

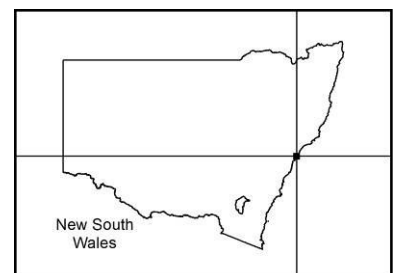


# Plan of Management

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## Wyrabalong National Park



**WYRRABALONG NATIONAL PARK**  
**PLAN OF MANAGEMENT**

**NSW National Parks and Wildlife Service**

**March 2013**

**This plan of management was adopted by the Minister for the Environment on 25 March 2013**

### **Acknowledgments**

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

NPWS acknowledges that this park is in the traditional country of the Darkinjung and Awabakal Aboriginal people.

Cover photograph of Tuggerah Lake edge vegetation along Canton Beach in Wyrribalong (north) National Park, taken from a kayak by Ray Mjadwesch, NPWS.

For additional information or any inquiries about this park or this plan of management, contact the NPWS Lakes Area Office at Blue Wren Drive, Munmorah State Conservation Area, or by telephone on (02) 4972 9000.

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## FOREWORD

Wyrabalong National Park is 620 hectares in area and is located near the township of The Entrance, on the Central Coast of New South Wales approximately 105 kilometres north of Sydney.

The park is comprised of North Wyrabalong (north of The Entrance), South Wyrabalong (south of The Entrance) and four islands within Tuggerah Lake (Pelican Island, Terilbah Island and two unnamed islands known locally as Bird Islands).

The park conserves the largest stands of littoral rainforest and Sydney red gums on the NSW Central Coast as well as significant freshwater wetlands. It also contains six endangered ecological communities, significant habitat for a number of threatened animal species and a variety of Aboriginal sites, including an extensive midden at Pelican Point.

The New South Wales *National Parks and Wildlife Act 1974* requires that a plan of management be prepared for each national park. A draft plan of management for Wyrabalong National Park was placed on public exhibition from 4 March to 6 June 2011. 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 monitoring of erosion and remedial works where necessary, protection of threatened species, continued management of pest species and updating of the fire management strategy for the park. The plan provides also for enhancing of recreation opportunities, including the preparation of site management plans for Crackneck Lookout and Wyrabalong Lookout/Cromarty Hill.

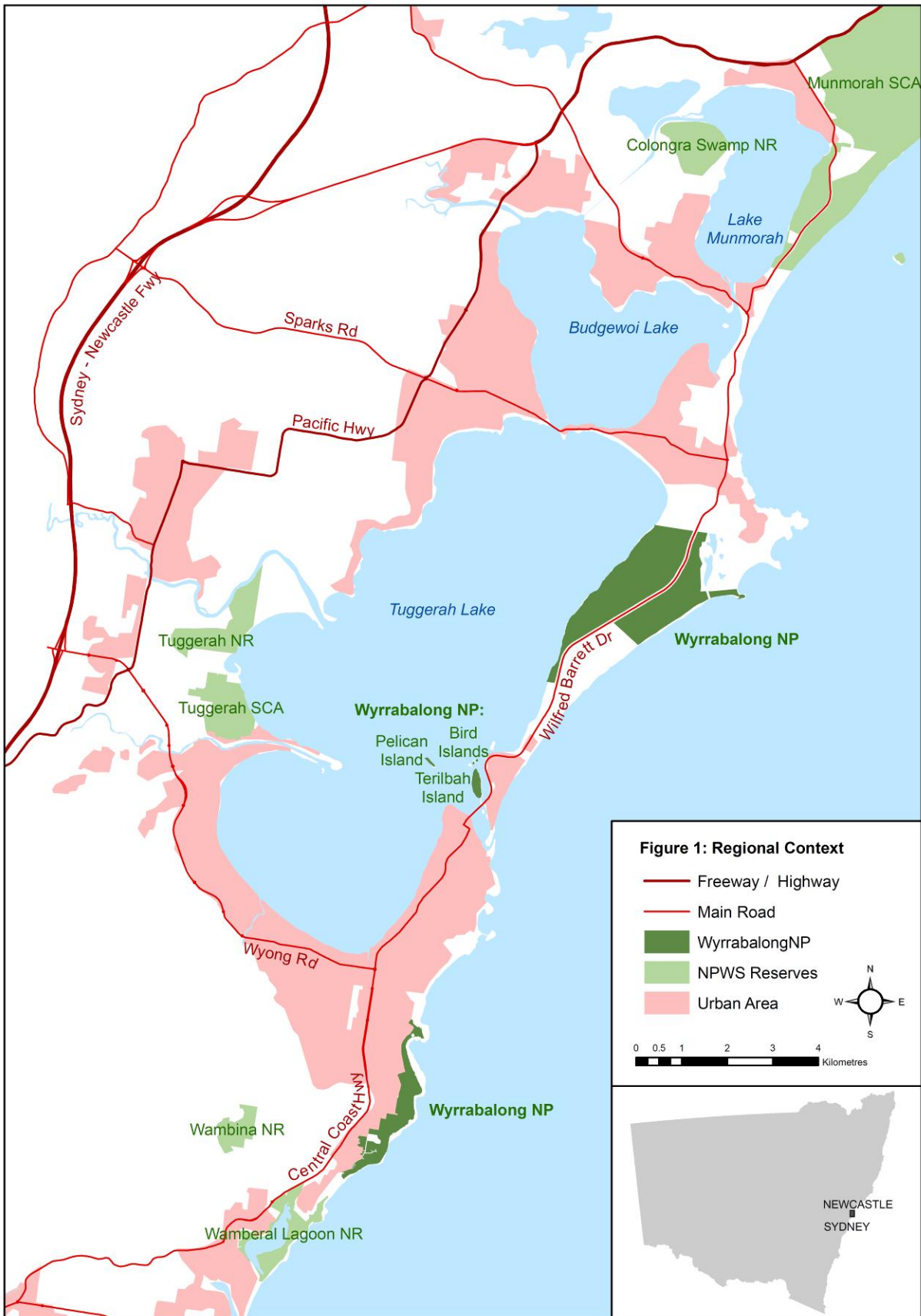
This plan of management establishes the scheme of operations for Wyrabalong National Park. In accordance with section 73B of the *National Parks and Wildlife Act 1974*, this plan of management is hereby adopted.



**Robyn Parker MP**  
**Minister for the Environment**

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**FIGURE 1. REGIONAL CONTEXT OF WYRRABALONG NATIONAL PARK**

## **1. LOCATION, GAZETTAL AND REGIONAL CONTEXT**

### **1.1 LOCATION**

Wyrribalong National Park is 620 hectares in area and is located near the township of The Entrance, on the Central Coast of New South Wales approximately 105 kilometres north of Sydney.

Wyrribalong National Park is comprised of three distinct land units: North Wyrribalong, South Wyrribalong, and four islands within Tuggerah Lake (Pelican Island, Terilbah Island and two unnamed islands known locally as 'Bird Islands').

The park is within the local government areas of Wyong Shire Council and Gosford City Council, and the administrative area of the Hunter-Central Rivers Catchment Management Authority and Darkinjung Local Aboriginal Land Council.

Wyrribalong National Park is within the Sydney Basin Bioregion (Wyong subregion) and forms part of a string of coastal reserves between the Hawkesbury River in the south and the Hunter River in the north. Together they protect significant natural and cultural values while providing for recreation and educational opportunities.

### **1.2 GAZETTAL**

North Wyrribalong protects 480 hectares of coastal barrier dune system on the North Entrance Peninsula, between The Entrance North and Norah Head. Recognition of the conservation significance of this area occurred as far back as 1958, however formal reservation as Wyrribalong National Park did not occur until May 1991, following a hard fought conservation battle between mining companies, and the North Entrance Peninsula Preservation Society and Wyong Council to protect the red gum forest.

South Wyrribalong (120 hectares) lies south of The Entrance and includes a narrow band of coastal forests, headlands and sea cliffs, between Shelley Beach and Forresters Beach. A 400 metre wide coastal strip between Toowoan Bay and Wamberal Lagoon was identified as having potential for coal mining in 1876 and was protected as a crown reserve. Most of this area was reserved as part of the original park declaration in 1991.

Between the northern and southern sections of the park lies a group of four islands near the Entrance Channel to Tuggerah Lake, which also form part of the park. The largest of the four, Terilbah Island, is a natural sand island, separated from the mainland at The Entrance North by a narrow channel. The other three islands are man-made, formed by deposits of dredge spoil from deepening of The Entrance Channel. Pelican Island is the furthest from the mainland and was formed in the 1920s. The two smaller islands, reserved to a depth of 50 metres below the surface, were constructed in the 1940s to provide artificial high tide roosts for wading birds. Pelican and Terilbah Islands formed part of the original park declaration in May 1991, while the smaller islands were reserved as part of the park in November 2005.

### 1.3 REGIONAL CONTEXT

Wyrrabalong National Park lies in a striking coastal landscape including estuarine lakes, coastal forests on sand dunes and towering sea cliffs surrounded by residential development. The park supports a diversity of significant natural habitats such as littoral rainforest, coastal wetlands, heaths and remnant forest ecosystems. The two main sections of the park (North and South) remain in their natural states today for opposing reasons: North Wyrrabalong because it was largely isolated and considered of very low economic value (with the exception of sand mining); and South Wyrrabalong because it was largely accessible and seen as having high economic potential (i.e. originally 'reserved on account of coal').

The unsuitability of North Wyrrabalong for agriculture or residential development made it 'suitable' as a refuse for the inevitable waste produced by an increasing population. A council garbage tip was constructed to the immediate south and a sewage treatment plant and absorption ponds were created to the immediate north-east of the current boundary. While not ideal land uses adjacent to a conservation area, these facilities created an effective buffer between the park and residential development for many years. Today this area has little interface with residential development. To the north of the park lies a relocatable home village and Vietnam Veterans Hostel, while the south-eastern boundary adjoins the tourist / residential resort Magenta Shores (built on the old tip site). The fact that the park covers the majority of the North Entrance Peninsula with the Pacific Ocean to the east and Tuggerah Lake to the west considerably reduces development pressure.

The first development pressure on South Wyrrabalong came in the form of holiday makers to the Central Coast and sand mining. Sand mining is no longer an issue in the sensitive coastal heaths, and while tourism remains a large industry in the region and places pressures on the park. Residential development surrounds South Wyrrabalong and creates management issues different to North Wyrrabalong.



## 2. MANAGEMENT CONTEXT

### 2.1 LEGISLATIVE AND POLICY FRAMEWORK

The management of national parks in NSW is in the context of the 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).

