



# Belmont Wetlands State Park Trust



## Final Plan of Management (PoM) Belmont Wetlands State Park

January 2010



Belmont Wetlands State Park  
Final Plan of Management

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A	19.06.09	Preliminary Draft Plan of Management	ZC/AN	TH
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## **BWSP Plan of Management Addenda**

*The following amendments to this Plan were requested by the Belmont Wetlands State Park Trust following printing of the final document. This addendum serves to formally amend all relevant sections throughout the Plan according to the needs below.*

### **1. Nine Mile Beach – Regulation of 4WD Activity:**

For safety considerations due to the characteristics of this beach, 4WD vehicles may need to be driven above MHW (mean high water mark). This will be considered in regulation of vehicle use by the Trust in consultation with Lake Macquarie City Council.

### **2. Infrastructure (Fig.12):**

This diagram may not necessarily depict all existing infrastructure at any point in time.

### **3. Cyclist access to wetlands zones:**

Some pedestrian boardwalks may be used as shared pathways, with carefully managed cyclist access through sensitive areas.

### **4. Approvals of Vegetation Works (Sect 6.5. Flora):**

Not all vegetation clearing works will require application for approval under the *Native Vegetation Act 2003*, since there are specific exemptions under that Act that may apply. Consultation with the Hunter Central Rivers Catchment Management Authority will take place in this regard as required.

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## Glossary of Terms

Aboriginal Community	All Indigenous groups within the area who represent the interests of the Aboriginal Community. This includes: <ul style="list-style-type: none"> <li>• Bahtabah Local Aboriginal Land Council;</li> <li>• Awabakal Traditional Owners Aboriginal Corporation;</li> <li>• Awabakal Descendants Traditional Owners Aboriginal Corporation</li> </ul>
Berm	A relatively flat back portion of the beach formed by material deposited by the action of waves.
Biotic	Consisting of, or relating to, living organisms.
Chitter	A by-product of coal mining.
Coastal wetland	Wetlands whose formation was dependant on marine influenced processes.
Coastline Protection Zone	An integrated land use unit of active coastline and associated areas identified in the Lake Macquarie Coastline Management Plan (1999).
Environmental weed	Weed that readily colonises natural areas and is extremely difficult to control once established.
Ex-officio	By virtue of office or official position.
Foredune	Mature sand dune located between the incipient foredune and hind dune.
Hind dune	Located to the rear of the foredune. Normally characterised by mature vegetation including trees and shrubs. (The hind dune at BWSP has been significantly altered by past mineral and construction sand mining operations).
Hummocks	Isolated mounds of sand held together by vegetation.
Incipient foredune	A small platform of wind-accumulated sand in front of the foredune.
Off-road vehicle	In this PoM, the term off-road vehicle is used to describe vehicles including four wheel drives (4WD), trail bikes, quad bikes, motorcross bikes and minibikes.
Overburden spoil	Soil, rock and clay that sits above coal mining seams.
Noxious weed	A declared noxious weed is a weed that must be controlled by law. The level of control is determined by the weed control class as defined by the Noxious Weeds Act 1993.
The 'Cauldron'	Local term for a large, former quarry area located in Management Zone 3, in the northern part of BWSP.
The 'park'	Belmont Wetlands State Park.
The 'reserve'	Belmont Wetlands State Park.
The 'Trust'	Belmont Wetlands State Park Trust Board.
Wetland	Areas of land that are either temporarily or permanently covered with water.



## Key to Abbreviations

ADTOAC	Awabakal Descendants Traditional Owners Aboriginal Corporation
AHD	Australian Height Datum
ANZECC	Australia and New Zealand Environment and Conservation Council
APAMP	Australian Pest Animal Management Program
ATOAC	Awabakal Traditional Owners Aboriginal Corporation
BWSP	Belmont Wetlands State Park
CAMBA	China-Australia Migratory Bird Agreement
DIWA	Directory of Important Wetlands in Australia
DPI	Department of Primary Industries
EPBC Act	Environmental Protection and Biodiversity Conservation Act (Commonwealth)
HCRCMA	Hunter Central Rivers Catchment Management Authority
JAMBA	Japan-Australia Migratory Bird Agreement
LGA	Local Government Area
LHCCREMS	Lower Hunter and Central Coast Regional Environmental Management Strategy
LMCC	Lake Macquarie City Council
NH&MRC	National Health and Medical Research Council
PoM	Plan of Management
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement
SEPP	State Environmental Planning Policy
TSC Act	Threatened Species Conservation Act (NSW)

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# Executive Summary



# EXECUTIVE SUMMARY

Belmont Wetlands was established in 2006 as the 10<sup>th</sup> State Park in New South Wales (NSW) following recommendations to the NSW Premiers Advisory Committee regarding the future management of 514 hectares of former BHP land. The site was proclaimed by the NSW Government on 3 March 2006 as Crown Reserve No.1011388 for Public Recreation, Coastal Environmental Protection and Tourist Facilities and Services. The park stands on the traditional tribal Country of the Awabakal People. This Plan of Management (PoM) recognises and respects the Awabakal People, past and present.

## Scope and Structure

This is the first PoM prepared for Belmont Wetlands State Park (BWSP). The work has been undertaken by Andrews Neil Urban Design Group (ANUDG) with the assistance of the BWSP Trust, the NSW Land and Property Management Authority, Syneca Consulting and Godden Mackay Logan Heritage Consultants.

This PoM is divided into four (4) parts;

Part A: Management Context;

Part B: Site Description;

Part C: Management Framework; and

Part D: Implementation and Review

## Part A: Management Context

Part A introduces the study area and provides information about the management context within which the PoM was developed. A basis for management is proposed, the planning context outlined and key reserve values identified.

BWSP is managed by the BWSP Trust, a community based board, which have the task of preparing and implementing this PoM in accordance with the *Crown Lands Act 1989*. This PoM sets out a management direction for BWSP for the following ten (10) years. It identifies the reserve's intrinsic values and provides principles, objectives and actions for its future use and management.

The process of developing this PoM was undertaken according to the requirements of the *Crown Lands Act 1989*. Community and stakeholder consultation was undertaken to raise awareness of the site in the community and seek feedback regarding the future use and management of BWSP.

Five key reserve values were identified as the result of community consultation. These values are:

- Open space and recreation values
- Environmental values
- Education values
- Culture and heritage values
- Economic values

The Lake Macquarie City Council (LMCC) Local Environment Plan currently zones the BWSP site as environmental and infrastructure zonings with an infrastructure zone in the northern centre of the site. These zonings are considered appropriate for the reserve's intended purposes being access, public requirements, tourism, environmental and heritage conservation.

## Part B: Site Description

Part B contains information about the existing conditions at BWSP.

