve neighbours.

3. VALUES OF THE RESERVE

The location, landforms, and plant and animal communities of an area determine how it has been used and valued. Both Aboriginal and non-Aboriginal people place values on natural areas, including aesthetic, social, spiritual and recreational values. These values may be attached to the landscape as a whole or to individual components, for example to plant and animal species used by Aboriginal people. This plan of management aims to conserve both natural and cultural values. For reasons of clarity and document usefulness, natural heritage, cultural heritage, threats and on-going use are dealt with individually, but their inter-relationships are recognised.

3.1 Landform, Geology and Soils

Most of the reserve is low lying, below 10 metres above sea level, comprising coastal sand plains and floodplains of flat to undulating topography and barrier dunal systems (McConchie 1997). At elevations of between 20 to 30 metres above sea level, the four headlands are prominent landmarks in the reserve and for the neighbouring villages.

The underlying geology of the area consists of sedimentary rocks which have undergone low grade metamorphism, with isolated igneous intrusions. The majority of the reserve comprises undifferentiated quaternary sediments, overlying the metasedimentary rocks of the Coramba Beds. Three of the four headlands are exposed protrusions of these rocks, mostly siliceous argillite and mudstones, which have resisted erosion and share a similar geology to the Solitary Islands. The fourth, Diggers Point, is an isolated outcrop of adamellite, a granite-like igneous rock. In the 1880s a short-lived gold mine attempted to exploit this unusual geology (see section 3.5).

The dunal systems adjacent to the beaches of the reserve are known as the Holocene barrier and rise up to 10 metres in height. In the 1970s, sand mining took place on many of the beaches along the north coast, including along the northern end of Moonee Beach and along sections of the dunal system adjacent to Fiddamans Beach.

Soils are generally loose, medium or coarse quartz sands of low nutrient status and high permeability. On the headlands, the soils are shallower and are prone to drying out but often tend to be of higher nutrient levels (Floyd 1988).

The western end of Bare Bluff contains a natural sand passage caused by wind and wave action which is maintained by the northward advance of coastal sands.

3.2 Native Plants

Moonee Beach Nature Reserve contains a number of threatened species and endangered ecological communities associated with headlands, dunal systems and woodland communities adjacent to Moonee Creek.

Significant species recorded from the reserve are listed in Table 1. The four headlands within the reserve support the only known wild populations of the endangered plant, headland zieria (*Zieria prostrata*), although part of the Diggers Point population lies on crown land adjacent to the reserve. These populations are considered of national significance (NPWS 1998). A number of other significant populations of threatened plants

also occur on the headlands of the reserve, including the largest known coastal population of Austral toadflax (*Thesium australe*) and the largest population of sand spurge (*Chamaesyce psammogeton*) in Australia (S. Clemesha, pers. comm. 2007).

The native grasslands on the headlands are dominated by kangaroo grass (*Themeda australis*) and are classified as an endangered ecological community under the TSC Act. Threats to this headland grass community include: compaction on informal walking tracks and subsequent erosion issues; invasive weeds; inappropriate fire regimes; and the encroachment of other native species such as banksias. Look At Me Now Headland also contains a small area of perched saline swamp and two areas of sedgeland, dominated by bare twig rush (*Baumea juncea*) and prickly couch (*Zoysia macrantha*).

Native species occurring in the dunal habitats include spinifex (*Spinifex sericeus*), pigface (*Carpobrotus glaucescens*) and coastal wattle (*Acacia sophorae*). Scattered stands of horsetail she-oak (*Casuarina equisetifolia*) and coast banksia (*Banksia integrifolia*) occur in the hind dunes. Rainforest species, such as tuckeroo (*Cupaniopsis anacardioides*), occur throughout much of the sclerophyll forest in the southern section of the reserve in the hind dunes. These rainforest species gradually increase in density to the south of Moonee Beach and, where the canopy closes, form a littoral rainforest community. Littoral rainforest is also classed as an endangered ecological community under the TSC Act.

Table 1. Significant plant species recorded or expected to occur in the reserve

Common name	Scientific name	Significance
Sand spurge	<i>Chamaesyce psammogeton</i> (syn. <i>Euphorbia sparrmanii</i>)	Endangered*
grass	<i>Lepturus repens</i>	Poorly known in NSW
Headland plectranthus	<i>Plectranthus cremnus</i>	Poorly known^
Coast headland pea	<i>Pultenaea maritima</i>	Vulnerable*
Austral toadflax	<i>Thesium australe</i>	Vulnerable* #
Headland zieria	<i>Zieria prostrata</i>	Endangered* #

* Status under TSC Act.

Denotes nationally threatened species listed under the EPBC Act.

^ Denotes species recognised as a rare or threatened Australian plant by Briggs and Leigh (1996) but not included on the TSC Act.

Table 2. Significant plant communities recorded in the reserve

Name of community	Location in reserve	Status*
Littoral Rainforest	Southern part of reserve in hind dunes behind the southern end of Moonee Beach	EEC
Swamp Oak Floodplain Forest	Small stands along Moonee Creek	EEC
Subtropical Coastal Floodplain Forest	Open forest along Moonee Creek	EEC
<i>Themeda</i> grassland on seacliffs and coastal headlands	All four headlands	EEC
Swamp Sclerophyll Forest on Coastal Floodplains	Western edges of the reserve	EEC
Coastal Saltmarsh	Southern part of reserve south of Tiki Trail adjacent to Moonee Creek	EEC
Coastal Wetlands	West of Fiddamans Beach and east of Pacific Hwy behind the large dunal system.	SEPP

* Status under NSW Legislation – EEC = endangered ecological community listed under TSC Act, SEPP = mapped under State Environmental Planning Policy No. 14

Other endangered ecological communities present in the reserve are listed in Table 2 and include the swamp forest/ woodland of broad-leaved paperbark (*Melaleuca quinquenervia*) along the western edges of the reserve, a floodplain forest of large mature blackbutts (*Eucalyptus pilularis*) and swamp oak (*Casuarina glauca*) adjacent to Moonee Creek, and a saltmarsh/ mangrove vegetation complex in the southern section of the reserve. A number of other low lying wetland areas within the reserve are also considered to be significant, with the wetland behind Fiddamans Beach being listed under State Environmental Planning Policy (SEPP) 14 Coastal Wetlands before its protection in the reserve. The sandy plain between Moonee Creek and the frontal dune (surrounding Tiki Trail) is dominated by a belt of wet heathland.