Other legislation, international agreements and charters may also apply to management of the area. In particular, the *Environmental Planning and Assessment Act 1979* 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* also applies in relation to actions that may impact on migratory species / 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 a park except in accordance with the plan. Wyrabalong National Park is currently subject to a plan of management adopted on 1 June 1995. This plan replaces the 1995 plan and will also apply to any future additions to Wyrabalong National Park. Should management strategies or works be proposed for the park or any additions that are not consistent with this plan, an amendment to this plan or a new plan will be prepared and exhibited for public comment.

### 2.2 MANAGEMENT PURPOSES AND PRINCIPLES

National parks are reserved under the NPW Act to protect and conserve areas containing outstanding or representative ecosystems, natural or cultural features or landscapes or phenomena that provide opportunities for public appreciation and inspiration and sustainable visitor use.

Under the Act (section 30E), national parks are managed to:

- conserve biodiversity, maintain ecosystem functions, protect geological and geomorphological features and natural phenomena and maintain natural landscapes
- conserve places, objects, features and landscapes of cultural value
- protect the ecological integrity of one or more ecosystems for present and future generations
- promote public appreciation and understanding of the park's natural and cultural values
- provide for sustainable visitor use and enjoyment that is compatible with conservation of natural and cultural values
- provide for sustainable use (including adaptive reuse) of any buildings or structures or modified natural areas having regard to conservation of natural and cultural values
- provide for appropriate research and monitoring.

## 2.3 STATEMENT OF SIGNIFICANCE

Wyrabalong National Park is of regional significance for its biological, cultural heritage, recreation and landscape values.

Key **biological values** include:

- The largest stand of littoral rainforest and the largest stand of Sydney red gums on the NSW Central Coast.
- Significant freshwater wetlands
- Six Endangered Ecological Communities (EECs) and significant habitat for a number of threatened species including migratory and resident wading birds, the squirrel glider and plants such as the magenta lilly pilly and the rough doubletail orchid.

Significant **landscape/catchment values** include:

- An intact barrier dune system separating Tuggerah Lake from the Pacific Ocean in the north, and extensive coastal cliffs ringed by rock platforms in the south.
- Spectacular coastal scenery including Wyrabalong Lookout, the highest coastal cliff between Sydney and Newcastle.

The key **Aboriginal and historic heritage** values comprise:

- Cultural links to the Darkinjung and Awabakal Aboriginal people.
- A variety of Aboriginal sites including an extensive midden at Pelican Point.
- One of the first trigonometrical points recorded on the Central Coast, headlands given special mention in the diaries of the early explorers, and the site of a major conservation battle.

Major **recreation** values include:

- A variety of open and sheltered coastal beaches and rock platforms popular for swimming, surfing and fishing.
- Spectacular coastal lookouts for year-round sightseeing, picnicking and land-based whale watching.
- An easily accessible walking track network to experience wildflowers, littoral rainforest, coastal dune forest and wetlands.

## 2.4 SPECIFIC MANAGEMENT DIRECTIONS

In addition to the general principles for the management of national parks (section 2.2), the following specific management directions apply to the management of Wyrabalong National Park:

- Aim to reduce and minimise edge effects from the residential interface.
- Visitor facilities are considered sufficient to cater for visitor numbers, without significantly impacting on park values. No additional facilities are planned.
- Weed control programs will focus on wetlands and littoral rainforest in the north and coastal dunes and forests in the south.
- Visitor promotion will focus on low impact recreational activities including bushwalking and land-based whale watching.

### 3. VALUES

The location, landforms and plant and animal communities of an area have determined 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, various aspects of natural heritage, cultural heritage, threats and on-going use are dealt with individually, but their inter-relationships are recognised.

#### 3.1 GEOLOGY, LANDSCAPE AND HYDROLOGY

North and South Wyrabalong have different underlying geologies. North Wyrabalong covers most of the North Entrance Peninsula, a relatively recent Quaternary sand barrier separating Tuggerah Lake from the Pacific Ocean. The peninsula was formed through the deposition of sand in tidal shallows off the coast south of Noraville. Over time, wave action and winds increased the height of the sand deposits to create long thin dunes which eventually stretched south to The Entrance and became stable enough to support vegetation. Further sand deposition created sand dunes up to 50 metres high which became an effective barrier to the sea and eventually separated Tuggerah Lake from the ocean.

Due to the sand content, the soils were considered of very low quality and their poor fertility prevented development for agriculture. The sand was however found to contain high quantities of rutile and zircon, and the eastern side was mined between 1969 and 1976, destroying the natural vegetation cover. Due to the inherently unstable nature of the dunes, vegetation disturbance quickly exposes the sands to erosion (see section 4.2) and provides opportunities for weed invasion and establishment, displacing native vegetation and altering fauna habitat.

A rock platform consisting of Narrabeen sandstones, shales and conglomerates protrudes from the sand at Pelican Point. This platform has significance to the Aboriginal community and the extensive midden it supports indicates its history of use by the community. The platform is colonised by a number of marine invertebrate species and provides habitat for threatened species such as the sooty oystercatcher (*Haematopus ostralegus*).

South Wyrabalong has a much older geology, with high coastal cliffs or bluffs, and extensive rock platforms between Bateau Bay Beach in the north and Forresters Beach in the south. Wyrabalong Lookout (Trig) at 130 metres above sea level is the highest point on the coast between Sydney and Newcastle.

The cliffs consist of thin, friable bands of sandstone interbedded with shale which comprise the Clifton Beds of the Narrabeen Series north of Wyrabalong Lookout, and the Gosford Formations to the south. The uneven weathering of the soft sandstones and harder shales has produced the distinctive stepped profile of the cliffs.

To the west of the cliffs lie more gently sloping perched sand dunes overlying Narrabeen shales and sandstones. Sand mining occurred in the perched dunes between Wyrabalong Trig and Whalans Road in the west and most of this area was stabilised through regeneration. In some steeper areas, such as the slope from Hilltop Street to Rickard Road, erosion is occurring following track creation from illegal car, bike and pedestrian access (see section 4.2).

Extensive wide, flat rock platforms of soft-grained sedimentary rock surround the base of the cliffs and provide a variety of habitats. At low tide it is possible to walk from Bateau Bay Beach to Forresters Beach along these platforms. The most significant habitat associated with the rock platforms is the community of grey mangroves (*Avicennia marina*) at the southern end of Bateau Bay Beach. This is the only occurrence of grey mangroves on a rocky platform in NSW and is extremely sensitive to disturbance, especially by foot traffic (Harty, 1997). The eastern boundary of the park is the mean high water mark, which means the beaches, rock platforms and the grey mangrove colony are not within the park.

Wyrabalong National Park is in the Central Coast Landscape of the Hunter–Central Rivers Catchment Management Authority. The park lies primarily in the Tuggerah Lake catchment, as well as the Brisbane Water and Tasman Sea catchments.

North Wyrabalong provides an important buffer on the eastern side of Tuggerah Lake, and in addition to Tuggerah Nature Reserve and Tuggerah State Conservation Area, represents the only intact vegetation on the lake foreshore (Dickinson et al. 2006). The park contains several large wetlands adjacent to the lake which assist in maintaining and improving water quality. Large seagrass beds exist in this area providing important fishery habitat within the lake. Extensive areas of seagrasses have been lost in the lake due to urbanisation of the surrounds (Dickinson et al. 2006).

An aquifer underlies the sands of North Wyrabalong and has been investigated for residential water supply purposes in the past. The sewage evaporation ponds to the north of the park are a potential contamination source for the supply however, and no current proposals to use this aquifer exist.

At Bateau Bay Beach a permanent aquifer spring exists and visitors collect the water. Water collection is not promoted by NPWS and no water quality monitoring is undertaken.

### **3.2 NATIVE PLANTS**

The vegetation communities of Wyrabalong National Park are extremely diverse and reflect the variety in soils, topography and aspect. Of high significance are the littoral rainforests and wetland communities in North Wyrabalong and the grassy coastal headlands in South Wyrabalong.

The vegetation communities in the park have been described on several occasions, from reports proposing reservation of the areas in the early 1980s (Association for Environmental Education; Strom, 1980) to strategic vegetation surveys and

modelling (Andrews Neil, 1995; NPWS, 2000) and more recently, detailed survey and vegetation community profiling (Bell, 2002 & 2004).

While the majority of the park's vegetation has similarities to communities in other coastal reserves, such as Bouddi National Park to the south and Munmorah State Conservation Area to the north, there are elements such as the littoral rainforest and red gum (*Angophora costata*) forest in North Wyrribalong which are not well conserved elsewhere.

The coastal dunes of North Wyrribalong and an area in the vicinity of Whalans Road in South Wyrribalong have been mined for rutile. As a result these areas have a more simplified vegetation structure and species composition than undisturbed areas.

### **3.2.1 Vegetation communities**

#### **North Wyrribalong**

Eight separate vegetation communities occur in North Wyrribalong (Bell 2002), associated with four main habitats.

#### ***Wetlands and fringing lake vegetation***

The primary vegetation community of the park's northern wetlands is Coastal Sand Mahogany – Paperbark Swamp Forest, occurring on poorly drained sand sheets. A series of wetlands occur on the lake edge and in these areas the swamp forest intergrades and is replaced with Estuarine Swamp Oak Forest.

One large wetland occurs inside the north western edge of the park, supporting Munmorah Impeded Sand Sedgeland, a community which in Wyong Shire is confined to the Noraville area and Munmorah State Conservation Area. The wetland is surrounded by swamp forest and forms an important filter for stormwater which drains into Tuggerah Lake from adjacent developments.

The three wetland communities in North Wyrribalong are listed as Endangered Ecological Communities under the TSC Act. In addition, the north western wetland and the largest of the lakeside wetlands were formerly listed under State Environmental Planning Policy (SEPP) 14 – Coastal Wetlands<sup>1</sup>. Weed invasion is a significant threat to these wetlands and regeneration work is ongoing (see section 4.1).

#### ***Littoral Rainforest***

North Wyrribalong contains the largest intact remnant of littoral rainforest on the NSW Central Coast. Two variants occur: Coastal Sand Littoral Rainforest and Coastal Sand Scrub-Littoral Rainforest. The littoral rainforest occurs on Quaternary sand deposits in sheltered, well drained areas. There is considerable variation in the structure, and in some areas understory components have been greatly simplified through invasion by bitou bush and lantana. The sand scrub-littoral rainforest represents an ecotonal community between the true littoral rainforest and the banksia scrub present in other areas of the park.