BWSP is located between the suburbs of Redhead and Belmont on the east coast of LMCC Local Government Area (LGA). BWSP has significant natural and cultural heritage values and its local and regional significance is considerable as it forms part of the largest remaining coastal wetland system in the Lake Macquarie LGA and occupies approximately 4.5km of beach frontage.

The wetlands and coastal areas of BWSP have links to Aboriginal culture and mythology. The adjacent Belmont Lagoon area has cultural significance to Aboriginal people as a gathering area and is the subject of a Dreamtime creation legend about *The Night the Moon Cried*.

BWSP also has a history of European industrial development and retains significant cultural values, most notably the Belmont to Adamstown Fernleigh Track pedestrian and cycleway easement which passes through the site.

Since European settlement in the region BWSP has been subject to land degradation from the coal industry, construction and mineral sands mining, changes to the water regime, erosion of the sand dune barrier system and pressures such as weed infestations, rubbish dumping, unauthorised off-road vehicle use and the influx of urban run-off.

Despite degradation of the sites natural eco-systems BWSP retains significant remnants of important ecological communities, including three State Environmental Planning Policy (SEPP) 14 Coastal Wetlands. It has the potential to provide a range of recreational, educational and tourism experiences and to contribute to the social, cultural and economic development of the local and regional area.

## Part C: Management Framework

Part C provides a framework for managing BWSP.

For management purposes BWSP was divided into three (3) Management Zones based on natural attributes and proposed land use practices. Management strategies are provided for each Management Zone and more generally, for the entire site.

The Trust and this Plan aim to protect and enhance the environmental values of the Park whilst allowing for and developing a range of recreational and appropriate economic opportunities.

### *Entire Site*

A Concept Masterplan has been developed for BWSP.

Key features of the Concept Masterplan include:

- Formalised main entry to BWSP at the corner of Kalaroo Road and Railway Crescent;
- Provision of a Beach Village to facilitate activities such as dining, picnicking, bike hire, beach access and educational and cultural activities;
- Provision of tourist accommodation facilities in the form of camping grounds and later, if demand determines, as more permanent holiday dwellings such as cabins or lodges;
- Areas for events to occur, such as music festivals, markets, outdoor cinema and the like;
- A clear hierarchy of roads, walkways and cycleways throughout the reserve;
- Integration with Council's development of the Fernleigh Track as a walkway/cycleway in conjunction with key stakeholders and promotion of BWSP as a final destination in this journey;
- 4WD beach access from the Beach Village carpark (Beach drivers will be required to purchase a permit and abide by a Code of Conduct for Beach Driving);
- Connections to regional trails and cycleways including the NSW Coastline Cycleway, the Great North Walk, the Lake Macquarie Coastal Walkway and existing trails around Lake Macquarie;
- Creation of a bird sanctuary island on Belmont Lagoon peninsula and the possibility of recreational and educational kayaking tours on the Lagoon under the guidance of qualified operators;

- Interpretation of Indigenous and non-Indigenous cultural heritage;
- An on-site nursery and services area;
- Continued protection and enhancement of the sites ecological values; and
- Investigate the possibility of land swaps or acquisitions with adjoining Government landholders to rationalise boundaries and improve management.

### ***Management Zone 1: Wetland Zone***

Management Zone 1 includes the wetlands and adjacent areas in the western portion of BWSP and the southern sections of Jewells Swamp including Third Creek.

This Management Zone is proposed to be managed and enhanced as an area of high environmental conservation value, whilst offering a range of appropriate passive recreation, education and volunteer opportunities for visitors.

### ***Management Zone 2: Beach and Fore-dune Zone***

Management Zone 2 includes the fore-dune and coastal strip along Nine Mile Beach, extending inland approximately 300 metres from the reserve's eastern boundary. It incorporates the outlet of Third Creek and the large sand dune adjacent to the outlet.

The aim of this Management Zone is to protect and enhance the natural and cultural values of the coastal zone and to provide opportunities for recreation and access to Nine Mile Beach.

Dune stabilisation and rehabilitation activities will be balanced with a system of managed access to Nine Mile Beach. 4WD vehicles will be permitted to drive along the beach between the shore and the high water mark under a permit system and Code of Conduct. The system will be regularly monitored as visitation to the park increases.

The BWSP is not an isolated unit and management is to be in accordance with the 'Whole of Coastline' approach advocated in the Lake Macquarie Coastline Management Plan (Umwelt, 1999).

### ***Management Zone 3: Sand Plain Zone***

Management Zone 3 includes areas which have been subject to past mineral and construction sand mining operations.

Much of this Zone is in a degraded state and it is considered appropriate that select areas within this Zone be developed as a high quality recreation and tourist facility. Facilities within this Management Zone could include low impact tourist and visitor accommodation, education and research facilities, cafés, restaurants and beer gardens, conference facilities, galleries, small to medium sized outdoor entertainment spaces, wedding reception facilities, community gathering spaces, picnic areas, playgrounds and dog exercise areas. Supporting infrastructure such as car parking, cycleways and visitor amenities would also be required in this Management Zone. Visitors can drive around a network of sealed roads, however vehicular beach access is limited to authorised permit holders of 4WD vehicles.

### ***Staged Implementation***

Two (2) development stages are proposed for the life of this PoM.

During Stage 1 (1-5 years) the focus will be activating spaces, raising awareness of the reserve, providing basic infrastructure and developing an income to support the reserves activities.

Stage 2 (6-10 years) will continue to strengthen the reserves key values through the provision of recreation facilities, environmental enhancement and infrastructure development.



## Part D: Implementation and Review

Part D considers the implementation of this PoM and contains information on potential funding sources, reporting, evaluation and review.

Funding is integral to the implementation of the PoM and an objective of the PoM is to establish and maintain sources of funding that ensure the long-term viability of BWSP while keeping its uses in accordance with the reserves stated values.

The Trust has determined to seek funding from a number of sources, including grants, sponsorship and private investment to ensure a regular income is generated to support the reserves activities. This is aided by the support of the Hunter-Central Rivers Catchment Management Authority (HCRCMA) who have endorsed the management strategies and objectives as they align with the Catchment Action Plan.

In addition to non-income generating services which the Trust aims to provide, such as picnic areas, walking trails and cycleways, the following income generating opportunities will be further investigated:

- Provision of tourist accommodation facilities, initially in the form of basic camping areas and later, if demand dictates, more permanent holiday dwellings such as cabins or lodges.
- Provision of areas for community events such as music festivals, markets, outdoor cinema and the like.
- Creation of a central Beach Village to facilitate activities such as dining, picnicking, bike hire, educational and cultural activities.

This PoM provides an excellent framework for the development and management of the Park. However, there will need to be extensive ongoing consultation, particularly between the Trust LMCC and LPMA to determine the feasibility and implementation of options and management directions.