3.3 Native Animals

Moonee Beach Nature Reserve, as the largest undeveloped and protected section of land adjacent to the ocean on the northern beaches of the Coffs Coast, is an important refuge for many species of native fauna. Due to the diverse assemblage of plant communities found within the reserve, a wide range of fauna species are found, including 13 threatened species (listed in Table 3). In addition to these recorded threatened species a further 25 threatened species have been identified as likely to occur within the reserve, including the wallum froglet (*Crinia tinnula*) and common planigale (*Planigale maculata*), both of which are listed as vulnerable.

Table 3. Threatened animal species recorded in Moonee Beach Nature Reserve

Common name	Scientific name	Legal Status*
Glossy black-cockatoo	<i>Calyptorhynchus lathami</i>	Vulnerable
Black-necked stork	<i>Ephippiorhynchus asiaticus</i>	Endangered
Sooty oystercatcher	<i>Haematopus fuliginosus</i>	Vulnerable
Pied oystercatcher	<i>Haematopus longirostris</i>	Endangered
Comb-crested jacana	<i>Irediparra gallinacea</i>	Vulnerable
Eastern osprey	<i>Pandion cristatus</i>	Vulnerable
Little tern	<i>Sternula albifrons</i>	Endangered ^
Squirrel glider	<i>Petaurus norfolcensis</i>	Vulnerable
Koala	<i>Phascolarctos cinereus</i>	Vulnerable
Little bent-wing bat	<i>Miniopterus australis</i>	Vulnerable
Eastern bent-wing bat	<i>Miniopterus schreibersii oceanensis</i>	Vulnerable
Common blossom-bat	<i>Syconycteris australis</i>	Vulnerable
Grey-headed flying-fox	<i>Pteropus poliocephalus</i>	Vulnerable #

* Status under TSC Act

Denotes nationally threatened species under the EPBC Act.

^ Denotes migratory species listed under EPBC Act.

The majority of native species found in the reserve are birds, and the reserve forms an important refuge for a number of migratory bird species, such as the wedge-tailed shearwater (*Ardenna pacifica*), glossy ibis (*Plegadis falcinellus*) and little tern (*Sternula albifrons*). Resident shorebirds such as the Australian pied oystercatcher (*Haematopus longirostris*) are known to breed in the Moonee Creek estuary. Although there are no records or sightings of the threatened eastern ground parrot (*Pezoporus wallicus wallicus*),

the wet heath community within the reserve is identified as potential habitat for this species.

Native mammals recorded from the reserve include sugar gliders (*Petaurus breviceps*), feather-tailed gliders (*Acrobates pygmaeus*), common brush-tailed possums (*Trichosurus vulpecula*), short-beaked echidnas (*Tachyglossus aculeatus*) and koalas (*Phascolarctos cinereus*) (Clancy 1989, 1994). Four species of bat have been recorded in the reserve, with two species of bent-wing bats roosting in caves on the headlands over winter. Swamp wallabies (*Wallabia bicolor*) frequent the littoral rainforests and heathlands, and a small population of red-necked wallabies (*Macropus rufogriseus*) resides on Dammerels Head (D. Scotts, pers. comm. 2008). The population of eastern grey kangaroos (*Macropus giganteus*) which graze on Look At Me Now Headland is increasing in numbers and this poses a potential risk to visitors (see section 3.6).

3.4 Aboriginal Heritage

The area protected in the reserve is considered to be of great spiritual significance to the Gumbaynggirr people. Aboriginal people have an association and connection to the land. The land and water within a landscape are central to Aboriginal spirituality and contribute to Aboriginal identity. Natural areas such as the reserve, and the resources contained within them, are associated with the use and enjoyment of foods and medicines, caring for the land, passing on cultural knowledge, kinship systems and strengthening social bonds. Aboriginal heritage and connection to nature are inseparable from each other and need to be managed in an integrated manner across the landscape.

Moonee Beach and the surrounding area provided the Gumbaynggirr people with an abundant variety of foods, medicines, shelter and utensils. Large tool-making workplaces, camp sites, ceremonial grounds and large middens are found within the reserve and its surrounds. Several sites, including an area first described by North (1964) as an axe 'factory', are known to occur in the reserve. Other sites are also likely to exist in the less disturbed areas of the reserve. This evidence of connections with the landscape in Moonee Beach Nature Reserve is important for Aboriginal people today as they provide evidence of past everyday life.

Look At Me Now Headland also plays an integral part in the creation story of the local Aboriginal community. This headland has additional importance because caves located on this headland are rain increase sites, where traditional ceremonies would be held to encourage rainfall in the surrounding area.

A threat to the value of these sites is illegal collection of material. Extensive collecting of artefacts has occurred in the past, and at least one major collection of material taken from what is now the reserve is known to be kept in private hands. A collection of artefacts from an axe factory located in the reserve are currently housed in the Australian Museum. The Aboriginal community may seek to have some of this material repatriated to the reserve in the future.

NPWS works closely with the Garlambirla Guyuu Girwaa (Coffs Harbour Elders Group) and Garby Elders in the management of the reserve. In 2004 an informal eroding beach access track on the southern side of Look At Me Now Headland, which was impacting on a midden site, was closed and rehabilitated after consultation with the local Aboriginal community.

3.5 Historic Heritage

From the mid 1800s, the economic development of the North Coast of New South Wales relied on the shipping of timber and other produce to Sydney. Ship wrecks along the coast were common. The graves of two un-named ship-wreck victims are located at Shelly Beach; their bodies were found following the collision of the *Keilawarra* and the *Helen Nicholl* east of Dammerels Head in 1886. None of the other 48 victims was found.