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<sup>1</sup> SEPP 14 and SEPP 26 do not apply to areas reserved under the NPW Act

Both variants of littoral rainforest are Endangered Ecological Communities under the TSC Act and a large section of the coastal sand littoral rainforest was formerly listed under State Environmental Planning Policy 26 – Littoral Rainforest. This community meets the criteria for the nationally threatened Littoral rainforest and coastal vine thickets of Eastern Australia community, listed under the EPBC Act. The rainforest also provides habitat for large populations of the threatened magenta lilly pilly (*Syzygium paniculatum*). The littoral rainforest is a high priority community for control of bitou bush under the Threat Abatement Plan for this species.

### **Red Gum forest**

The red gum forest in North Wyrabalong is a variant of Coastal Sand Blackbutt–Apple Forest. The community generally occurs on Quaternary Pleistocene sand deposits in protected areas with good drainage. The red gum forest is well known in the region for its unique and highly photogenic appearance. A walking track links the red gum forest and the littoral rainforest in North Wyrabalong and the area is popular for school and recreation groups.

### **Coastal dunes**

Three vegetation communities occur on the coastal dunes in North Wyrabalong. The most seaward of these is the Coastal Sand Beach Spinifex which is a floristically simple and highly sensitive vegetation type occurring on the frontal beach dunes, and is highly susceptible to invasion by bitou bush.

In slightly more sheltered locations generally higher up the frontal dune system Coastal Sand Holocene Banksia Scrub occurs. Typically this vegetation type is very dense with little understorey shrubs or herbs. In many areas further simplification of this community has occurred due to mining and invasion by bitou bush.

### **The Islands**

Three of the four islands which are reserved in Wyrabalong National Park are man-made from dredge spoil from the Entrance Channel. Colonisation by native species has occurred and today three main vegetation communities cover the islands. In occasionally inundated areas the saltmarsh variant of Estuarine Mangrove-Saltmarsh Complex occurs, while on the landward side of the saltmarsh, Estuarine Baumea Sedgeland exists, a very simplified sedgeland.

On slightly higher ground with little inundation Swamp Oak Forest occurs and covers the majority of the islands. On Terilbah Island the vegetation is primarily swamp oak, however taller eucalypt species and tuckeroos are evident in the middle of the island.

The vegetation communities which occur on the islands are all listed as Endangered Ecological Communities. Invasion by bitou bush is evident on the perimeter of Pelican and Terilbah Islands and spraying by boat has been undertaken in past years. A dense ground cover of asparagus fern also exists over much of Terilbah Island.

### **South Wyrabalong**

The vegetation types in the southern section of the park are reasonably diverse and are closely tied to the underlying geology. Eleven separate vegetation communities have been mapped (Bell 2002, 2004) which can be divided into two main habitat types.

### **Coastal headland complex**

The coastal headland community forms a complex of merging vegetation types dependant on local soil conditions and disturbance history.

The exposed headlands at Crackneck, Yumbool Point and Wyrabalong Lookout support grasslands with occasional stunted shrubs. This community is included in the Themeda Grassland on Seacliffs and Coastal Headlands EEC and requires special management due to the high recreational use at Crackneck and to a lesser degree Wyrabalong lookout.

In more sheltered areas a shrubland occurs, which is highly susceptible to invasion by bitou bush, and in many areas, particularly on the steep slopes, large populations of pampas grass have established.

On the south-western side of Cromarty Hill and in pockets south of Crackneck a paperbark scrub occurs on clayey soils exposed to onshore winds. Directly adjacent to this community where there is some protection from on shore winds, a low forest develops.

A variant of coastal headland complex occurs on the area immediately west and south west of the carpark at Crackneck. This is the only occurrence of a coastal headland spotted gum (*Corymbia maculata*) forest in Gosford and Wyong LGAs and occurs where a small outcropping of Narrabeen sandstone supports a thin mantle of sand.

The coastal headland complex, particularly south of Crackneck, supports terrestrial orchids, including the threatened rough doubletail orchid (*Diuris praecox*) and various species of lady finger orchids (*Caladenia* spp.). Bitou bush and asparagus fern impact on the habitats of these orchids and targeted control, particularly in the spotted gum forest, has been undertaken and will continue to be carried out as resources and time permit.

A significant population of the vulnerable bioconvex paperbark (*Melaleuca biconvexa*) occurs behind the safety fence directly south of Wyrabalong Lookout. This species generally occurs on alluvial floodplains rather than exposed coastal headlands. Invasion by bitou bush is threatening this population.

### **Coastal sand communities**

In South Wyrabalong vegetation communities on sand vary from spinifex on fore dunes to tall apple / blackbutt forests in more sheltered areas.

Coastal sand beach spinifex and foredune acacia scrub communities occur on the beach dunes at Bateau Bay and Forresters Beaches. Higher on the frontal dunes, where the effects of salt and wind is less, coastal sand banksia scrub occurs. On the perched sand masses between Crackneck and Wyrabalong Lookouts a coastal sand wallum heath community occurs with a high diversity of flowering shrubs and herbs.

Coastal sand apple-blackbutt forest occurs surrounding Bateau Bay Beach and on the western edge of the park behind Stephenson and Rickard Roads. This community also exists in the vicinity of Hollydell Farm. A bangalay variant of this community occurs north of Wyrabalong Lookout, and a rough-barked apple / red bloodwood variant occurs south west of Hollydell Farm.

### 3.2.2 Threatened and significant plants and vegetation communities

Three threatened plant species (listed under the TSC Act and EPBC Act) and one Rare or Threatened Australia Plant (ROTAP) species have been recorded in the park (Table 1).

**Table 1. Threatened and significant plant species**

Family name	Scientific name	Common name	Legal status	Known habitat in the park
Myrtaceae	<i>Syzygium paniculatum</i>	Magenta lilly pilly	TSC - Endangered EPBC - Vulnerable	Littoral rainforest, coastal sand apple-blackbutt forest
Myrtaceae	<i>Melaleuca biconvexa</i>	Biconvex paperbark	TSC – Vulnerable EPBC - Vulnerable	Coastal headland paperbark scrub
Orchidaceae	<i>Diuris praecox</i>	Rough doubletail orchid	TSC – Vulnerable EPBC - Vulnerable	Coastal headland complex
Orchidaceae	<i>Acianthus exiguus</i>		ROTAP 3RC- (Reserved species considered rare, occurs in small populations)	Littoral Rainforest

Wyrabalong National Park contains six EECs listed under the TSC Act (Table 2), which cover the wetlands, lake foreshore, islands and littoral rainforest of North Wyrabalong, and the grassy headlands in South Wyrabalong. Littoral Rainforest is also listed as a critically endangered community under the EPBC Act.

**Table 2. Endangered Ecological Communities**

Endangered Ecological Community	Vegetation Community	Hectares on park
Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner Bioregions	Estuarine Baumea Sedgeland	3
	Estuarine Mangrove – Saltmarsh Complex	1
Littoral Rainforest in the NSW North Coast, Sydney Basin and South East Corner Bioregions	Coastal Sand Littoral Rainforest	83
	Coastal Sand Scrub – Littoral Rainforest	20
Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner Bioregions	Estuarine Swamp Oak Forest	9
Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions	Coastal Sand Mahogany – Paperbark Swamp Forest	46
Sydney Freshwater Wetlands in the Sydney Basin Bioregion	Munmorah Impeded Sand Sedgeland	8
Themeda Grassland on seacliffs and coastal headlands in the NSW North Coast, Sydney Basin and South East Corner Bioregions	Coastal Headland Grassland	3
	Coastal Headland Scrubland	1

Under the provisions of the TSC Act, the *Threatened Species Priorities Action Statement* (PAS) sets out recovery and threat abatement strategies to be adopted for threatened species and key threatening processes, and establishes relative priorities to implement these strategies. A draft Recovery Plan has been prepared for the



magenta lilly pilly. The population in Wyrabalong is not considered under significant threat and has not been identified as a high priority for recovery actions in the draft plan. The PAS commits NPWS to undertake recovery actions for *Diuris praecox*, *Melaleuca biconvexa* and all of the EECs occurring in the park.

The main threats to the integrity of the threatened species and EECs in the park come from weed invasion (see section 4.1.1), inappropriate fire regimes (4.3), recreational pressure (3.6) and adjacent urban development (4.2).

### 3.3 NATIVE ANIMALS

Good data for birds in the park has been available for many years because of active local ornithologists. A preliminary fauna survey was undertaken by O'Brien in 1993, and surveys specifically for bats were undertaken in 1993 and 1994 (Ecotone Ecological Consultants). However, no systematic fauna study of the park was undertaken until 2009 (Forest Fauna Surveys 2010).

The recent surveys highlighted a change in the distribution and abundance of the New Holland mouse, confirmed the presence of the threatened squirrel glider, and resulted in the recording of a new amphibian species.

The NSW Wildlife Atlas has records of 144 bird, 29 mammal, 19 reptile and 8 amphibian species within the park.

#### 3.3.1 Birds

The park contains feeding and high tide roosting habitat for many species listed on the schedules of the Japan-Australia (JAMBA), China-Australia (CAMBA) and Korea-Australia (ROKAMBA) Migratory Bird Treaties (Table 3).

The rock platforms off the headlands, which become islands at high tide, provide important refuges for gulls, terns, migratory waders and herons. Protected lake foreshore and islands also provide refuge and feeding grounds for migratory waders, herons and terns, including the endangered little tern (*Sterna albifrons*) and pied oystercatcher (*Haematopus longirostris*), and the vulnerable sooty oystercatcher (*H. fuliginosus*).

The red gum forests, swamp forests and tall heaths in the north and the blackbutt / bloodwood forests in the south are important feeding areas for honeyeaters, which winter on the NSW Central Coast. Of high significance are the nationally endangered regent honeyeater (*Xanthomyza phrygia*) and swift parrot (*Lathamus discolor*).

The littoral rainforests of the north provide important food for uncommon nomadic rainforest and fruit-eating pigeons, such as the vulnerable superb fruit-dove (*Ptilinopus superbus*). The fruit of the hard corkwood (*Endiandra sieberi*) is particularly important for the topknot pigeon (*Lopholaimus antarcticus*) during late autumn and winter.

### 3.3.2 Mammals

Native mammals recorded in the park range from the common ringtail possum (*Pseudocheirus peregrinus*) and brown antechinus (*Antechinus stuartii*) to the more elusive swamp wallaby (*Wallabia bicolor*) and northern brown bandicoot (*Isodon macrourus*). The northern section of the park supports significant species such as the vulnerable squirrel glider (*Petaurus norfolcensis*) and grey-headed flying-fox (*Pteropus poliocephalus*), while the beaches have provided haul out sites for the New Zealand fur seal (*Arctocephalus forsteri*).