The Trust is required to report on its activities at the end of each financial year in accordance with section 122 of the *Crown Lands Act 1989*. Evaluation of performance will coincide with this report. Review of the PoM may be required from time to time to keep up to date with Government legislation and policy changes and reviews are recommended at regular intervals.



# Part A

## Management Context

Part A introduces the study area and contains information about the management context within which the Plan of Management was developed. A basis for management is proposed, the planning context outlined and key reserve values identified. A description of the current site condition is contained in Part B.

## 1.0 The Plan of Management

### 1.1 Background

Belmont Wetlands State Park (BWSP) is a unique landscape comprised of coastal wetlands, sand dunes and remnant ecological communities located between the suburbs of Redhead and Belmont on the east coast of New South Wales, Australia. The BWSP is wholly within the Lake Macquarie Local Government Area (LGA) in the Parish of Kahibah, county Northumberland. The park stands on the traditional tribal Country of the Awabakal People. This Plan of Management (PoM) recognises and respects the Awabakal People, past and present.

The 514 hectare site was acquired by the New South Wales (NSW) State Government from the former BHP Holdings Company in 2002 after sand mining operations ceased. Due to considerable community opposition to the proposed development of the land for housing, and strong support to reserve the site for public use, an Advisory Committee was established in 2003 to assist the Premier's Department, Cabinet Office and Treasury in considering options for the sites future uses, management, protection and rehabilitation. The Belmont Wetlands Advisory Committee recommended to the Premier's Department that the land be dedicated as a Crown Reserve under Part 5 of the *Crown Lands Act 1989* for the purpose of conservation, recreation and ecotourism (Belmont Wetlands Advisory Committee, 2004).

The Premier's Department accepted the recommendation and BWSP was reserved on 3 March 2006 as Crown Reserve No.1011388 for Public Recreation, Coastal Environmental Protection, and Tourist Facilities and Services, becoming the 10<sup>th</sup> State Park in NSW. BWSP is within the Lake Macquarie Regional Crown Reserve 1012129 for the public purpose of Access and Public Requirements, Tourism Purposes and Environmental and Heritage Conservation, as gazetted on 11 August 2006.

BWSP has inherited a history of degradation, yet retains significant natural and cultural values. It has the potential to become an important local and regional resource for public recreation, tourism, education and environmental conservation and a PoM is required to ensure it is used and managed in a way that will meet the needs of present and future generations.

### 1.2 What is a Plan of Management?

A PoM is a strategic planning document that provides a framework for managing an area of public land. It defines the values, use, management practices and intent relating to the land concerned.

BWSP Trust and the NSW Land and Property Management Authority have engaged Andrews Neil Urban Design Group (ANUDG) to prepare a PoM and Concept Masterplan for BWSP. The work has been undertaken with the assistance of the BWSP Trust, the NSW Land and Property Management Authority (formerly Department of Lands), Syneca Consulting and Godden Mackay Logan Heritage Consultants.

The BWSP PoM is a legal document which has been prepared in accordance with the requirements of the *Crown Lands Act 1989*. It provides guidelines on the use, management and protection of the reserves natural resources and for the provision of services and facilities over at least the following ten (10) years. This is the first PoM to be prepared for BWSP.

#### How to read this PoM

This PoM is divided into four (4) parts.

Part A introduces the study area and provides information about the management context within which the PoM was developed. A basis for management is proposed and key reserve values identified.

Part B contains information about the existing conditions at BWSP.

Part C provides a framework for managing BWSP. The site is divided into three (3) Management Zones and a range of objectives and strategies are recommended for each Management Zone and for the entire site. A Concept Masterplan is provided in this section.

Part D considers the implementation of this PoM and contains information on potential funding sources, reporting, evaluation and review.

### 1.3 Land to which this PoM applies

The PoM applies to the Crown Land known as BWSP, located between the suburb of Jewells to the north, Nine Mile Beach to the east (up to the high water mark), Belmont Lagoon and the Hunter Water Corporation Waste Water Treatment Facility to the south and the suburbs of Belmont and Belmont North to the west (Figure 1).

BWSP landholdings also include a keyhole shaped peninsula of land extending into Belmont Lagoon and a triangular corner of land on Ocean Park Road adjacent to Belmont Cemetery. These parcels of land comprise the 'core' study area to which this PoM relates (Figure 1).

Surrounding lands have also been considered in the PoM as shown in Figure 13, page 46. Whilst these lands lie beyond the boundaries of BWSP, their use and management is an important consideration in the broader context of how the BWSP functions.



Figure 1: Land to which this PoM applies  
 Source: Adapted from Department of Lands, 2008 (a)

The BWSP Trust landholdings are shown in Table 1:

Table 1: BWSP Trust Landholding Details

Lot	Deposited Plan (DP)	Area (ha.)
Lot 1	208759	7.0
Lot 1	208758	5.4
Lot 2	105964	4.4
Lot 3	211142	0.3
Lot 20	817883	109.4
Lot 22	709388	0.9
Lot 23	709388	380.5
Lot 2064	823738	6.2
<b>Total</b>	<b>-</b>	<b>514.1 hectares</b>

Source: Department of Lands, 2008(a)

#### 1.4 What is a State Park?

State Parks are created over significant public lands and are reserved under the *Crown Lands Act 1989* for various appropriate public purposes. They are part of NSW's extensive broader Crown reserve network. Each park is managed by a Trust Board on behalf of the Land and Property Management Authority. In the case of the BWSP it has three statutory public purposes;

- Coastal Environmental Protection;
- Public Recreation; and
- Tourism Facilities and Services.

#### 1.5 Objectives of this Plan of Management

The PoM has been prepared in order to provide direction and a strategic framework for the operational use and management of the BWSP.

The principal objectives of this PoM are;

- Identify a vision for the BWSP;
- Set out the strategic direction of the BWSP;
- Identify the values of the BWSP;
- Outline operational use and management strategies for the BWSP;
- Propose a concept masterplan for future development;
- Identify opportunities for generation of income to assist the reserves management;
- Provide direction on the conservation and environmental management of natural resources within BWSP;
- Provide direction on the conservation and protection of cultural heritage sites within BWSP;
- Identify and minimise risks within BWSP;
- Consolidate information into a single document for ease of reference; and
- Identify future studies that may be required to achieve the BWSP,s vision.