The number of ship wrecks prompted the development of the 'coastal highway of lights' in the late 1800s. South Solitary Lighthouse is located on an island off the coast of the reserve and was part of this 'highway'. Communication from the mainland to the lighthouse originally relied upon semaphore flags erected at a signal station near what is now known as Dammerels Head, named after George Dammerel who was the first operator of the signal station. The memorial to the Dammerels and a replica of the signal pole, which were originally located on Signal Hill, were moved to the headland to make way for the development of the village of Emerald Beach. The replica of the signal pole was cut down after being struck by lightning and was not replaced. A number of Norfolk Island pines (*Araucaria heterophylla*) were planted on the southern side of Dammerels Head by Joan Simms in 1965, also coinciding with the Emerald Beach development.

Mining took place over parts of the reserve during the 19th and 20th centuries, including gravel extraction from Shelly Beach in 1946 and mineral sand mining for rutile in various locations from the 1950s through to the 1970s. Frederick Fiddaman, a hermit, mined the point now known as Diggers Point for gold in 1882. The locations of old filled-in shafts and mullock heaps can still be seen today. Impending mining of mineral sands at the northern end of Moonee Beach in 1971 aroused considerable concern in the local area to the point where the then Coffs Harbour Shire Council refused concurrence to mining and took out a court injunction to halt any mining work. NPWS investigated the values of the area in 1972 and sought the protection of the area as a nature reserve. Gazettal of the original part of the nature reserve occurred in 1976.

The name of Look At Me Now Headland is believed to involve a picnic at Shelly Beach where an Englishman, showing off to the girls of the local Skinner family, took off on horseback with the Skinner boys through some low wetlands and upon his return to the picnic, covered in mud, said 'Look at me now!' (LAMN Arts Project Committee 2000).

In 1963, Look At Me Now Headland was purchased from the Skinner family for development as a tourist resort featuring a golf course and tennis courts. Following objections by local community groups, the NSW Government resumed the land in 1980 and it was expected that it would be added to the nature reserve. However in 1987 Coffs Harbour City Council proposed that an ocean discharge point for treated effluent be located at Look At Me Now Headland. The local community raised strong objections. In 1988, 1500 people marched against the proposal, and the campaign was taken on by the Coalition against Ocean Outfall Inc. and the Coffs Harbour Environment Centre. By 1994, it had grown into a major community-based campaign, which prompted a national call for rethinking the desirability of effluent disposal via ocean outfalls. At the height of the controversy, large sewer pipes were laid over Look At Me Now Headland.

A Commission of Inquiry was held under the EPA Act in 1993 to review the proposal, and the natural and cultural values and significance of the headland. While the Inquiry found in favour of the outfall in late 1994, the project was stopped due to a change in NSW Government in March 1995. Following lobbying by local conservationists, Diggers Point and Bare Bluff were added to an election commitment to protect Dammerels Head and Look At Me Now Headland as additions to the reserve. All four headlands were gazetted as additions in 1995. At this time, Look At Me Now Headland was in a degraded state,

primarily as a result of the unrestricted vehicular and pedestrian access across the headland which had caused significant vegetation damage, soil compaction and erosion. There was also considerable disturbance from the heavy machinery used to lay the sewer pipes. Since 2001 NPWS has undertaken extensive rehabilitation of the headland, constructed a carpark and restricted vehicular access, and controlled pedestrian access via walking tracks around the headland and to Moonee, Shelly and Emerald beaches. Some of the scars from past works and activities on the headland can still be seen today.

3.6 Recreation and Education Values

The headlands within the reserve, and the beaches which are accessed through the reserve, are used for a variety of recreational activities in a natural environment, including walking, surfing, swimming, sightseeing, whale watching, nature studies, beach and rock fishing, snorkelling and scuba diving. The local communities of Sandy Beach, Emerald Beach and Moonee Beach use the reserve on a daily basis and have a strong affiliation with the reserve. The southern side of Look At Me Now Headland is a renowned surfing location and experiences a high volume of use, particularly during summer months.

The diverse nature of the natural and cultural landscape of the reserve and the adjacent Solitary Islands Marine Park means the area is well suited to environmental education. An understanding of the values of the area, particularly in the local community, is necessary to gain support for conservation initiatives. The NPWS conducts regular "Discovery" activities in the area, particularly in the school holiday periods for local communities and visitors.

Interpretive display facilities within the reserve are low key and are designed to provide visitors with information on the natural and cultural values found in the reserve, recreational opportunities and NPWS's conservation responsibilities. Trackside panels have been installed to provide information on the graves at Shelly Beach, on the memorial to the Dammerel family at Dammerels Head, and on 'Living with Kangaroos' to reduce potential risks associated with the public's interaction with the population of eastern grey kangaroos on Look At Me Now Headland.

Walking tracks in the reserve, particularly on the headlands, allow visitors to appreciate the scenic values of the reserve, while minimising visitor impacts on the surrounding significant natural and cultural heritage values. Part of the headland walking track on Look At Me Now Headland is wheelchair accessible.

In the south of the reserve, Tiki Trail currently receives little visitor use but is maintained as a non-vehicular management trail for strategic fire control. It previously provided public access to Moonee Beach from the former Tiki Caravan Park. The Trail traverses Swamp Oak Floodplain Forest and heathland, allowing visitors to experience magnificent flora displays. A pedestrian bridge, constructed and owned by Coffs Harbour City Council, links Tiki Trail to the western bank of Moonee Creek. While there is currently no public access to the bridge from the west, it is expected that Council will establish this access within the life of the plan, leading to a significant increase in the use of the walking track.

The Solitary Island Coastal Walk extends from Sawtell to Corindi within the Coffs Harbour Local Government Area. The route for this walkway traverses the reserve, mainly following beaches and existing pathways across the headlands.