In 1993 the population of New Holland mouse (*Pseudomys novaehollandiae*) in the red gum forest was considered to be regionally significant due to its size and the small number of other populations on the Central Coast (O'Brien 1993). Recent surveys (Forest Fauna Surveys 2010) did not detect the species at all in the red gum forest to the west of Wilfred Barrett Drive, and only two individuals were found on the eastern side. This species prefers vegetation which has been recently burnt, which accounts for high numbers in 1993 following a 1991 wildfire. There has been no significant fire since that time and the absence of the species in the red gum forest in 2009 probably reflects its unsuitability for the New Holland mouse 18 years after fire.

One of the better surveyed groups of mammals in the park is bats. Surveys in 1993 and 1994 (Ecotone Ecological Consultants, 1993 & 1994) found 10 species of micro-bats including three threatened species: the southern myotis (*Myotis macropus*), greater broad-nosed bat (*Scoteanax rueppellii*), and eastern bentwing-bat (*Miniopterus schreibersii oceanensis*). The littoral rainforest was found to have the highest diversity and abundance of bat species in the park.

### 3.3.3 Reptiles and amphibians

Nineteen species of reptiles have been recorded in the reserve, the most significant being the sand swimming lizard (*Anomalopus swainsoni*) which is restricted to the Central Coast and Hunter regions and is well represented in the park. Amphibian species recorded include the vulnerable wallum froglet (*Crinia tinnula*), which was found in the freshwater wetlands near the lake in North Wyrabalong, and a new species of *Uperoleia* recorded in 2010. This new species had been previously recorded from only two other sites in the vicinity of Port Stephens.

Permanent pit fall trap locations have been established throughout the park. These traps will be monitored several times annually in an effort to increase knowledge about reptile and amphibian diversity in the reserve.

### 3.3.4 Threatened and significant fauna species

Eighteen threatened fauna species listed under the TSC Act have been recorded in the park. These include four endangered species and 14 vulnerable species. The majority of these species are permanent residents in the park, particularly the mammals, however many of the birds are seasonal visitors or vagrants. In addition to the threatened species, the park provides habitat for at least 23 migratory bird species listed under the JAMBA, CAMBA and ROKAMBA treaties. Threatened and significant fauna are listed in Table 3.

Invasion of native habitats by weeds (see section 4.1.1) and competition from introduced predators (4.1.2) continues to threaten the park's fauna.

**Table 3. Threatened and significant fauna**

Family	Scientific name	Common name	TSC Act status	Migratory bird treaties
Accipitridae	<i>Haliaeetus leucogaster</i>	White-bellied sea-eagle		JAMBA
Apodidae	<i>Apus pacificus</i>	Fork-tailed swift		CAMBA, JAMBA, ROKAMBA
	<i>Hirundapus caudacutus</i>	White-throated needletail		CAMBA, JAMBA, ROKAMBA
Ardeidae	<i>Ardea alba</i>	Great egret		CAMBA, JAMBA
	<i>Egretta sacra</i>	Eastern reef egret		JAMBA
Columbidae	<i>Ptilinopus superbus</i>	Superb fruit-dove	Vulnerable	
Diomedeidae	<i>Diomedea exulans</i>	Wandering albatross	Endangered	
	<i>Thalassarche melanophris</i>	Black-browed albatross	Vulnerable	
Haematopodidae	<i>Haematopus fuliginosus</i>	Sooty oystercatcher	Vulnerable	
	<i>Haematopus longirostris</i>	Pied oystercatcher	Endangered	
Hydrobatidae	<i>Oceanites oceanicus</i>	Wilson's storm-petrel		CAMBA
Laridae	<i>Sterna albifrons</i>	Little tern	Endangered	CAMBA, JAMBA, ROKAMBA
	<i>Sterna bergii</i>	Crested tern		CAMBA
	<i>Sterna hirundo</i>	Common tern		CAMBA, JAMBA, ROKAMBA
Meliphagidae	<i>Xanthomyza phrygia</i>	Regent honeyeater	Critically Endangered	
Procellariidae	<i>Puffinus carneipes</i>	Flesh-footed shearwater	Vulnerable	CAMBA, JAMBA
	<i>Puffinus pacificus</i>	Wedge-tailed shearwater		CAMBA
Procellariidae	<i>Puffinus tenuirostris</i>	Short-tailed shearwater		CAMBA, JAMBA
Psittacidae	<i>Lathamus discolor</i>	Swift parrot	Endangered	
Scolopacidae	<i>Arenaria interpres</i>	Ruddy turnstone		CAMBA, JAMBA, ROKAMBA
	<i>Calidris aeuminata</i>	Sharp-tailed sandpiper		CAMBA, JAMBA, ROKAMBA
	<i>Calidris canutus</i>	Red knot		CAMBA, JAMBA, ROKAMBA
	<i>Calidris ferruginea</i>	Curlew sandpiper		CAMBA, JAMBA, ROKAMBA
	<i>Calidris ruficollis</i>	Red-necked stint		CAMBA, JAMBA, ROKAMBA
	<i>Calidris tenuirostris</i>	Great knot	Vulnerable	CAMBA, JAMBA, ROKAMBA
	<i>Heteroscelus brevipes</i>	Grey-tailed tattler		CAMBA, JAMBA, ROKAMBA
	<i>Limosa lapponica</i>	Bar-tailed godwit		CAMBA, JAMBA, ROKAMBA
	<i>Numenius madagascariensis</i>	Eastern curlew		CAMBA, JAMBA, ROKAMBA
	<i>Tringa nebularia</i>	Common greenshank		CAMBA, JAMBA, ROKAMBA
	<i>Xenus cinereus</i>	Terek sandpiper	Vulnerable	CAMBA, JAMBA, ROKAMBA
Petauridae	<i>Petaurus norfolcensis</i>	Squirrel glider	Vulnerable	
Pteropodidae	<i>Pteropus poliocephalus</i>	Grey-headed flying-fox	Vulnerable	
Vespertilionidae	<i>Myotis macropus</i>	Southern myotis	Vulnerable	
	<i>Scoteanax rueppellii</i>	Greater broad-nosed bat	Vulnerable	
	<i>Miniopterus schreibersii</i>	Eastern bentwing-bat	Vulnerable	
Otariidae	<i>Arctocephalus forsteri</i>	New Zealand fur-seal	Vulnerable	
Myobatrachidae	<i>Crinia tinnula</i>	Wallum froglet	Vulnerable	
	<i>Uperoleia</i> sp. "Oyster Cove"	Toadlet		

North Wyrabalong does not have the same level of edge effects or high visitation as the south but it does have issues for fauna management. It is bisected by Wilfred Barrett Drive which is located in a 100 metre wide easement through the centre of the park. Also located in this easement are utilities such as powerlines and gas and water mains. These easements are cleared of vegetation and together with the road

create a significant barrier for movement of animals. Road kills in this area are also common.

### **3.4 ABORIGINAL HERITAGE**

Aboriginal communities 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. Aboriginal communities associate natural resources with the use and enjoyment of foods and medicines, caring for the land, passing on cultural knowledge, kinship systems and strengthening social bonds. Aboriginal heritage and connection to nature are inseparable from each other and need to be managed in an integrated manner across the landscape.

While the NSW Government has legal responsibility for the protection of Aboriginal sites and places it acknowledges the right of Aboriginal people to make decisions about their own heritage. It is therefore policy that Aboriginal communities be consulted and involved in the management of Aboriginal sites, places and related issues and the promotion and presentation of Aboriginal culture and history. Wyrabalong is within the area of the Darkinjung LALC. A Regional Aboriginal Co-management Committee has been established to represent Aboriginal interests in management of NPWS reserves within the Central Coast Hunter Region. There may also be other Aboriginal community organisations and individuals with an interest in use and management of the park.

Wyrabalong, meaning 'headland looking over the sea' (Bennett, 1981) is a word of the Darkinjung people, whose country included the narrow strip of coastline between Bateau Bay and Forresters Beach. It was the name given to the most prominent headland on the coast between Newcastle and Sydney by Assistant Surveyor Felton Mathews in 1831.

Five Aboriginal sites have been recorded in the park, the most significant being a large midden at Pelican Point. Stabilisation and fencing works have been undertaken to protect the site from erosion in conjunction with the Darkinjung LALC. Middens, campsites and burial sites are known up and down the Central Coast and due to the park's proximity to the abundant resources of the lakes and ocean it is expected that other sites also exist, although sand mining may have destroyed sites in the area.

There is the potential for soil erosion (see section 4.2) and fire (4.3) to expose or impact on both known and unknown Aboriginal sites.

### **3.5 HISTORIC HERITAGE**

Due to its sandy, low fertility soils the North Entrance Peninsula was not sought for inclusion in any of the early land grants in the area and there was little development pressure until the construction and opening of The Entrance Bridge in 1934 which provided direct access from the south (McClure, 1978). With increasing development during the 1930s and 1940s came pressure to build a road north from The Entrance to Toukley. The first tree was felled for the construction of Wilfred Barrett Drive, through the centre of North Wyrabalong, in November 1962. The road was officially opened in February 1965 and increased development followed.

Despite a plan to preserve the North Entrance Peninsula as early as the 1950s, and subsequent proposals for the creation of the national park, mining for mineral sands such as rutile, zircon and monazite began on the coastal side of the peninsula in 1969. A campaign to 'Save the Red Gums' from mining was led by the North Entrance Peninsula Preservation Society. In 1972 public pressure resulted in the NSW Supreme Court forbidding mining on the North Entrance Peninsula without the prior consent of Wyong Shire Council which had invoked a Tree Preservation Order for the Peninsula. Although contested by the mining companies, the Privy Council upheld the Supreme Court Decision in 1974 and a substantial portion of the red gum forest became a reserve under Council management. Sand mining ceased on the peninsula in 1976 and restoration works were undertaken in accordance with conditions set out by the Local Government Appeals Tribunal.

In 1988 the North Entrance Peninsula Preservation Society reformed to oppose development plans for the peninsula and sought protection of the area as a national park. The majority of the peninsula, including the red gum forest, was formally included in Wyrabalong National Park in May 1991.

South Wyrabalong includes the majority of a ¼ mile (400 metre) wide coastal area between Toowoan Bay and Wamberal Lagoon which was reserved from public sale 'on account of coal' in 1876, and further reserved 'for defence and public purposes' in 1884 (Association for Environmental Education NSW). The southern section of the park was created in two stages. The first occurred concurrently with the reservation of North Wyrabalong in 1991 and included the majority of the original area reserved 'on account of coal'. The second reservation of approximately 23 hectares occurred in 1995 and comprised 70 separate lots which were alienated over time from the original public reserve, but later acquired by the Department of Planning and Gosford City Council under the Coastal Lands Acquisition Scheme and Regional Open Space Program to prevent inappropriate coastal development.