## 1.6 The BWSP Trust's vision

BWSP Trust has prepared the following Vision Statement for BWSP;

*"Provide the community with a sustainable world class, family orientated facility featuring passive and active recreational and educational activities within a rehabilitated and well managed coastal and wetlands park environment."*

## 2.0 Basis for Management

### 2.1 Principles of Crown Land management

Section 11 of the *Crown Lands Act 1989* provides a set of principles for Crown Land management, which are summarised below:

- environmental protection principles are to be observed in relation to the management and administration of Crown land;
- the natural resources of Crown land (including water, soil, flora, fauna and scenic quality) are to be conserved wherever possible;
- public use and enjoyment of appropriate Crown land is encouraged;
- where appropriate, multiple use of Crown land is encouraged;
- where appropriate, Crown land should be used and managed in such a way that both the land and its resources are sustained in perpetuity; and
- Crown land is to be occupied, used, leased, licensed or otherwise dealt with in the best interests of the State consistent with the above principles.

### 2.2 Roles and responsibilities of the BWSP Trust

BWSP is managed by the BWSP Trust on behalf of the community. The reserve Trust system offers members of the community and local Councils an opportunity to participate in the stewardship of Crown reserves in their locality. Trust board members are appointed by the Minister for a term of up to five (5) years. They are empowered to make decisions regarding the use and management of the land, and are responsible for the implementation of those decisions. The Trust is an incorporated body and has care, control and management of the reserve.

The Trust board currently comprises seven (7) community volunteers and 'ex-officio' representatives from the Land and Property Management Authority and Lake Macquarie City Council.

The Trust board can make decisions about regulating such things as:

- *'the way in which the reserve is used;*
- *the driving and parking of vehicles (or the mooring of vessels) on the reserve;*
- *hours of entry;*
- *fees to be charged for entry; and*
- *permitted or prohibited activities.'* (Department of Lands, 2007)

The BWSP Trust board is responsible for the care, control and management of the BWSP in accordance with the *Crown Lands Act 1989*. Upon adoption of the PoM by the Minister, it is incumbent on the BWSP Trust to implement the Plan pursuant to section 114 of the *Crown Lands Act 1989*. No operations may be undertaken on, or in relation to, the BWSP unless they are in accordance with the PoM.

The BWSP Trust will implement this PoM in accordance with the vision, objectives and strategies outlined. Decisions on the future use and management of BWSP will be based upon consideration of the values, vision and management principles outlined in the PoM.

The Land and Property Management Authority requires that Trust boards adopt good risk management practices to ensure that risks are proactively managed and that responsible action is planned (Department of Lands, 2007). To assist Trust boards in managing risk, the Land and Property Management Authority has prepared a Risk Management Checklist and Register which should be used as a resource by the BWSP Trust.

The PoM and/or any supporting documents in no way exempt the BWSP Trust, licensees or general public using the BWSP from their statutory obligations under any other legislation, regulations, policies and plans.

## 2.3 Roles and responsibilities of key agencies and stakeholders

Various agencies and stakeholders also have an important role to play in either their relationship with the reserve and its Trust, or the implementation, review and evaluation of this PoM. They include:

- Land and Property Management Authority;
- Lake Macquarie City Council;
- Hunter Water Corporation;
- Hunter Central-Rivers Catchment Management Authority;
- Awabakal Descendants Traditional Aboriginal Corporation;
- Awabakal Traditional Owners Aboriginal Corporation;
- Bahtabah Local Aboriginal Land Council;
- Department of Environment, Climate Change and Water;
- Energy Australia;
- Fernleigh Track Committee;
- Neighbouring Landholders;
- Lessees and Licensees;
- Visitors;
- Volunteers and Community Groups; and
- The Wider Community.

Refer to Appendix B for a list of the roles and responsibilities of these agencies and stakeholders.

## 2.4 Plan of Management process

The process of preparing the PoM has been undertaken according to the requirements outlined in sections 112-115 of the *Crown Lands Act 1989*.

The BWSP Trust was closely involved in reviewing and refining the Draft PoM prior to public exhibition. Although not a legal requirement, community consultation was conducted as outlined below:

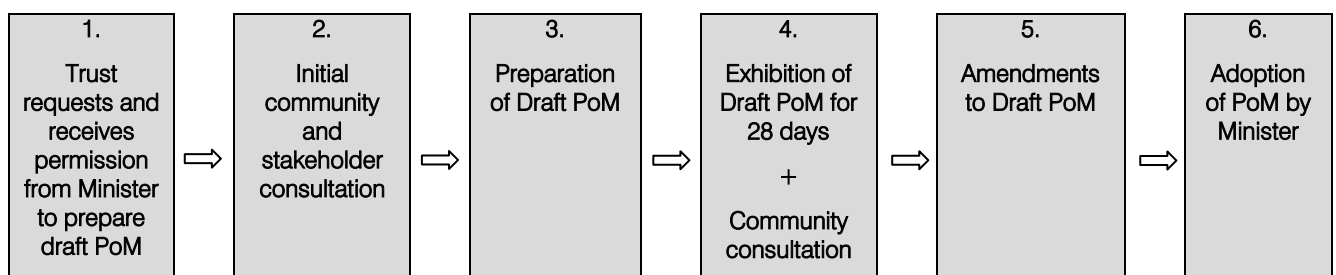


Figure 2: Plan of Management process



## 2.5 Literature review

There is a large amount of background literature and information pertaining to the history and development of BWSP.

The key documents relevant to the PoM are listed below:

- Andrews Neil UDG, May 2009, *Belmont Wetlands State Park; Summary Issues Paper*;
- Belmont Wetlands Advisory Committee, October 2004, *Advice to the Premier of New South Wales, Future Management of the Former BHP Lands Between Redhead and Belmont.*;
- City of Lake Macquarie, 2001, *Belmont Lagoon Reserve Plan of Management*;
- City of Lake Macquarie, June 2005, *Lake Macquarie Coastal Wetlands Park Proposal*;
- Dartnell Consulting and Hunter Wetlands Centre, October 2008, *Belmont Wetlands State Park Communications Strategy*;
- Godden Mackay Logan Heritage Consultants, May 2009 *Belmont Wetlands State Park Aboriginal Community Consultation Report*, Prepared for Andrews Neil UDG;
- Hassell, 1996, *Belmont Redhead Local Environment Study – Final Report*, prepared for Lake Macquarie City Council; and
- Lake Macquarie Estuary & Coastal Management Committee, 1999, *Coastline Management Plan*, Lake Macquarie City Council and Department of Land and Water Conservation, Umwelt (Australia) Pty Ltd;

A Summary Literature Review, previously undertaken by ANUDG is provided as supporting documentation to this PoM.

## 2.6 Consultation

Initial Stakeholder and Community Consultation was conducted between 10 February and 9 March 2009. The consultation was later extended for an additional four week period to 23 March 2009.

The first stage of consultation was intended to raise awareness of the site amongst the community and seek their ideas and feedback regarding the future use and management of BWSP through the use of a questionnaire submission. Results of the questionnaires were used to identify community values and guide development of the PoM.