4. THREATS TO RESERVE VALUES

4.1 Introduced Species

The major weed species within the reserve are listed in Table 4. The noxious weeds, bitou bush and groundsel bush, are currently the weeds of most concern in the reserve. The *Noxious Weeds Act 1993* places obligations upon public authorities and private landholders to suppress declared noxious weeds on land they control to prevent weeds spreading to adjoining lands. Invasion of native plant communities by bitou bush is listed as a key threatening process under the TSC Act. It is an introduced South African species that was widely planted for dune stabilisation following sand mining in the late 1970s. The Western Australian willow wattle was also planted at this time for dune stabilisation and is a problem in the northern part of the reserve.

Other key threatening processes listed under the TSC Act that are operating in the reserve include: invasion of native plant communities by exotic perennial grasses; invasion, establishment and spread of lantana; and invasion and establishment of exotic vines and scramblers. Threat abatement plans may be prepared to address key threatening processes. As part of the threat abatement plan for bitou bush (DEC 2006), an annual aerial spraying program is carried out in the southern part of the reserve along with intensive ground control over the headlands. The encroachment of weed species, such as bitou bush, is a threat to headland zieria and a number of other threatened plants and communities within the reserve including the littoral rainforest and *Themeda* grassland.

On the northern side of Look At Me Now Headland behind Shelly Beach, there are numerous exotic garden plants growing on the site of an old house. The dumping of household garden waste into the reserve is a major and ongoing source of weed infestation. Several locations exist where this practice has occurred for many years resulting in a proliferation of weed species.

Table 4. Major weed species of concern in Moonee Beach Nature Reserve

Common name	Scientific name	Status*
Crofton weed	<i>Ageratina adenophora</i>	Noxious
Ground Asparagus Fern	<i>Asparagus aethiopicus</i>	Noxious
Groundsel bush	<i>Baccharis halimifolia</i>	Noxious
Bitou bush	<i>Chrysanthemoides monilifera</i> spp. <i>rotundata</i>	KTP, Noxious, WONS
Willow wattle	<i>Acacia saligna</i>	
Lantana	<i>Lantana camara</i>	Noxious, KTP, WONS
Easter Cassia	<i>Senna pendula</i> var. <i>glabrata</i>	
Morning glory	<i>Ipomoea indica</i>	KTP
Corky passionflower	<i>Passiflora suberosa</i>	KTP
Giant paspalum	<i>Paspalum urvillei</i>	KTP
Kikuyu	<i>Pennisetum clandestinum</i>	KTP
Giant Parramatta grass	<i>Sporobolus fertilis</i>	KTP, Noxious

* Status is as follows: Noxious = declared noxious in Coffs Harbour Local Government Area
 KTP = species included as part of a key threatening process under the TSC Act
 WONS = weed of national significance

Apart from straying pets, introduced animals are not currently a major problem in the reserve. The European red fox (*Vulpes vulpes*) is present in the reserve and poses the greatest threat to the natural state of the reserve, through direct predation or disturbance of native wildlife populations and as vectors in the spread of weeds throughout the reserve. While fox baiting is occasionally carried out in the reserve in response to fox sightings, the reserve is not currently identified as a priority site for fox control under the threat abatement plan being implemented for the fox (NPWS 2001).

Feral and stray cats (*Felis catus*) and domestic dogs (*Canis lupus familiaris*) also pose threats to the values of the reserve through predation and disturbance of wildlife.

The pandanus plant hopper (*Jamella australiae*), which is a native to northern Australia but has been introduced to northern NSW, may become a threat in the future to the iconic coastal screw pines (*Pandanus tectorius*) at Shelly Beach.

4.2 Inappropriate Fire Regimes

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

The reserve contains some vegetation communities which have evolved and adapted to fire, including headland and heathland communities, and appropriate fire regimes are considered essential for the survival of these communities (Kenny *et al.* 2004). In contrast, fire should be excluded from all the areas of littoral rainforest and saltmarsh. The reserve also contains some assets that are vulnerable to fire, including visitor facilities and the historic sites. A fire management strategy addressing assets at risk of fire has been developed in consultation with the Rural Fire Service and the local community (NPWS 2005).

Arson has historically been the cause of most fires within the reserve. The vegetation surrounding Tiki Trail in particular is extremely fire prone and the potential for acts of arson and significant unplanned fire events is likely to increase with the anticipated increased public use of Tiki Trail.

4.3 Visitor Impacts

The population of the northern beaches of the Coffs Coast area is expected to increase substantially over the coming decades (CHCC 2004). Pressures on the reserve from this increasing population and associated development adjacent to the western boundaries of the reserve will place strains on the reserve values if not managed appropriately.

The headland areas are the most heavily used sections of the reserve. The shallow soils on the headlands are vulnerable to erosion from both vehicular and foot traffic, and the dwarf heath and grassland communities are particularly at risk from trampling damage by visitors walking off designated pathways. Aboriginal sites are also at risk from erosion caused by informal use patterns.

As a nature reserve, dog walking within the reserve is prohibited. Occasional issues with dogs in the reserve still occur and ongoing law enforcement aims to control these activities which impact on the fauna within the reserve, including the population of eastern grey kangaroos on Look At Me Now Headland.

4.4 Isolation and Fragmentation

Long term conservation of biodiversity depends upon the protection, enhancement and connection of remaining habitat across the landscape, incorporating vegetation remnants on both public and private lands. Along with nearby vegetated areas, the reserve forms part of a regional ecological corridor and an important link to other forested areas (Scotts 2003). Maintaining the integrity of the remaining habitat within the reserve and, where possible, linking this to adjacent areas of bushland to facilitate wildlife corridors is important in ensuring long term viability of the reserve's biological values.

4.5 Climate Change

Anthropogenic climate change has been listed as a key threatening process under the TSC Act as it has the potential to significantly affect biodiversity by changing population size and distribution of species, modifying species composition, and altering the geographical extent of habitats and ecosystems. Species most at risk are those unable to migrate or adapt, particularly those with small population sizes or with slow growth rates.