Crackneck and Wyrabalong Lookouts have historic associations. Wyrabalong Lookout is located on Cromarty Hill, which is the highest point on the coast between Sydney and Newcastle. The site was cleared for a trigonometrical survey by Surveyor Felton Mathew in 1831 and the later construction of the Wyrabalong trigonometrical station.

Crackneck Point is recorded as being the first land sighted in the Wyong Shire by Lieutenant James Cook in 1770 and was where Cook's ship spent three days becalmed in that year. Development of Crackneck Lookout began in 1964 and in 1970 a sandstone cairn was erected at the lookout to commemorate Cook's sighting 200 years previously.

### **3.6 RECREATION AND EDUCATION**

Wyrabalong National Park provides many opportunities for recreation and appreciation of the natural environment. Signs at key visitor areas provide directional information as well as interpretation of specific values such as whale watching, vegetation types and fauna.

Public access to South Wyrabalong is available via North Scenic Drive / Cromarty Hill Road, Reserve Road and Hilltop Street. Public access to North Wyrabalong is provided with several car parking areas along Wilfred Barrett Drive, as well as via Pelican Beach Road. Access to the islands is via boat and is not promoted due to the small size of the islands and the limited recreation opportunities available.

### **3.6.1 Picnic areas and lookouts**

In North Wyrabalong, picnic facilities are provided at the Burrawang Track access off Wilfred Barrett Drive and at the lookouts on the Redgum Trail. The Pelican Beach Road carpark provides a lookout and pedestrian access to Pelican Beach, which is popular for surfing.

South Wyrabalong offers a number of picnic locations and lookouts. Picnic, playground and toilet facilities are provided at Bateau Bay. Crackneck Lookout is a popular site for whale watching and receives high visitation. Due to the remote nature of the lookout and regular vandalism, facilities are currently basic and robust. It is proposed to gate and close access to the lookout at night. Wyrabalong Lookout receives regular use due to its location on the Coast Walking Track but is not highly used as a picnic location.

### **3.6.2 Bushwalking**

Bushwalking is currently well promoted and catered for in the park. The Coast Walking Track in South Wyrabalong links Shelley Beach with Forresters Beach via Bateau Bay Beach and Crackneck Lookout. The walk includes lookouts, interpretive information and spring wildflower displays. This walking track was upgraded following fire and flood damage in 2007, including the replacement of timber stairways with metal ones.

In North Wyrabalong the Wetland, Redgum, Burrawang and Lillypilly Trails offer over 10 kilometres of walking tracks through the littoral rainforest, red gum forests and along the Tuggerah Lake foreshore. Lookouts and signs are provided. Tuggerah Beach Trail provides walking access from Wilfred Barrett Drive to Tuggerah Beach.

Due to the sensitive nature of its dunes North Wyrabalong is not suited to recreation uses that would result in disturbance to the vegetation or cause erosion of the trail system. Bushwalking has minimal impact on the current trail/track network.

### **3.6.3 Cycling**

Cycling within the park is limited to the public access roads (Hilltop Street and Pelican Beach Road). Cycling is not permitted on any management trails or walking tracks within the park. The soft sand surface, erodible nature, and topography of the sand dunes of North Wyrabalong make the management trails unsuitable for cycling. South Wyrabalong has no management trails of significant length.

A new cycleway through the park has been proposed by Wyong Shire Council. Cycling is well catered for off park and within nearby national parks. Extension of the Wyong Shire Council Tuggerah Lake foreshore concrete pathway into North Wyrabalong will not be permitted due to significant environmental impacts (see sections 3.1, 3.2, 3.4, 4.1, 4.2, 4.4). The easement on the eastern side of Wilfred Barrett Drive would provide a scenic link between The Entrance North and Toukley. NPWS supports investigation of this route along the park boundary.

### **3.6.4 Hang gliding and paragliding**

Two hang gliding / paragliding launch sites exist in South Wyrabalong, at Crackneck Lookout and on Cromarty Hill. The NPWS Hang Gliding and Paragliding Policy requires that a site management plan is prepared for all launch sites in NPWS reserves and that consideration be given to the potential impacts of the launch site on the natural and cultural values of the park.

A site management plan has been prepared and approved for the Cromarty Hill launch site. This site was closed in 2006 due to unsafe flying conditions and options for alternate launch locations were explored. Following development and approval of the management plan, vegetation trimming was undertaken to increase site safety and the site was reopened. Yearly inspections are made of the site to assess any impacts and undertake vegetation maintenance in accordance with the plan.

A management plan has not yet been developed for the launch site at Crackneck Lookout. There are several issues related to the site which need to be addressed in the plan. These include threatened species habitat in the current launch footprint (see section 3.2.2), fencing and vegetation maintenance. Discussions have commenced with the Central Coast Sky Surfers about these issues and regarding options for an altered launch footprint and modified fencing to reduce impacts.

### **3.6.5 Fishing**

Beach and rock fishing are popular along the coast, and boat fishing occurs in Tuggerah Lake around the foreshore and islands. Beach access for recreational fishing is by walking or boat. Vehicle access to Pelican and Tuggerah Beaches for commercial fishing is permitted under a consent authorised by NPWS (see section 5.3).

### **3.6.6 Group and commercial activities**

Consent from NPWS is required for all group activities (e.g. weddings) with over 40 people, and for high risk activities. Activity consents may be issued for one off occasions or for a specified time period. Applications for group activities are assessed in accordance with NPWS policy and the Central Coast Hunter Region's Guidelines for Group Consents.

An annual consent has been issued to the Central Coast Sky Surfers for use of the hang gliding / paragliding launch sites at Crackneck Lookout and Cromarty Hill by club members.

Commercial activities within the park require a licence from NPWS.

### **3.6.7 Education and research**

Regular NPWS Discovery activities are conducted in the park. The park is also popular for school excursions as it provides a wide variety of easily accessible natural and cultural values.

As one of the few examples of intact lake foreshore vegetation within the Tuggerah Lakes system, North Wyrabalong is of significant value for scientific research. It provides undisturbed control sites to compare effects of other land uses around the lake and to monitor new impacts such as sea-level rise.

## 4. ISSUES

### 4.1 WEEDS AND PEST ANIMALS

Weeds and pest animals are plants or animals not native to the park and have the potential for detrimental effects on ecological values and can spread to and from neighbouring land. The Central Coast Hunter Range Region Pest Management Strategy (DECC 2008) broadly identifies pest distribution and their associated impacts on the Region's parks, and details priorities and principles for pest management. Management of weeds and pest animals in the park are undertaken in accordance with this plan.

#### 4.1.1 Weeds

The main weeds of concern in the park are bitou bush (*Chrysanthemoides monilifera*), lantana (*Lantana camara*), asparagus fern (*Protasparagus aethiopicus*), coastal morning glory (*Ipomoea cairica*), turkey rhubarb (*Acetosa sagittata*), pampas grass (*Cortaderia selloana*) and cassia (*Senna pendula*). In many areas weed invasion is seriously compromising the natural values of the park. Of highest concern are the littoral rainforests and wetlands in the north and the coastal dunes and forests in the south because of their ecological values, their susceptibility to weed invasion, or both.

Weed management strategies have been prepared for both the north and south of the park. Weed control work in the park is primarily funded through external grants, for example from the Catchment Management Authority, Caring for Country, and Environmental Trust. Volunteers have contributed to weed control in the park through Bushcare groups, Conservation Volunteers Australia and Green Corps projects. There are currently no active Bushcare groups working in the park, though new groups are encouraged.

In North Wyrabalong areas targeted for weed control include the littoral rainforest in the vicinity of the Lillypilly Loop Track, the coastal wetlands and lake foreshore. These areas all contain Endangered Ecological Communities and key weeds include bitou, lantana, blackberry and coastal morning glory.

In the south a long-term focus has been the dunes and coastal forest surrounding Bateau Bay Beach. Target species in this area are bitou, asparagus fern, a variety of vines and other species such as cassia. Bitou and asparagus fern are also target species in the spotted gum forest surrounding Crackneck Lookout. This area provides habitat for the threatened rough doubletail orchid and several other significant orchid species.

Recent aerial weed mapping has identified significant pampas grass and cassia infestations on the sea cliffs between Bateau Bay and Forresters Beaches. In addition to the bitou bush, these weeds threaten the integrity of the coastal communities, of greatest concern being the Themeda Grassland Endangered Ecological Community. Aerial spraying was conducted in this area in 2010, and monitoring of the effectiveness of this program will be undertaken to determine the need for follow up work.



Of the main weeds of concern, four have been listed as key threatening processes under the TSC Act. These are:

- Invasion and establishment of exotic vines and scramblers (coastal morning glory);
- Invasion of native plant communities by bitou bush & boneseed (bitou bush);
- Invasion of native plant communities by exotic perennial grasses (pampas grass);
- Invasion, establishment and spread of *Lantana camara* (lantana).

The Priorities Action Statement has identified a number of threat abatement strategies to reduce the impact of these processes. Strategies relevant to Wyrribalong National Park will be actively pursued and will focus mainly on the protection of threatened species and Endangered Ecological Communities.

The Bitou Bush Threat Abatement Plan lists three control sites within Wyrribalong National Park, two of which are high priority sites.

The *Noxious Weeds Act 1993* obliges public authorities to control noxious weeds on their land to prevent weeds spreading to adjoining lands. Noxious weeds known to occur within the park include crofton weed (*Ageratina divaricata*), prickly pear (*Opuntia* spp.), bridal creeper (*Myrsiphyllum asparagoides*), blackberry (*Rubus fruticosus*), bitou bush, pampas grass and lantana. Infestations of noxious weeds outside of the target areas described above will be treated as resources permit, with priority given to areas in the vicinity of threatened species or Endangered Ecological Communities.

#### **4.1.2 Pest animals**

Introduced animal species are a concern as they damage native vegetation, disturb, kill and displace native animals and may transmit disease to native populations.

Six introduced mammal species are known to occur within the park: the house mouse (*Mus musculus*), black rat (*Rattus rattus*), red fox (*Vulpes vulpes*), rabbit (*Oryctolagus cuniculus*), cats (*Felis catus*) and dogs (*Canis lupis familiaris*).

Six introduced bird species have been recorded in the park including the spotted turtle-dove (*Streptopelia chinensis*) and common starling (*Sturnus vulgaris*). While these species are likely to compete with native species for feeding and nesting resources, the proximity to urban development does not make controlling these birds possible and their management is not considered to be a priority.