Consultation with Bahtabah Local Aboriginal Land Council was conducted by Godden Mackay Logan (GML) Heritage Consultants. Awabakal Aboriginal Land Council advised GML that as the BWSP is not within their area, no further consultation was required. The Awabakal Descendants Traditional Owners Aboriginal Corporation and the Awabakal Traditional Owners Aboriginal Corporation have provided information regarding Aboriginal culture heritage and are engaged in ongoing discussion with the BWSP Trust.

It is a requirement of the *Crown Lands Act 1989* that a Draft PoM be publicly exhibited for a minimum of 28 days. This PoM was exhibited for 43 days. During this period a community workshop was held to seek the community's response to the Draft PoM. Feedback received during the exhibition of the Draft PoM has been considered and where appropriate, incorporated into the Final PoM.

## 2.7 Values

The values identified in the following sections represent the most important elements about the BWSP as determined by a combination of consultation with the community, key stakeholders and Trust board, a review of literature pertaining to the study area and site visits. The objectives and strategies outlined in the PoM have been devised to protect and enhance these values and they should be taken into consideration when formulating future use and management strategies. Further information is contained in Part B: Site Description.

### 2.7.1 Open space and recreation values

BWSP has become an important recreational resource for local residents and tourists. It provides scope for a wide range of recreational activities and is valued by the community as a new, yet significant part of the open space network between Sydney and Newcastle. The wetlands and sand dunes combine to create a landscape of high scenic value as the reserve directly adjoins Nine Mile Beach, offering over 4km of beach frontage.

Core open space and recreation values for BWSP include:

- Access to wetlands for activities such as walking, bird watching and environmental rehabilitation;
- Provision of areas for active and passive recreation activities;
- Pedestrian and cyclist access;
- Beach access for activities such as surfing, fishing, camping and swimming; and
- Controlled vehicle access.

### 2.7.2 Environmental values

BWSP has a strong coastal character and rich diversity of environmental values.

The wetlands in BWSP and the surrounding area represent the largest remaining coastal wetland system in the Lake Macquarie LGA (McEwan & McCord, 1995). Three of the wetlands at BWSP are protected under NSW State Environmental Planning Policy (SEPP) 14 - (Coastal Wetlands) policy. The wetlands have a high conservation value and remain in relatively good condition despite being disturbed in some areas.

BWSP is included in the *Lake Macquarie Coastal Wetlands Park* proposal, an interconnected system of coastal wetlands, parks and reserves that provide habitat for native fauna and wildlife corridors, particularly for local and international migratory species. BWSP provides habitat for a diverse range of flora and fauna including threatened species, migratory birds and endangered ecological communities.

The sand dune barrier system, while considerably modified by sand mining and wind erosion, provides natural protection to inland communities and important habitat for local fauna. One large dune in the north of the site wraps around the toe of Third Creek and forms the northern edge of a large former sand quarry area. This dune and the adjacent Jewells Swamp wetlands form a dramatic natural amphitheatre which has become an iconic landmark in the community.

Although large tracts of BWSP are degraded and require rehabilitation, the combination of coastal wetlands, sand dunes, coastline and native vegetation result in a visually interesting and environmentally significant landscape.

Core environmental values for BWSP include:

- Protection and rehabilitation of wetland ecosystems;
- Protection and rehabilitation of native flora and fauna habitats;
- Biodiversity conservation;
- Rehabilitation of degraded areas;
- Stabilisation and protection of sand dunes;
- Coastal protection;
- Recognition of BWSP as part of a broader system of coastal wetlands in the Lake Macquarie LGA; and
- Recognition of the ecological significance of the sand dune landscape, remnant native vegetation communities and wildlife corridors found at BWSP.

### 2.7.3 Education values

BWSP offers significant educational opportunities for park users and the broader community including a diverse variety of eco-systems, a rich cultural heritage and opportunities for community participation. Educational opportunities derived from the natural and cultural values of the BWSP have yet to be formally developed and may include activities such as site interpretation, study and research, user access and eco-tourism.

Core education values of the BWSP include:

- Environmental stewardship and rehabilitation;
- Wetland education;
- Community involvement and participation;
- Access to and interpretation of cultural heritage sites;
- Research and study opportunities – e.g. coastal processes, wetland hydrology, management of public recreation and natural resources; and
- Establishment of mutually beneficial partnerships with neighbouring landholders and education institutions.

### 2.7.4 Culture and heritage values

BWSP lies within the traditional lands of the Awabakal People. The Aboriginal Community maintains a close relationship with the land and knows the location of Aboriginal sites including middens, artefact scatters and campsites. Many of these sites exist in a highly modified landscape however, in less disturbed areas, such as around the wetland margins, undiscovered burials may still exist (Bonhomme, 1994).

Belmont Lagoon has particular cultural significance to the Aboriginal community. The Lagoon is a 'Dreaming-site' that was formed when the Moon wept out of loneliness. Creation of the Lagoon was cause for celebration and became known by Aboriginal people as 'a place of joyous dancing' (Haslam, undated).

The BWSP also has high European heritage values with evidence of past uses found across the site, including an abandoned rail corridor linking Belmont to Adamstown (known as the Fernleigh Track), a walking trail used by former workers of the John Darling Colliery (known as the Burma Track), a capped airshaft on the Belmont Lagoon peninsula and remnants of the former Belmont Railway platform (located just outside the BWSP boundaries).

Core culture and heritage values for the BWSP include:

- Recognition, protection and sensitive interpretation of Indigenous culture and heritage; and
- Recognition, protection and sensitive interpretation of non-Indigenous culture and heritage.

### 2.7.5 Economic values

The economic value of BWSP is currently un-realised and there is potential to improve management and generate funding for maintenance and rehabilitation works through the introduction of ecologically sustainable development at suitable sites.

Core economic values for BWSP include:

- Development of services and infrastructure that are aligned to the core values of BWSP;
- Development of the BWSP as an attraction for the local community and regional and international visitors; and
- Long term economic and financial viability.

### 3.0 Planning Context

There are a number of State and Local Government Planning Policies and Instruments that contain principles and statutory requirements to take into account in the future management and development of the BWSP.

The relevant Planning Acts, Policies and Instruments are listed below and the provisions contained in them would need to be complied with for any new development, use or activities at BWSP. A further detailed summary of these Acts, Policies and Instruments is provided as Appendix C.

#### 3.1 Legislation

The key legislation governing any future development on the site is:

- *Crown Lands Act 1989*

The *Crown Lands Act 1989* controls and governs all development on Crown Land, as well as the general management of these areas. In addition, the Act sets out the general requirements for the preparation of Plans of Management for Crown Land. The overall Principles of Crown Land Management as set out in the Act are identified in Section 2.1 of this PoM.