Projections of future changes in climate for NSW include higher sea levels, increasing water temperatures, more intense but possibly reduced annual average rainfall, increased temperature extremes and higher evaporation rates. Across the landscape, these changes are likely to lead to greater intensity, duration and frequency of fires, more severe droughts and increased regional flooding. In coastal areas, it is anticipated that there will be increased shore erosion, impacts on coastal ecosystems (including the loss of important coastal wetlands and mangroves) and impacts on human settlements and infrastructure.

The potential impact of climate change for Moonee Beach Nature Reserve is difficult to predict with any accuracy since it depends on the compounding effects of other pressures, particularly barriers to migration and changes in fire regimes. Programs to increase the connectivity of the reserve, and to reduce pressures from pest species and inappropriate fire regimes, may help reduce the severity of some of the effects of climate change. It is beyond doubt however that rising sea levels will have serious deleterious impacts on the reserve's low-lying vegetation communities. It is anticipated that salt water inundation due to storm surges may lead to loss of freshwater wetlands, including swamp forests, fundamentally changing the reserve's vegetation complex.

5. MANAGEMENT STRATEGIES AND ACTIONS

Current Situation	Desired Outcomes	Management Response	Priority
<p>5.1 Soil and Water Conservation</p> <p>The major areas of concern in terms of soil erosion exist on the headland areas and are associated with visitor use of (mostly informal) natural surface walking tracks. Soils on the headlands are shallow and stabilising vegetation can take a long time to recover from disturbance (Floyd 1988). Aboriginal sites can also be exposed and impacted by erosion. The construction of a network of hardened paved walking tracks and strategic fencing has been successful in substantially reducing this pressure on Look At Me Now Headland.</p> <p>Sand erosion of dunal areas is another area of concern, particularly in the northern section of the reserve south of Sandy Beach and on the western end of Bare Bluff where a natural sand passage is maintained by the northward advance of coastal sands. In 1997, stabilisation works were conducted to slow the surface erosion of Bare Bluff and its hind dunes, which had been exacerbated by past vehicle access on the sand passage. Further stabilisation of dunes to the west and south-west of Bare Bluff may also be required.</p> <p>Moonee Creek forms the western boundary of the southern section of the reserve. There is some bank erosion along the creek caused by boating activities conducted above the speed limits.</p>	<ul style="list-style-type: none"> The impact of soil erosion and water pollution on the values of the reserve is minimised. 	<p>5.1.1 Control soil erosion affecting Aboriginal sites in consultation with the local Aboriginal community.</p> <p>5.1.2 Monitor the rehabilitating sand blow-out at Bare Bluff and continue to stabilise areas as required.</p> <p>5.1.3 Monitor the sand dunes to the west and south west of Bare Bluff and stabilise as required using native species.</p> <p>5.1.4 Monitor the walking tracks and beach access points on the headlands and take appropriate action as needed, such as track re-alignment, track hardening or fencing, to minimise erosion and root exposure. Current areas of concern include Bare Bluff, Dammerels Head, Diggers Point, and the access to Moonee Beach from Look At Me Now Headland.</p> <p>5.1.5 Monitor bank erosion along Moonee Creek. Liaise with and support other relevant agencies, including Marine Parks Authority, Maritime NSW and Coffs Harbour City Council, with regard to the management of the estuary.</p>	<p>High</p> <p>Medium</p> <p>Low</p> <p>High/ Ongoing</p> <p>Low</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p>5.2 Native Plants and Animals</p> <p>The reserve protects a diversity of vegetation types and is a key habitat for wildlife. It also currently forms part of a regional corridor for wildlife movement (Scotts 2003). Four threatened plant species, six endangered ecological communities and 13 threatened animal species are known to occur within the reserve (tables 1-3), and other threatened species are predicted to occur. A recovery plan for headland zieria is approved and currently in operation. The Priorities Action Statement lists recovery actions for other species and endangered ecological communities.</p> <p>Threats to the native plant species and communities include weed infestation (section 4.1), inappropriate visitor use such as informal walking track development and associated trampling, root exposure and erosion (section 4.3), and inappropriate fire regimes (section 4.2). These threats impact on the habitat value of the reserve for wildlife. Introduced animals, including foxes and straying domestic dogs and cats, also threaten the survival of native animal species.</p> <p>Damage from past land uses, including sand mining and vehicle access on the headlands, continues to impact upon the plant communities found in the reserve. In the area south of Sandy Beach, the denuded dune system remains an ongoing problem.</p> <p>Volunteer groups occasionally work within the reserve on bush regeneration activities. It is NPWS policy to ensure that only local native seed sources are used in propagation works.</p> <p>The number of eastern grey kangaroos grazing on Look At Me Now Headland is increasing and there is some potential risk associated with their interaction with the public.</p>	<ul style="list-style-type: none"> • Native species and communities are conserved. • Understanding of native biodiversity, its distribution and ecological requirements is improved. • Structural diversity and habitat values are restored in areas subject to past disturbance. • Safety risks due to interactions with native fauna are minimised. 	<p>5.2.1 Encourage targeted surveys for threatened plant and animal species that are predicted to occur in the reserve.</p> <p>5.2.2 Implement relevant strategies in the recovery plan and Priorities Action Statement for threatened species and communities.</p> <p>5.2.3 Liaise with neighbours, Coffs Harbour City Council, the Crown Lands Division of the Department of Primary Industries, and the Roads and Traffic Authority to encourage the retention and appropriate management of key habitat and corridors adjacent to the reserve.</p> <p>5.2.4 Encourage volunteer support in programs that protect and enhance the natural and cultural values of the reserve.</p> <p>5.2.5 Initiate the recovery through bush regeneration techniques of small sections of the denuded dunal system in the northern section of the reserve south of Sandy Beach to establish seed sources that will allow natural regeneration over time.</p> <p>5.2.6 Promote public awareness of measures to minimise potential safety risks associated with kangaroos through signage and targeted Discovery programs.</p> <p><i>For management responses in relation to erosion, introduced species, fire and visitor management, see sections 5.1, 5.5, 5.6 and 5.7.</i></p>	<p>Medium</p> <p>High</p> <p>Medium</p> <p>Medium</p> <p>Low</p> <p>High</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p>5.3 Aboriginal Heritage</p> <p>The reserve lies within the country of the Gumbaynggirr people. The Moonee area was renowned as a fertile place with bountiful resources, including stones for making axes.</p> <p>There are numerous significant Aboriginal sites within the reserve including middens, axe factories, sacred sites and artefact scatters, which provide evidence of a rich history of the traditional use of the area. While many sites are recorded, there are probably other sites in the reserve.</p> <p>Threats to sites mainly revolve around inappropriate visitor use, illegal collection of material and erosion.</p>	<ul style="list-style-type: none"> Aboriginal cultural features and values of the reserve are appropriately identified and protected. Aboriginal people are involved in management of their culture. 	<p>5.3.1 Consult and involve the Coffs Harbour Local Aboriginal Land Council, the Garlambirla Guyuu Girwaa (Coffs Harbour Elders Group) and Garby Elders Group and other relevant Aboriginal community organisations in the management of the reserve, particularly its Aboriginal sites, places and values.</p> <p>5.3.2 Encourage further research into the Aboriginal heritage values of the reserve in consultation with relevant Aboriginal community organisations.</p> <p>5.3.3 Ensure information on the reserve's Aboriginal heritage is presented appropriately to the public and only with the direct involvement or endorsement of the local Aboriginal community.</p> <p>5.3.4 If supported by the representative organisations of the Aboriginal community, permit repatriation of artefacts or other material sourced from the reserve or surrounding district to a suitable site within the reserve or other suitable keeping place.</p>	<p>High</p> <p>Medium</p> <p>High</p> <p>High</p>