Predation by foxes and feral cats has been recognised as key threatening processes under the TSC Act. Foxes have been attributed with causing, or contributing to, the extinction and decline of medium-sized ground dwelling and semi-arboreal mammals, ground-nesting birds and tortoises. In Wyrribalong and surrounding areas they are known to prey on rare shorebirds such as little terns. Feral, domestic and stray cats are a threat to smaller ground dwelling mammals and birds.

Rabbits are common where mown grass provides food but they are not considered to impact significantly on the natural vegetation in the park. Calicivirus and Myxomatosis have both been released on the NSW Central Coast and it is likely that these diseases spread naturally through populations every few years as numbers seem to fluctuate. Both black rats and house mice are likely to compete with native species for food and shelter however given the proximity to residential areas it is not anticipated that these species can be effectively controlled or removed from the park.

Domestic pets (other than assistance animals) are not permitted in national parks, including Wyrabalong National Park. Illegal dog walking occurs at Pelican Beach in North Wyrabalong and in the vicinity of Bateau Bay and the Coast Walking Track in the south. A media campaign and law enforcement program has been undertaken in the past in an attempt to reduce dog numbers in the park. Management of illegal dog walking in the park will require ongoing law enforcement.

#### **4.1.3 Myrtle rust**

Myrtle rust is a plant disease caused by the exotic fungus *Uredo rangelii*. It was first detected in Australia in 2010 on the NSW Central Coast. It has established through coastal NSW from the Shoalhaven River north into Queensland. Myrtle rust is likely to spread rapidly to the extent of its biological range as the spores are dispersed readily by wind. Eradication is unfeasible (OEH 2011).

The likely impacts of myrtle rust on biodiversity in Australia are unknown. Infection with myrtle rust may cause significant mortality among younger plants and hence reduce recruitment into adult populations. This may contribute to the decline and extinction of species, which is of immediate concern for those species already at high risk, i.e. threatened species. Reduced recruitment may also have severe impacts on the structure and function of the many natural ecosystems that are dependent on Myrtaceae.

NPWS priorities for management of myrtle rust are to slow the establishment of myrtle rust on national park estate, and to minimise the impact on threatened species and ecological communities. Species and communities of concern within Wyrabalong NP are the threatened Myrtaceae species, magenta lilly pilly and biconvex paperbark, and the littoral rainforest EEC.

## **4.2 SOIL EROSION**

The unconsolidated sand dunes of North Wyrabalong are highly prone to erosion in areas where vegetation has been disturbed or removed. As a system the sand dunes are considered fragile and any disturbance other than for essential asset maintenance of existing infrastructure will not be permitted.

The bands of sandstones and shales overlain with sandy soils in South Wyrabalong are also susceptible to erosion, particularly following heavy rains in disturbed areas. A number of landslips have occurred, the most recent in June 2007 which resulted from high rainfall and runoff on artificial fill. Due to the unstable nature of the cliff tops and edges in South Wyrabalong it is crucial that removal / disturbance of native vegetation is limited to requirements for fire protection and existing recreation / management facilities.

The high residential interface with South Wyrabalong creates many management issues due to edge effects. In areas such as the rear of private residences along North Scenic Road incremental clearing of native vegetation in the park has been undertaken by residents to maintain views, and illegal tracks have been created for private access points.

Illegal vehicle access from Hilltop Street to the corner of Rickard Road and Keats Avenue, combined with runoff during high rainfall events has caused significant erosion to the north west of the carpark at Crackneck Lookout. Ameliorative works are required in this area to divert run off and reduce further erosion.

### **4.3 FIRE**

The primary fire management objectives of NPWS are to protect life and property and community assets from the adverse impacts of fire, whilst managing fire regimes to maintain and protect biodiversity and cultural heritage.

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, and high frequency fires have been listed as a key threatening process under the TSC Act.

A separate fire management strategy has been prepared for the park (DEC 2006). The fire management strategy outlines the recent fire history of the park, key assets within and adjoining the park including sites of natural and cultural heritage value, fire management zones including asset protection zones, and fire control advantages such as management trails and water supply points. Hazard reduction programs, ecological burning proposals and fire trail works are submitted annually to the Gosford and Wyong Bush Fire Management Committees.

Park fire history will help determine areas requiring hazard reductions and specific fire management regimes. The vast majority of wildfires in the park appear to have been caused by arson. Most fires are lit along roadsides, trails and walking tracks and are often lit in times of dry to extreme weather conditions when fires are difficult to suppress and more destructive.

Due to the high urban interface, particularly in South Wyrabalong, community education is a high priority. Since approval of the Fire Management Strategy, significant works have been undertaken to establish asset protection zones adjacent to residential areas. In many areas rubbish dumping and infrastructure such as play equipment and outdoor furniture occurs in these asset protection zones.

Cooperative 'FireWise' street meetings have been undertaken in areas around South Wyrabalong in conjunction with the NSW Rural Fire Service and the NSW Fire Brigade and have proved successful.

#### **4.4 ISOLATION AND FRAGMENTATION**

The area surrounding Wyrabalong National Park has been extensively cleared and the two main sections of the park are segregated by urban development.

North Wyrabalong covers the majority of the North Entrance Peninsula, protecting vegetation that is otherwise not well represented or conserved within the region and providing an important buffer for Tuggerah Lake. South Wyrabalong is a narrow coastal strip of land, surrounded by urban development. The intense urban interface leaves this portion of the park under pressure from various threats such as erosion associated with adjacent development and illegal clearing (see section 4.2), weed invasion (4.1.1), dog walking (4.1.2), and heavy recreational use (3.6).

Maintaining the integrity of the remaining habitat within the park is important in ensuring the long-term viability of the park's biological values. Connections between the sections of the park and other areas of vegetation are important for fauna movement in the region. South Wyrabalong has some connection to Wamberal Lagoon Nature Reserve via the hind dune vegetation at Forresters Beach. North Wyrabalong has some contiguous Crown reserve bushland. The two sections of the park are separated by the suburbs of Bateau Bay, Long Jetty and The Entrance.

#### **4.5 CLIMATE CHANGE**

Climate change has been listed as a key threatening process under the TSC Act. Projections of future changes in climate for NSW include higher temperatures, increasing sea levels and water temperatures, elevated CO<sub>2</sub>, more intense but possibly reduced annual average rainfall, increased temperatures and higher evaporation. These changes are likely to lead to greater intensity and frequency of fires, more severe droughts, reduced river runoff and water availability, regional flooding, increased erosion and ocean acidification.

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

Programs to reduce the pressures arising from other threats, such as habitat fragmentation, invasive species (see section 4.1), bushfires (4.3), pollution and urban expansion (4.2), will help reduce the severity of the effects of climate change.

## **5. MANAGEMENT OPERATIONS AND OTHER USES**

### **5.1 ROADS AND MANAGEMENT TRAILS**

Hilltop Street and Pelican Beach Road are the only sealed park roads (public vehicle access permitted). Pelican Beach Road has a gate that is locked at night. Other public roads providing access to the park are managed by Council (North Scenic Drive, Cromarty Hill Road, Reserve Road).

A network of management trails provides operational access for NPWS and walking access for the public. No public vehicle or cycling access is permitted on these management trails.

The Lake Trail originally provided vehicle access from Wilfred Barrett Drive to the foreshore of Tuggerah Lake at the southern end of North Wyrabalong. Road alignment and safety barrier work associated with intersection upgrades for the Magenta Shores development has blocked access to this trail. As vehicle access is no longer possible the Lake Trail will be formally closed.

### **5.2 ACCESS TO INHOLDINGS**

The end of Cromarty Hill Road provides access to an inholding for transmission / communication towers. The access road is gated and vehicle access restricted to the NPWS to undertake maintenance, and TX Australia to maintain the communication facilities. The access road is currently maintained by NPWS.

There is an access easement through the southern end of the park to Hollydell Farm. The established trail off Whalans Road has historically provided the only vehicle access to this property. A residential access licence was first issued to the property owners in April 2005, and renewed in 2010. The licence requires that the access be maintained to a reasonable standard and that public liability insurance covers private users.

### **5.3 BEACH ACCESS - COMMERCIAL FISHING**

Access to Pelican and Tuggerah Beaches for commercial fishing in North Wyrabalong is permissible under NPWS consent. Vehicle access is available via Soldiers Beach around Pelican Point. Access to Soldiers Beach requires approval from Wyong Council, and NPWS consent is required to cross Wyrabalong National Park around Pelican Point. Vehicle access to the beach is not permitted via the park from Pelican Beach Road or the Tuggerah Beach Fire Trail.

## 6. IMPLEMENTATION

Current situation	Desired outcomes	Management response	Priority*
<b>6.1 On-park ecological conservation: geology / landscape / hydrology</b>			
<p>North Wyrrabalong is an important buffer for Tuggerah Lake and the wetlands are important for the lake's water quality.</p> <p>Surrounding development has the potential to affect water quality within South Wyrrabalong.</p> <p>The dunes at North Wyrrabalong are unstable and highly susceptible to erosion.</p> <p>Vegetation clearing / trimming in the park adjacent to residential areas and illegal access in some areas in South Wyrrabalong is impacting on vegetation communities and increasing the risk of erosion / landslides.</p> <p>Beaches, rock platforms and the significant population of grey mangroves at Bateau Bay which lie below mean high water mark are outside the park.</p>	<p>Landscape and catchment values are protected.</p> <p>Human induced soil erosion in the park is minimised.</p>	<p>6.1.1 Liaise with Gosford City Council regarding controlling stormwater discharge from residences into the park.</p> <p>6.1.2 No additional development or increased intensity of use which may increase erosion will be permitted.</p> <p>6.1.3 Monitor erosion and undertake remedial actions to minimise impacts.</p> <p>6.1.4 Control illegal access and rehabilitate illegal tracks e.g. North Scenic Road and Rickard Road.</p> <p>6.1.5 Liaise with neighbours to reduce clearing and remove illegal structures behind properties along North Scenic Road.</p> <p>6.1.6 Pursue the addition of the intertidal zone to the park.</p> <p>6.1.7 Investigate options to control pedestrian access to the rocky mangrove colony at south Bateau Beach if visitor impacts become evident.</p>	<p>Low</p> <p>High</p> <p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Medium</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.

Ongoing is for activities that are undertaken annually or statements of management intent that will direct the management response if an issue arises.