- *Environmental Planning and Assessment Act 1979*

The *Environmental Planning and Assessment Act 1979* is the legislation that governs the overall development assessment framework within New South Wales. Any future development proposed on the site will need to consider the overall aims and objectives and be subject to assessment pursuant to the relevant sections of the Act.

The following legislation may also apply, depending on the nature of proposed work.

- *Crown Lands Regulations 2006*
- *Coastal Protection Act 1979*
- *Environmental Planning and Assessment Regulations 2000*
- *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*
- *Protection of the Environment Operations Act 1997*
- *Native Vegetation Act 2003*
- *Threatened Species Conservation Act 1995*
- *Noxious Weeds Act 1993*
- *Heritage Act 1977*
- *Rural Fires Act 1997*
- *Local Government Act 1993*

### 3.2 Planning policies and instruments

The planning policies below all relate to different forms of development and different areas in the site, and as such, will need to be addressed on a case by case basis.

- State Environmental Planning Policy Number 14 –Coastal Wetlands
- State Environmental Planning Policy Number 71 - Coastal Protection
- State Environmental Planning Policy (Infrastructure) 2007
- Lower Hunter Regional Strategy 2006
- NSW Coastal Crown Lands Policy 1991
- National Strategy for Ecologically Sustainable Development 1992
- NSW Wetlands Management Policy 1996
- NSW State Plan 2009
- NSW Biodiversity Strategy 2008
- Lake Macquarie Coastline Management Plan 1999
- Lake Macquarie City Council Local Environmental Plan 2004
- Lake Macquarie City Council Plans of Management including Belmont Lagoon Reserve Plan of Management.

SEPP (Infrastructure) may also facilitate appropriate development and activities by relevant public authorities, either as exempt development or 'development without consent'. The latter will require assessment under Part 5 of the *Environmental Planning and Assessment Act 1979*. Refer to the Lake Macquarie City Council website for a current list and criteria of exempt development ([www.lakemac.com.au](http://www.lakemac.com.au)).

### 3.3 Development assessment guidelines

The following guidelines represent the factors that must be considered by any proponent when submitting a Development Application (DA) to LMCC in regards to the BWSP. These are additional to any necessary provisions of the *Environmental Planning and Assessment Act 1979*.

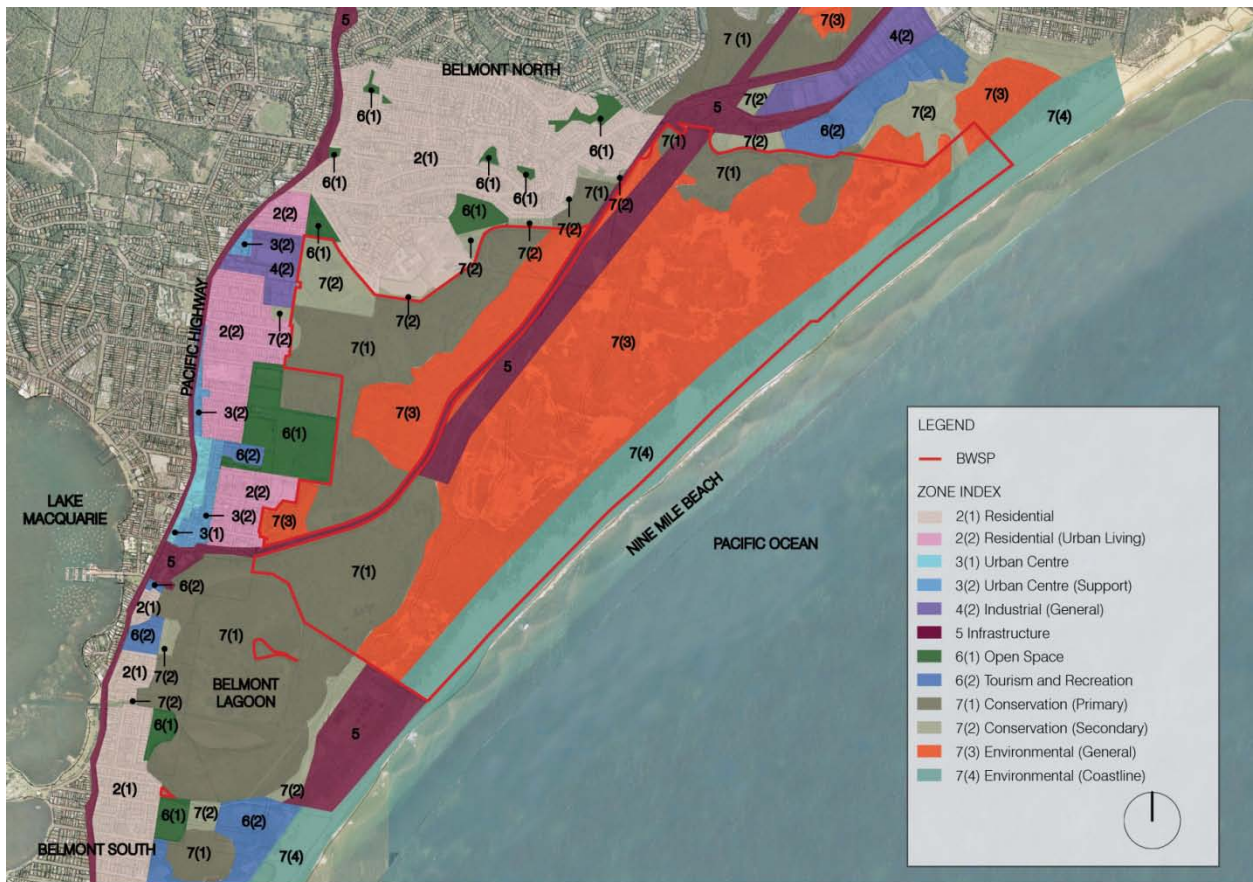
Future development proposals must address the following:

- Land owners consent, via Land and Property Management Authority;
- ensure consistency with the reserve's gazetted purpose, any adopted PoM, Crown Lands policies, Council's adopted policies and codes, all environmental planning instruments and the principles of Council's Planning Scheme;
- environmental and biodiversity sustainability;
- protection of identified values;
- public accessibility, equity, exclusivity and alienation of Crown land;
- public demonstration of a clear connection with the area's designated purpose, role and setting;
- protection of visual and environmental amenity;
- development which may adversely affect scheduled heritage items. Development in the vicinity of a heritage item should complement its character and integrity; and
- ensure appropriate native planting.

Source: *Department of Lands, 2007*

In addition, there will need to be ongoing liaison with LMCC to determine the most appropriate and relevant development assessment protocol applicable to each proposed work, the feasibility of development options and the development of management guidelines and management programs.