<p>5.4 Historic Heritage</p> <p>There are a number of important non-Aboriginal historic sites in the reserve, including the Dammerels' memorial on Dammerels Head and the graves of ship-wreck victims on the cliff above Shelly Beach. A replica signal pole was erected by Coffs Harbour City Council next to the Dammerels memorial but this was cut down after being struck by lightning. There is community interest in reinstating this pole and improving the interpretation of the historic linkages between Dammerels Head and South Solitary Island.</p>	<ul style="list-style-type: none"> Historic heritage items are recorded, protected and appropriately interpreted. No new commemorative plaques are 	<p>5.4.1 Protect and continue to interpret the Dammerels' memorial and the shipwreck grave sites.</p> <p>5.4.2 Encourage further research into the history of the reserve.</p> <p>5.4.3 Work with stakeholders, such as the Friends of South Solitary Island, to investigate projects to enhance historic heritage experiences offered within the reserve. This may include a historic walk and/or</p>	<p>High</p> <p>Low</p> <p>Low</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p>A number of unapproved commemorative plaques have also been erected on the headlands, most of which were installed before these areas were dedicated as part of the reserve in 1995. No action has been taken to remove these to date. However, the cumulative result of allowing all future requests to erect plaques would detract from the natural and cultural values of the reserve.</p> <p>A stand of Norfolk Island pines was planted on the southern side of Dammerels Head in 1965. They may impact on the natural values of the reserve and public safety.</p>	<p>installed within the reserve.</p> <ul style="list-style-type: none"> Planted exotic trees are phased out from the reserve. 	<p>the reinstatement of a replica signal pole and enhancement of interpretation and presentation of historic memorials provided there are no impacts on endangered ecological communities or threatened species.</p> <p>5.4.4 Do not permit any further private commemorative plaques within the reserve or the replacement of any plaques that are destroyed or damaged (except those associated with the historic graves or the Dammerels), and remove any new unauthorised memorials.</p> <p>5.4.5 Assess exotic plants at historic sites for their significance, their potential to spread and public safety. Remove any exotic plants lacking cultural significance or which pose a risk to public safety. Those determined to be of historic significance will be retained until they senesce but will not be replaced or allowed to regenerate.</p>	<p>High</p> <p>High</p>
<p>5.5 Introduced Plants and Animals</p> <p>The relatively small size of the reserve makes it vulnerable to the impacts of introduced species. The reserve currently has scattered infestations of bitou bush, groundsel bush and exotic grasses, along with isolated infestations of other woody weeds (such as the introduced willow wattle), exotic vines and lantana. The NPWS Regional Pest Management Strategy identifies priorities for control. Control programs are designed to avoid impacts on non-target species. NPWS efforts are assisted by local Dune Care groups.</p> <p>Invasion by bitou bush is the key threat to the threatened plants occurring in the reserve and is an immediate ongoing threat to the conservation values of the reserve's significant</p>	<ul style="list-style-type: none"> Impacts on native plants and animals from introduced species are minimised. Park users and neighbours are consulted, informed of and encouraged to participate (where 	<p>5.5.1 Manage introduced species in accordance with the NPWS Regional Pest Management Strategy, including the ongoing control of bitou bush, exotic grasses, groundsel bush and woody weeds (such as willow wattle). Groundsel bush control will need to be done in conjunction with neighbours and other agencies.</p> <p>5.5.2 Work closely and provide support to local volunteer groups that work in and adjacent to the reserve.</p> <p>5.5.3 Work closely with Coffs Harbour City Council, local resident groups and local nurseries to promote</p>	<p>High</p> <p>High</p> <p>High</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p>vegetation communities, including littoral rainforest and grassy headlands. The four headlands in the reserve are identified as high priority sites for ongoing control under the bitou bush threat abatement plan. Progress on controlling infestations is being made, with the heaviest infestations now occurring to the west of Look At Me Now Headland, on the dunal system to the south of Sandy Beach and along Moonee Beach.</p> <p>Control of exotic grasses, particularly giant paspalum and kikuyu, is undertaken as a recovery action for the headland zieria. Priority areas for control of exotic grasses are also the littoral rainforest and grassy headlands.</p> <p>A large infestation of groundsel bush occurs in the southern section of the reserve, extending west across Moonee Creek into neighbouring private properties. It affects several endangered ecological communities, including floodplain forests and swamp forest. Access to this area is difficult and effective control can only be achieved through a cooperative program across all tenures.</p> <p>Works are continuing on removing the former garden plants at the old house site on Look At Me Now Headland. An ongoing source of weeds in several parts of the reserve is the dumping of garden waste. This problem is likely to worsen with increased residential development in the area. The NPWS has increased law enforcement and prosecution efforts as deterrence.</p> <p>Domestic dogs and cats enter the reserve, and dog-walking on the neighbouring beach and estuary is an issue. Foxes are also present in the reserve and impact on nesting shorebirds. There is also the potential for feral cats to become a large threat. The pandanus plant hopper may also become a threat in the future to the coastal screw pines at Shelly Beach.</p>	<p>appropriate) in pest control.</p> <ul style="list-style-type: none"> • The dumping of garden waste into the reserve is eliminated. • Clear measurable data is collected to demonstrate the effectiveness of weed control programs. 	<p>awareness of the impact of garden waste dumping, and to encourage the planting of non-invasive 'bush friendly' plant species in gardens and new residential areas neighbouring the reserve.</p> <p>5.5.4 Monitor the presence of noxious and other significant environmental weeds. Eradicate any new isolated outbreaks where possible.</p> <p>5.5.5 Establish monitoring sites, particularly in headland areas, to measure the effectiveness of weed control programs on the recovery of threatened species.</p> <p>5.5.6 Monitor populations of introduced animals within the reserve and their impacts. Conduct pest animal control programs as required using appropriate methods in collaboration with neighbours and council.</p> <p>5.5.7 Continue the program of monitoring screw pine health to assist in the detection and future control of pandanus plant hopper.</p> <p>5.5.8 Seek to have the beach and estuary adjacent to the reserve declared off limits for dogs. In the meantime, work with the Moonee Beach Caravan Park and Coffs Harbour City Council to promote responsible dog ownership and the need to keep dogs on a leash and outside the reserve at all times.</p>	<p>High</p> <p>Medium</p> <p>Medium</p> <p>Low</p> <p>High</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p>5.6 Fire Management</p> <p>The primary fire management objectives of the NPWS are to protect life and property and community assets from the adverse impacts of fire, while managing fire regimes to maintain and protect biodiversity and cultural heritage (NPWS 2007). The NPWS uses a zoning system for bushfire management that is compatible with the zoning used by the Coffs Harbour Bush Fire Management Committee (BFMC) in its bushfire risk management plan. Annual hazard reduction programs, which may include mechanical fuel reduction techniques, prescribed burning and fire trail works, mostly in asset protection zones (APZs), are submitted to the BFMC.