Current situation	Desired outcomes	Management response	Priority
<b>6.1 On-park ecological conservation: native plants and animals</b>			
<p>Highly invasive weeds, inappropriate fire regimes, impacts from adjacent residential development and high visitor use are threatening the integrity of the park's vegetation communities, including Endangered Ecological Communities, and place pressure on native fauna.</p> <p>Climate change may significantly affect biodiversity by changing the population size and distribution of species, modifying species composition, and altering the geological extent of habitats and ecosystems.</p> <p>Permanent fauna monitoring points have been established in North Wyrabalong to establish baseline information and to monitor population trends.</p>	<p>Native plant and animal species and communities are conserved.</p> <p>Structural diversity and habitat values are restored in areas subject to weed invasion.</p> <p>Negative impacts on threatened taxa are stable or diminishing.</p> <p>Increased data on native fauna distribution and abundance informs management actions.</p> <p>The effects of climate change on natural systems are reduced.</p>	<p>6.1.8 Continue existing fire, pest and weed management programs to increase the park's ability to cope with future disturbances.</p> <p>6.1.9 Implement actions from bitou and lantana Threat Abatement Plans with a focus on littoral rainforest and wetland Endangered Ecological Communities in the north and <i>Diuris praecox</i> and Themeda grassland Endangered Ecological Community in the south.</p> <p>6.1.10 Implement relevant strategies for species and communities in the Priorities Action Statement and recovery plans.</p> <p>6.1.11 Seek funding to undertake regeneration works in priority areas.</p> <p>6.1.12 Continue to undertake fauna surveys at established monitoring points to aid knowledge of species using the park and to monitor changes in response to management actions.</p> <p>6.1.13 Encourage research into appropriate indicators to monitor the effects of climate change.</p> <p>6.1.14 Liaise with neighbouring landholders and community groups regarding off-park conservation measures and wildlife corridor improvements.</p>	<p>High / Ongoing</p> <p>High / Ongoing</p> <p>High / Ongoing</p> <p>Medium</p> <p>Medium</p> <p>Low</p> <p>Ongoing</p>

Current situation	Desired outcomes	Management response	Priority
<b>6.2 Cultural heritage</b>			
<p>Aboriginal sites exist in the park, the most significant being the extensive midden at Pelican Point.</p> <p>No significant European cultural heritage items occur in the park. One historic marker exists at Crackneck Lookout.</p>	<p>Aboriginal places and values are identified and protected.</p> <p>Aboriginal people are involved in management of the Aboriginal cultural values of the park.</p> <p>Understanding of the cultural values of the park is improved.</p> <p>Negative impacts on Aboriginal and historic heritage values are stable or diminishing.</p> <p>Historic features are appropriately conserved and managed.</p>	<p>6.2.1 Consult and involve the Regional Aboriginal Co-Management Committee, Darkinjung Local Aboriginal Land Council and other relevant Aboriginal community organisations in the management of Aboriginal sites, places and values, including interpretation of places or values.</p> <p>6.2.2 Undertake an Aboriginal heritage and cultural assessment prior to all works with the potential to impact on Aboriginal or historic sites and places.</p> <p>6.2.3 Encourage further research into the Aboriginal heritage values of the park with the Darkinjung Local Aboriginal Land Council and other relevant Aboriginal community organisations.</p> <p>6.2.4 Monitor the Pelican Point midden to ensure no damage is occurring to the site or fences. Undertake ameliorative works where required.</p> <p>6.2.5 Retain the historic cairn at Crackneck Lookout but do not actively maintain it.</p>	<p>Medium</p> <p>High / Ongoing</p> <p>Medium</p> <p>Medium / Ongoing</p> <p>Low</p>



Current situation	Desired outcomes	Management response	Priority
<b>6.3 Visitor use and services</b>			
<p>Visitor vehicle access to the park is facilitated by the public road network and by sealed park roads (Pelican Beach Road in the north and Hilltop Street in the south).</p> <p>Visitor opportunities provide for low impact day use activities. Interpretive and minimal impact use information is provided throughout the park.</p> <p>Cycling is only permitted on sealed park roads but is not permitted on management trails due to the highly erodible sandy soils.</p> <p>There are no camping areas within the park.</p> <p>Inappropriate recreational activities in the park include dog walking and motorbike / mountain bike riding on walking tracks.</p> <p>A cycleway has been proposed by Wyong Shire Council to link The Entrance with Toukley. Route options include through Wyrribalong National Park on both the western and eastern sides and along either side of Wilfred Barrett Drive in the road easement outside the park.</p> <p>Several day use areas need renovation and replacement of old amenities.</p> <p>The toilet block at Bateau Bay is in poor repair due to its age, and is often subject to vandalism. It is also visually unappealing.</p>	<p>A variety of low key visitor opportunities are available that encourage appreciation of the natural environment.</p> <p>Visitor use is appropriate and ecologically sustainable.</p> <p>Visitor use and services encourage appreciation of the park's values.</p> <p>Negative impacts of visitors on park values are stable or diminishing.</p>	<p>6.3.1 Allow public vehicle access on Pelican Beach Road and Hilltop Street.</p> <p>6.3.2 Promote use of the park for low impact recreational use including walking, swimming, fishing and whale watching.</p> <p>6.3.3 Maintain interpretive and minimal impact use information throughout the park. Review the number and location of park information signs.</p> <p>6.3.4 Allow bushwalking throughout the park on walking / management trails. No new walking tracks are permitted in the park.</p> <p>6.3.5 Cycling is allowed on existing sealed roads. Management trails will be signposted to indicate that cycling is not permitted.</p> <p>6.3.6 Liaise with Department of Planning and Wyong Shire Council regarding development of a cycleway generally within the easement along Wilfred Barrett Drive while minimising impact on the park.</p> <p>6.3.7 Camping is available adjacent to the park at Blue Lagoon Beach Resort and Sun Valley Tourist Park. No camping is permitted in the park.</p> <p>6.3.8 Vegetation trimming may be undertaken by NPWS staff to maintain strategic views on the Red Gum Trail and Pelican Beach viewing platforms in</p>	<p>Ongoing</p> <p>Medium</p> <p>Medium</p> <p>Ongoing</p> <p>High</p> <p>Ongoing</p> <p>Ongoing</p> <p>Low</p>

Current situation	Desired outcomes	Management response	Priority
<p>High visitor use at Crackneck Lookout and the many tracks in the area are impacting on <i>Diuris praecox</i> habitat and Endangered Ecological Communities. Regular vandalism of facilities also occurs.</p> <p>Two hang gliding / paragliding launch sites are located in the park and are managed in accordance with the NPWS Hang gliding and Paragliding Policy which requires site management plans for each site.</p> <p>Group activities involving more than 40 people and high risk activities require consent from NPWS. Commercial activities require a licence.</p>		<p>the north; and Bateau Bay day use areas and Crackneck and Wyrabalong lookouts in the south. Trimming will be minimised as far as possible, not involve tree removal.</p> <p>6.3.9 Minor upgrading of visitor facilities may be undertaken at the Burrawang access, at lookouts on the Redgum Trail, and at Bateau Bay Lookout. No new visitor areas will be created.</p> <p>6.3.10 Site management plans will be prepared and implemented for Crackneck Lookout and Wyrabalong Lookout/Cromarty Hill addressing upgrading of safety fencing, paving, replacement/provision of picnic tables, installation of interpretive information, possible construction of toilets and viewing platforms, and protection of native vegetation.</p> <p>6.3.11 Options for removal, renovation or rebuilding of the toilets at Bateau Bay in a less obtrusive location will be explored.</p> <p>6.3.12 The children's playground at Bateau Bay south will be maintained for its useful life but will not be replaced if major maintenance is required.</p> <p>6.3.13 Prepare a Site Management Plan for the hang gliding launch site at Crackneck lookout including provision for altered fencing to protect threatened species and endangered ecological communities. Implement the Site Management Plan for the Cromarty Hill launch site, and for the Crackneck launch site when completed.</p>	<p>Medium</p> <p>Medium</p> <p>Medium</p> <p>Low</p> <p>High</p>

Current situation	Desired outcomes	Management response	Priority
		<p>6.3.14 Review and rationalise tracks in the vicinity of Crackneck Lookout.</p> <p>6.3.15 Permit organised group visits, subject to limits on numbers and conditions to minimise impacts. Permit commercial activities that are consistent with this plan and will not negatively impact on other park visitors or park values.</p>	<p>Low</p> <p>Ongoing</p>

Current situation	Desired outcomes	Management response	Priority
<b>6.4 Community programs and education</b>			
<p>The park provides a number of good vantage points for land-based whale watching which are promoted through a variety of media.</p> <p>The park has a good network of interpretive signs and is regularly promoted through Discovery activities and used for curriculum based school excursions.</p> <p>Clearing of vegetation by neighbours, particularly on cliff tops, threatens the integrity of the park's vegetation communities and may cause erosion and contribute to landslips. Unauthorised walkways, structures and furniture have also been constructed / placed in the park, including on Asset Protection Zones on the park boundary and rubbish dumping occurs in many areas.</p> <p>Continued community education regarding the potential impact of dogs on native animals and the reasons for the prohibition of domestic animals in the park is required to reduce the number of dogs in the park.</p>	<p>Discovery programs promote conservation and the values of parks.</p> <p>The local community is aware of the significance of the park and of park management programs.</p> <p>Park neighbours support conservation of native vegetation near the park.</p> <p>Locals and visitors recognise the significant values of the park and dog numbers are greatly reduced.</p>	<p>6.4.1 Promote Discovery activities, including whale watching, to increase community involvement and appreciation of the park.</p> <p>6.4.2 Organise media releases, educational material and contact with neighbours and community organisations.</p> <p>6.4.3 Liaise with neighbours to encourage the retention and appropriate management of vegetation and Asset Protection Zones adjacent to and on the park, and use of authorised tracks only. Remove private walkways, structures and furniture and rehabilitate sites.</p> <p>6.4.4 Continue to publicise the impacts of domestic animals and the penalties if brought into parks.</p> <p>6.4.5 Undertake targeted law enforcement to reduce the number of dogs brought into the park. Maintain existing "dogs prohibited" signs and install at new locations if required.</p>	<p>Medium / Ongoing</p> <p>Low / Ongoing</p> <p>Medium / Ongoing</p> <p>Medium / Ongoing</p> <p>High / Ongoing</p>