### 3.4 Zoning



**Figure 3: Zoning plan**

Source: Adapted from Department of Lands, 2008 (c)

The LMCC Local Environment Plan currently zones the BWSP site as environmental and conservation zonings with an infrastructure zone running through the northern section of the parks centre, adjacent to the Fernleigh Track. These zonings align well with the intended purposes for the reserve, being access, public requirements, tourism, environmental and heritage conservation.

A complete breakdown of the aims, objectives and permissible forms of development in each of these zones is included as Appendix D.

# Part B



## Site Description

Part B contains a description of the current condition of the Belmont Wetlands State Park site. It includes information about the site's local and regional context, history, landscape character, environmental condition and existing services and infrastructure. The following section, Part C, contains principles and strategies for managing Belmont Wetlands State Park.



## 4.0 Local and Regional Context

BWSP is located approximately 100 kilometres north of Sydney and 18 kilometres south of Newcastle. It lies between Lake Macquarie, Australia's largest coastal saltwater lake, and the Lake Macquarie coastline and is part of the Hunter Tourism Region (Figure 4).

The main northern rail line from Sydney lies to the west of Lake Macquarie while the Pacific Highway runs along the eastern side of Lake Macquarie and provides local access to Belmont and adjacent suburbs such as Charlestown and Swansea, in addition to regional access to Newcastle, Sydney and beyond. The Pacific Highway is situated approximately 500 metres from the western park boundary and offers convenient access opportunities from a number of local roads.

Local access to and from the park is primarily by foot, private motor vehicle, and bus/coach travel. Connections from rail services to the BWSP are dependent on car and bus travel and there are currently no direct bus services between the rail network or Newcastle City to the BWSP. The Newcastle Airport at Williamtown currently services the region with regular daily flights.

BWSPs local and regional significance is considerable. The park occupies approximately 4.5 kilometres of beach frontage and forms part of the largest remaining coastal wetland system in the Lake Macquarie LGA (McEwan & McCord, 1995). BWSP is included in a visionary proposal to form an interconnected complex of reserves, coastal wetlands and parks in the Lake Macquarie area known as the *Lake Macquarie Coastal Wetlands Park*. Other areas proposed for inclusion are Jewells Swamp, the Awabakal Nature Reserve, Bangalay Reserve, Belmont Lagoon, Golf Course Wetlands, Pelican/Blacksmiths Cabbage Tree Palm Forests, Blacksmiths Dunes, Salts Bay Reserve, Black Neds Reserve, Galgabba Point Reserve and Spectacle Island (City of Lake Macquarie, 2005).

BWSP also has areas of historical significance, both Aboriginal and European, including the Fernleigh Track, a former rail corridor linking Belmont to Adamstown.

BWSP is well positioned to support the local economy and as visitation to the region and site increases, tourism facilities proposed for the park will enhance and complement the regions existing tourist market.



Figure 4: Context map

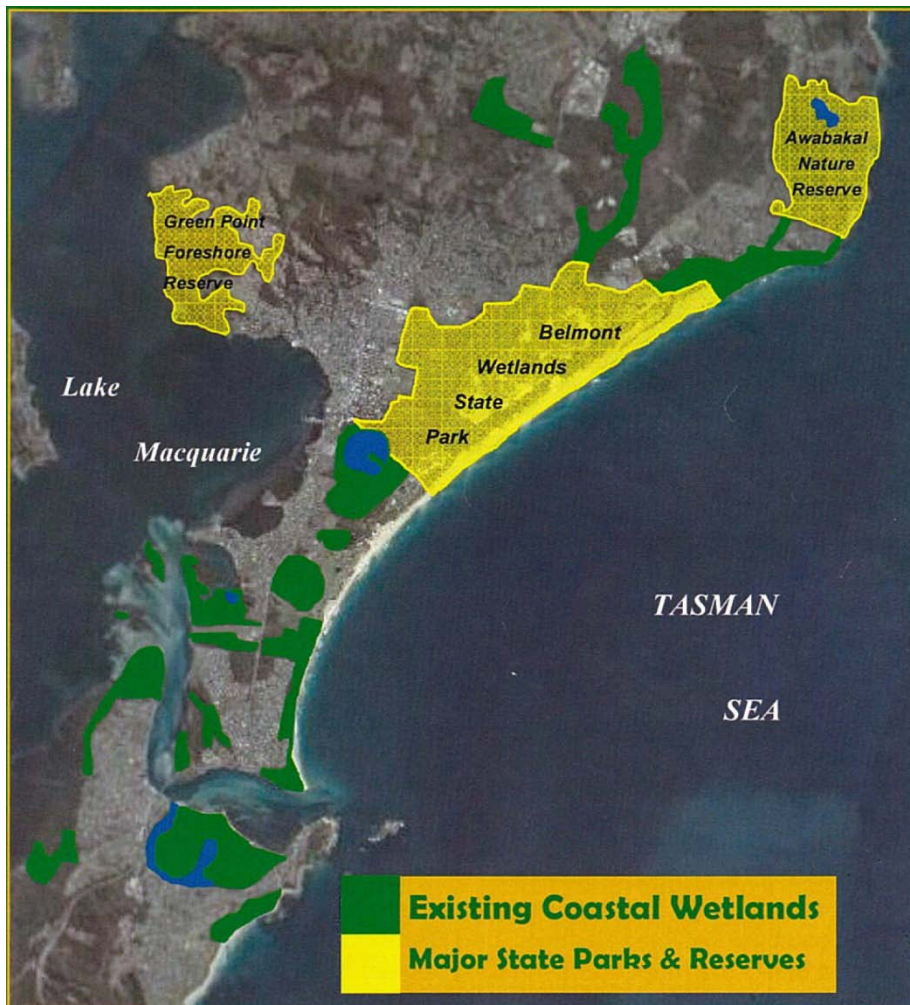


Figure 5: Areas proposed for inclusion in the Lake Macquarie Coastal Wetlands Park

Source: City of Lake Macquarie, 2007

#### 4.1 Neighbouring landholders

BWSP shares boundaries with a number of landholders including private residents and government organisations (Figure 6). The relationship between the Park and these adjoining lands is highly important to the Parks management.

Lake Macquarie City Council (LMCC) owns and/or manages vacant land directly north of the BWSP, several parks and reserves along the western boundary and the majority of Belmont Lagoon.

Hunter Water Corporation (HWC) occupies land directly south of BWSP which includes the Belmont Waste Water Treatment Facility. This facility is accessed from Ocean Park Road. To minimise the effects of odour impacting on park visitors it is recommended that a buffer zone of 400 metres be maintained between the HWC Waste Water Treatment Facility and any future development within BWSP.

Land adjoining the southern boundary of BWSP, between the HWC Waste Water Treatment Facility and Belmont Lagoon is currently undeveloped. There is potentially direct connectivity between BWSP and Belmont Lagoon through this area.