</p> <p>A separate fire management strategy has been prepared for the reserve (NPWS 2005). This details the fire risks, asset protection measures and control options for the reserve. It also identifies the appropriate fire regimes and thresholds suitable for each vegetation community. The headland areas, where banksia woodland is encroaching on <i>Themeda</i> grassland, are identified as underburnt areas.</p> <p>Consistent with the Coffs Harbour Bushfire Risk Management Plan and the classification of the reserve as a nature reserve, the majority of the reserve is zoned as a Land Management Zone, the objectives of which are the conservation of native biodiversity and cultural heritage sites. Fire should be excluded from the areas of littoral rainforest and saltmarsh to the south of the reserve. Prescribed fires may be required elsewhere to ensure that fire regimes are appropriate for the conservation of plant and animal communities.</p> <p>The reserve contains some areas of highly fire prone vegetation such as the heath communities. Asset Protection Zones have been identified along all neighbouring assets and are regularly maintained in a low fuel condition to protect</p>	<ul style="list-style-type: none"> Life, property and natural and cultural values are protected from the impacts of fire. Fire frequencies are appropriate for conservation of native plant and animal communities. Fire is excluded from littoral rainforest and saltmarsh communities. Arson attacks are reduced. 	<p>5.6.1 Implement the Reserve Fire Management Strategy (RFMS) for Moonee Beach Nature Reserve, and update as required.</p> <p>5.6.2 Continue to participate in the Coffs Harbour BFMC. Maintain cooperative arrangements with the Rural Fire Service, its brigades and fire control officers, other fire authorities and surrounding landowners in regard to fuel management and fire suppression.</p> <p>5.6.3 Manage the nature reserve to protect biodiversity in accordance with the fire interval guidelines for vegetation communities identified in the RFMS.</p> <p>5.6.4 Use prescribed fire to achieve a variety of fire regimes in appropriate vegetation types and maintain habitat suitable for species with specific requirements.</p> <p>5.6.5 Liaise with consent authorities to ensure all future developments that border the reserve incorporate the required fire protection measures wholly within private property except where an existing APZ exists and is identified in the RFMS.</p> <p>5.6.6 Maintain Tiki Trail as a strategic (non-vehicular) fire control line.</p> <p>5.6.7 Promote the NPWS's fire management objectives and activities in the reserve to the public and visitors.</p> <p>5.6.8 Encourage research which adds to the knowledge of the response of the reserve's vegetation</p>	<p>High</p> <p>High</p> <p>High</p> <p>High</p> <p>High</p> <p>Medium</p> <p>Medium</p> <p>High</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p>these assets from unplanned fire events. Tiki Trail in the middle of the southern section of the reserve also forms a strategic (non-vehicular) fire access for the control and management of fire.</p> <p>Arson has been the cause of most fires in the reserve in the past, and there is the potential for increasing incidence of arson as more of the surrounding area is urbanised.</p>		<p>communities and significant species to fire.</p>	
<p>5.7 Visitor Use</p> <p>Moonee Beach Nature Reserve is a relatively small conservation area with significant natural and cultural values that can be impacted by visitors. Access to the reserve is also constrained, mainly occurring via narrow residential streets that are poorly signposted, and so there is the potential for visitation to cause conflicts with reserve neighbours.</p> <p>Walking on the designated walking tracks over the headlands and along the beaches is the major recreational activity in the reserve. The pressures on walking track surfaces are high and are likely to increase with population increases. At the time of its dedication as part of the reserve, Look At Me Now Headland was severely affected by a large network of informal tracks, and fencing was introduced to keep visitors to the paved track, thereby protecting threatened species and allowing recovery of some heavily eroded areas. Some of these areas are now well protected by vegetation and the fencing in these sections has become redundant. However, informal tracks elsewhere in the reserve are eroding, and damage to vegetation and soils on the headland areas in particular will need to be monitored and managed appropriately.</p> <p>Dog walking occasionally occurs in the reserve, mainly around the headland areas adjacent to the villages. While dog walking is permitted in adjacent areas of Coffs Coast</p>	<ul style="list-style-type: none"> • Visitor use is appropriate and ecologically sustainable, and encourages appreciation of the reserve's values. • The local community and visitors to the reserve are aware of the reserve's significance and management programs. • Acts of vandalism are reduced. • Spear fishing equipment is 	<p>5.7.1 In liaison with Coffs Harbour City Council, establish directional road signs to Look At Me Now Headland.</p> <p>5.7.2 Implement necessary control actions on walking tracks to minimise the impacts of erosion or trampling on threatened species and communities. This may include formalising walking tracks with a paved or hardened surface and/ or installation of steps or temporary fencing, particularly in locations adjacent to threatened species. <i>Current priorities for action are listed in management response 5.1.4.</i></p> <p>5.7.3 Remove redundant sections of previously installed fencing.</p> <p>5.7.4 Once Coffs Harbour City Council grants general public access to Tiki bridge, monitor the use and condition of Tiki Trail. Tiki Trail is to remain designated as a walking track but sections may be upgraded (e.g. by installation of boardwalks) to minimise visitor impacts on reserve values.</p> <p>5.7.5 Provide interpretive and other use information at existing locations and where significant</p>	<p>Medium</p> <p>Ongoing</p> <p>Low</p> <p>Medium</p> <p>Medium</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p>Regional Park, it is prohibited in nature reserves. This needs to be promoted in the neighbouring community.</p> <p>Under NPWS policy, bicycle riding is generally not permitted in nature reserves. Bicycle riding on walking tracks is a hazard for walkers, particularly on Look At Me Now Headland. Within the reserve, public vehicles and bicycles are permitted only on the sealed road and car park at Look At Me Now Headland. A bike rack has been installed at the car park, so that visitors may store their bikes safely.</p> <p>There will be a significant increase in demand for visitor access to Moonee Beach in the southern section of the reserve as areas adjacent to the west of Moonee Creek are developed. It is likely that public access to the council-owned bridge across the creek at the end of Tiki Trail will be re-established during the life of this plan, with a large increase in the use of this natural surface walking track.</p> <p>The diverse nature of the natural and cultural landscape of the reserve including the adjacent Solitary Islands Marine Park means the area is well suited to local environmental education. Promotion of an understanding of the values of the area, particularly in the local community, is a means of gaining support for conservation initiatives in the reserve. NPWS encourages and fosters activities which promote the protection and enhancement of the natural and cultural values of the reserve. Vandalism of park infrastructure such as signs, interpretation displays and fences is a sporadic but ongoing issue.</p> <p>Spear fishing is permitted at various locations within Solitary Islands Marine Park, some of which are accessed through the reserve.</p>	<p>carried in a safe manner in the reserve.</p>	<p>management issues arise that will assist in raising visitor awareness of the reserve's values and management programs.</p> <p>5.7.6 Allow spear fishers to carry equipment through the reserve from the Look At Me Now car park along the walking track to Moonee Beach provided that the equipment is in a dismantled/ disarmed state.</p> <p>5.7.7 Public vehicles and bicycles are permitted only on the sealed road and car park at Look At Me Now Headland as shown on the map.</p> <p>5.7.8 Provide and maintain track-side seating at strategic locations. Locations may include Look At Me Now Headland, Dammerels Head, Bare Bluff and Shelly Beach.</p>	<p>Ongoing</p> <p>Ongoing</p> <p>Low</p>