Current situation	Desired outcomes	Management response	Priority
<b>6.5 Weeds and pest animals</b>			
<p>The main weeds of concern in the park are bitou bush, lantana, asparagus fern, coastal morning glory, turkey rhubarb, pampas grass and cassia.</p> <p>Weed management strategies have been prepared for the north and south sections of the park. Areas at greatest risk from weeds are the littoral rainforests and wetlands Endangered Ecological Communities in the north and the coastal dunes and forests in the south.</p> <p>Of the main weeds of concern, 4 have been listed as key threatening processes: coastal morning glory, bitou bush, pampas grass and lantana. Threat abatement plans have been prepared to target bitou bush and lantana.</p> <p>Monitoring of littoral rainforest burnt in a wildfire in 2005 has shown that the fire significantly reduced the dense bitou bush infestation and that natural regeneration is comparable to that in adjacent areas where bitou bush has been sprayed with herbicide or removed by hand.</p> <p>Myrtle rust is a new potential threat to the park's vegetation.</p> <p>Predation by the red fox has been recognised as a key threatening process, however Wyrribalong is not a priority area for control in the Threat Abatement Plan. The control of</p>	<p>Introduced plants and animals are controlled and where possible eliminated.</p> <p>Negative impacts of weeds and pest animals on park values are stable or diminishing.</p>	<p>6.5.1 Manage introduced species as per the regional and park Pest Management Strategies. Priority for weed control will be Endangered Ecological Communities, areas with good potential for recovery, and outlying populations with the risk of spreading.</p> <p>6.5.2 Develop a weed control program for inaccessible areas of the park</p> <p>6.5.3 Encourage establishment of volunteer bush regeneration groups.</p> <p>6.5.4 Seek the cooperation of neighbours in implementing weed and pest control programs.</p> <p>6.5.5 Implement Threat Abatement Plan (TAP) actions for bitou bush and lantana in priority target areas as specified in the TAPs. Implement other relevant TAPs as prepared.</p> <p>6.5.6 Continue to monitor effectiveness of weed control methods through quantitative analysis to enable comparison of control techniques.</p> <p>6.5.7 Monitor post-fire regeneration in littoral rainforest, with a view to using small-scale fire as part of an integrated weed control strategy in heavily weed infested areas.</p> <p>6.5.8 Prepare a fox control program and implement as required. Priority areas for investigation are</p>	<p>High / Ongoing</p> <p>Medium</p> <p>Medium</p> <p>Low</p> <p>High / Ongoing</p> <p>Medium / Ongoing</p> <p>Low / Ongoing</p> <p>Medium</p>

Current situation	Desired outcomes	Management response	Priority
foxes on land adjoining residential development is problematic due to restrictions on the use of baits in proximity to housing.		<p>water-bird protection around the islands, threatened fauna protection in north Wyrabalong, and complementing the Wamberal Lagoon Nature Reserve program in south Wyrabalong.</p> <p>6.5.9 Monitor susceptible communities and species for myrtle rust infection.</p> <p>6.5.10 Maintain myrtle rust biosecurity as per the Management Plan for Myrtle Rust on National Park Estate. Ensure staff awareness of vulnerable sites, risk of spread, and hygiene protocols. Maintain medium level hygiene protocol for weeding and survey work in littoral rainforest.</p>	<p>Ongoing</p> <p>Ongoing</p>

Current situation	Desired outcomes	Management response	Priority
<b>6.6 Fire management</b>			
<p>The Fire Management Strategy for the park was approved in April 2006 and is currently being reviewed. The Strategy details fire management objectives and actions for the park and will consider fire threats, vegetation communities sensitive to fire, assets at risks including cultural heritage and the need for ecological burns.</p> <p>FireWise community education programs have proved very successful.</p>	<p>Life, property and natural and cultural values are protected from fire.</p> <p>Fire regimes are appropriate for conservation of native plant and animal communities.</p> <p>Negative impacts of fire on natural and cultural heritage values are stable or diminishing.</p> <p>Community understanding of the management of fire in the park will increase and the incidence of arson will decrease.</p>	<p>6.6.1 Update and implement the Fire Management Strategy for the park.</p> <p>6.6.2 Participate in the Gosford and Wyong Bush Fire Management Committees. Maintain cooperative arrangements with local Rural Fire Service brigades, fire control officers, the NSW Fire Brigade, and surrounding landowners in regard to fuel management and fire suppression.</p> <p>6.6.3 Management trails will be maintained to appropriate standards depending on their fire classification in the Fire Management Strategy.</p> <p>6.6.4 Manage the park to protect biodiversity in accordance with the identified fire regimes / thresholds in the Fire Management Strategy.</p> <p>6.6.5 Continue to undertake cooperative FireWise community education programs in conjunction with the RFS and NSW Fire Brigade.</p>	<p>High</p> <p>Medium</p> <p>High</p> <p>High / Ongoing</p> <p>Medium</p>

Current situation	Desired outcomes	Management response	Priority
<b>6.7 Infrastructure and maintenance</b>			
<p>The park contains two sealed public access roads and a network of management trails.</p> <p>The retaining wall on the Lillypilly Loop Trail needs major repairs to make the trail safe for vehicles.</p> <p>There is an access agreement providing private residential access to Hollydell Farm.</p> <p>Shared access with TX Australia exists to Cromarty Hill. The access is not reserved as park however NPWS has historically maintained the road. A MOU for maintenance liability needs to be established.</p> <p>Regular vandalism of facilities occurs at Crackneck Lookout. Upgrading of the day use area and facilities will only be viable if Hilltop Street is gated and closed at night.</p> <p>Vehicle access to the Lake Trail in North Wyrabalong has been blocked by road barriers associated with the Magenta Shores road upgrades.</p> <p>Vehicle access to Pelican and Tuggerah Beaches for commercial fishing is permitted only through appropriate consents from NPWS and Wyong Shire Council.</p>	<p>Infrastructure and assets are routinely maintained.</p> <p>Management facilities and operations adequately serve management needs and have minimal impact.</p> <p>Approved commercial activities will not impact on the natural or cultural values of the park or the enjoyment of other park visitors.</p>	<p>6.7.1 Maintain all roads, management trails and walking tracks shown on Figure 2.</p> <p>6.7.2 Investigate funding options to rebuild / relocate Lillypilly Loop Trail retaining wall.</p> <p>6.7.3 Monitor the license for access to Hollydell Farm to ensure compliance with licence conditions. Renegotiate licence and conditions on expiry, provided that no formalised road construction providing alternate access occurs.</p> <p>6.7.4 Initiate an MOU with TX Australia for shared maintenance responsibility for access to Cromarty Hill.</p> <p>6.7.5 Negotiate with residents and Wyong Shire Council for a suitable location for gates, a turning circle and parking area, to provide night time closure of Hilltop Street.</p> <p>6.7.6 Close the Lake Trail.</p> <p>6.7.7 Permit vehicle beach access for commercial fishing only via Soldiers Beach and in accordance with approved consents and NPWS policies.</p>	<p>Medium</p> <p>Medium</p> <p>Ongoing</p> <p>Low</p> <p>Medium</p> <p>Medium</p> <p>Medium</p>



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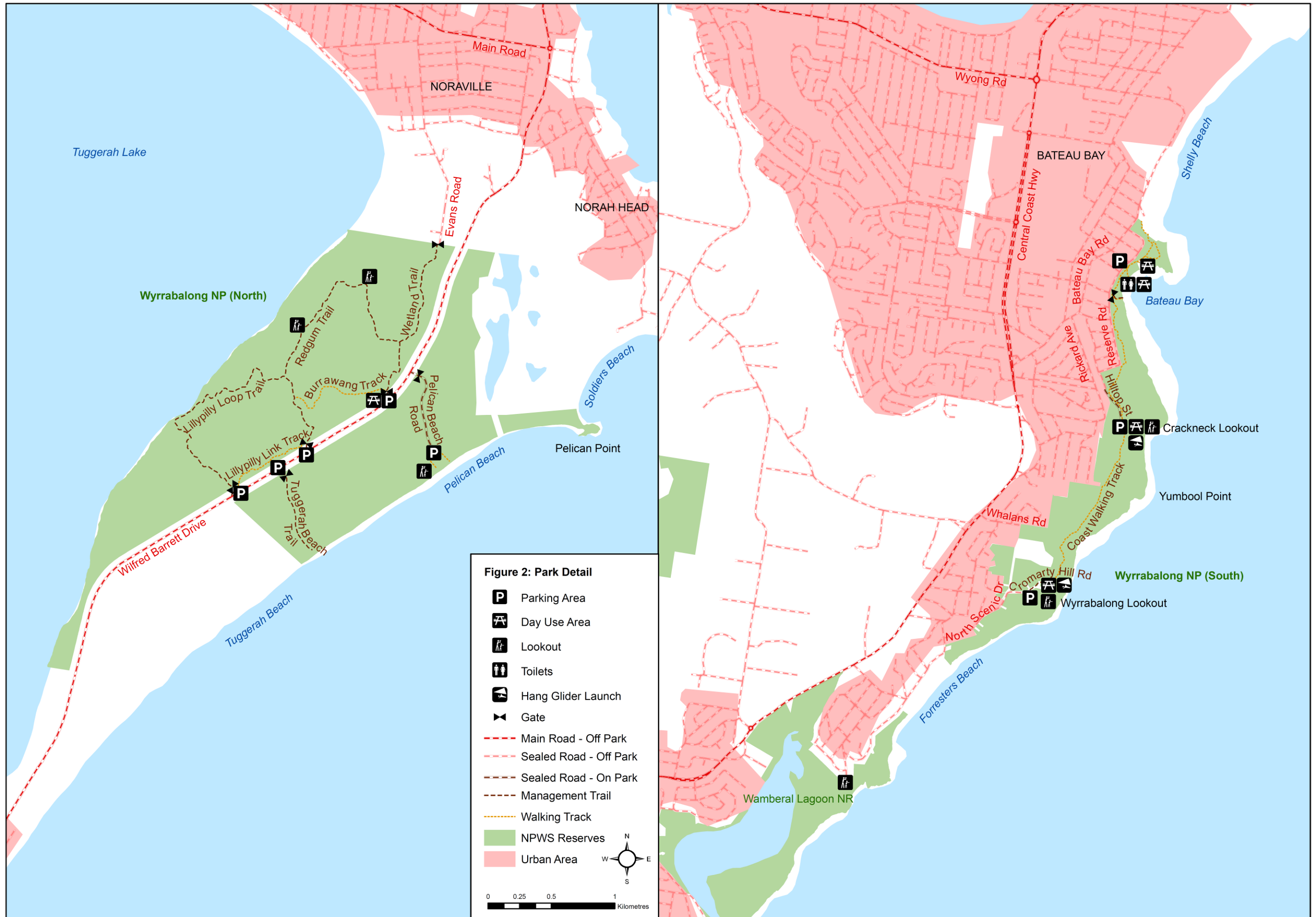


FIGURE 2. PARK DETAIL