Current Situation	Desired Outcomes	Management Response	Priority
<p>5.8 Management Operations and Other Uses</p> <p>Management operations in the reserve are primarily concerned with weed control and maintenance of visitor infrastructure. There are no management trails or other facilities in the reserve. The old sand mining trail shown on old topographic maps in the southern section of the reserve has re-vegetated and is not used for management or access. Reserve boundaries are generally well marked, although additional regulatory signage is required in certain places and directional signage is required at the eastern end of Tiki Trail.</p> <p>Underground sewerage and water reticulation easements exist within the reserve along the southern interface with the village of Emerald Beach and along the highway in the northern part of the reserve. The easements are maintained in a low fuel condition to provide Asset Protection Zones under the Reserve Fire Management Strategy (see section 5.6).</p> <p>Some neighbouring areas of crown land adjacent to the reserve may be suitable as additions to the reserve.</p>	<ul style="list-style-type: none"> Existing infrastructure is managed to minimise impacts on natural and cultural values. Reserve boundaries are clearly designated on ground. 	<p>5.8.1 Install and maintain regulatory and directional signage at appropriate locations in the reserve.</p> <p>5.8.2 Ensure that the management of easements does not impact on the values of the reserve.</p> <p>5.8.3 Initiate and complete processes for gazettal of additions of neighbouring Crown land to the reserve.</p>	<p>High</p> <p>High</p> <p>Medium</p>

High priority activities are those imperative to achievement of the objectives and desired outcomes. They must be undertaken in the near future to avoid significant deterioration in natural, cultural or management resources.

Medium priority activities are those that are necessary to achieve the objectives and desired outcomes but are not urgent.

Low priority activities are desirable to achieve management objectives and desired outcomes but can wait until resources become available.

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