Belmont Park and Belmont Sportsman Ovals adjoin the western boundary. Emergency services access to the site can be gained from the ovals and unauthorised vehicular access is a problem in this area. Signage and lockable gates are provided and should remain at this access point. To the west of Belmont Lagoon is Spinnakers Leisure Park which offers caravan, cabin and camping facilities.

Much of the western boundary adjoins existing housing with access points at a number of locations including George Street, Glover Street, Deane Street, Stanley Street, Livingstone Street and Merleview Street (via Belmont Park) and Kalaroo Road.

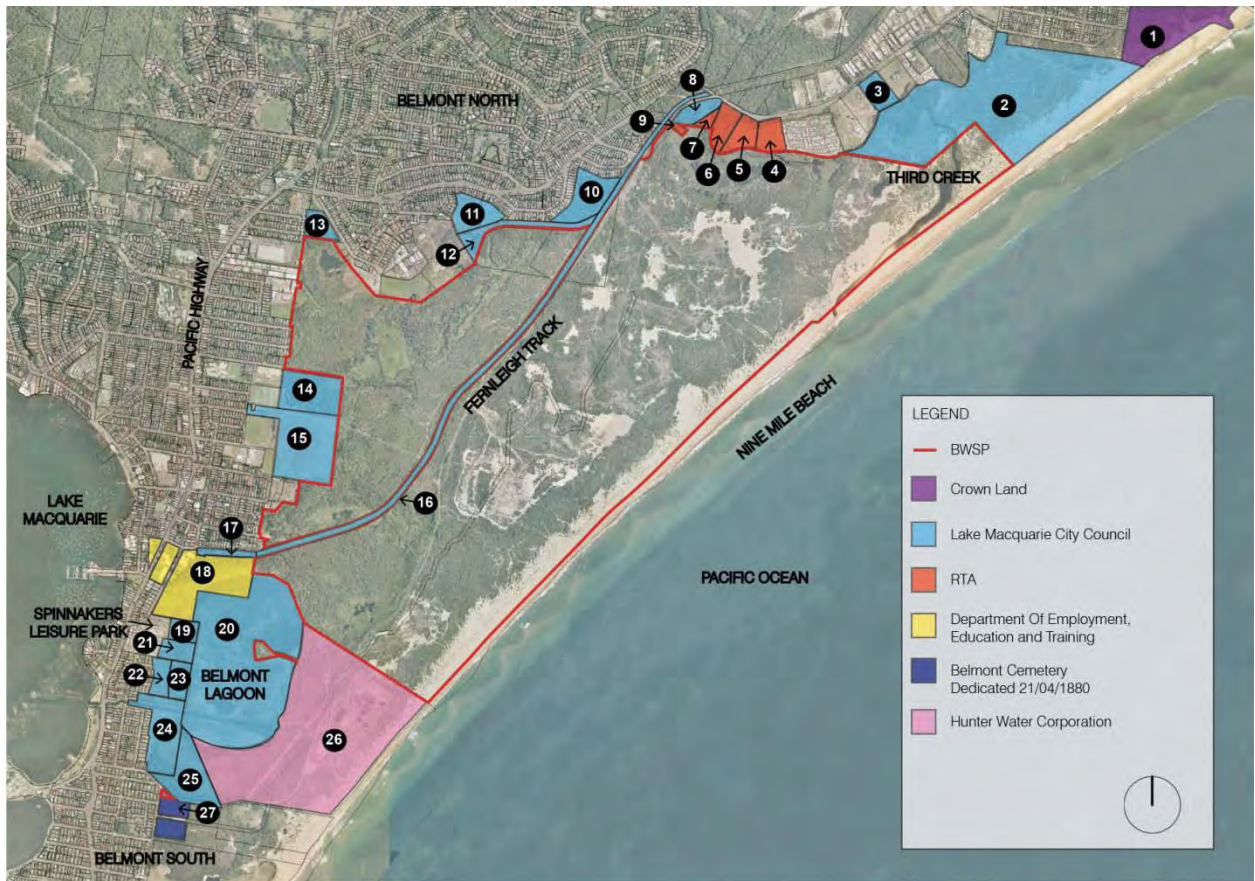


Figure 6: Adjoining state, local government and utilities owned lands  
 Source: Adapted from Department of Lands, 2008 (d)

Table 2: Lot and DP numbers of adjoining state, local government and utilities owned lands

Circled Number	Owner	Lot Number	Deposited Plan (DP)
1	Crown Land being R78624 for Public Recreation managed by LMCC	1412	755233
2	Lake Macquarie City Council	2	228483
3	Lake Macquarie City Council	64	10262
4	Roads and Traffic Authority	59	10262
5	Roads and Traffic Authority	58	10262
6	Roads and Traffic Authority	57	10262
7	Roads and Traffic Authority	1	573400
8	Lake Macquarie City Council	1	202665
9	Roads and Traffic Authority	3	652321
10	Lake Macquarie City Council	104	533297
11	Lake Macquarie City Council	2	540902
12	Lake Macquarie City Council	6	814551
13	Lake Macquarie City Council	1	537587
14	Lake Macquarie City Council	10	548901
15	Lake Macquarie City Council	2	519114

Circled Number	Owner	Lot Number	Deposited Plan (DP)
16	Lake Macquarie City Council	2	573398
17	Lake Macquarie City Council	5	592876
18	Department of Employment, Education and Training	10	860814
19	Lake Macquarie City Council	802	1066865
20	Lake Macquarie City Council	21	709388
21	Lake Macquarie City Council	82	733198
22	Lake Macquarie City Council	35	253148
23	Lake Macquarie City Council	36	253148
24	Lake Macquarie City Council	4	556338
25	Lake Macquarie City Council	1	553216
26	Hunter Water Corporation	1	433549
27	Belmont Cemetery (Dedicated 21/04/1880)	338	755233

Source: Department of Lands, 2008 (d) and Lake Macquarie City Council, 2009.

## 5.0 Site History

### 5.1 Aboriginal cultural heritage

Lake Macquarie is an area rich in Aboriginal cultural heritage. The Aboriginal community in the region is represented by the Awabakal Descendents Traditional Owners Aboriginal Corporation, the Awabakal Traditional Owners Aboriginal Corporation, the Bahtabah Local Aboriginal Land Council and the Indigenous people who live in the region. The Aboriginal community maintain a strong cultural connection with their traditional country and the area that is now known as Belmont Wetlands State Park has great significance to the Awabakal people.

Prior to European arrival, resources in the area were plentiful for Aboriginal people. Food sources included fresh water fish, eels, crayfish and birds such as geese and ducks which were found around the lagoon. Weirs were constructed to catch fish in small tidal channels and dune areas provided plants and terrestrial animals and were also used as mealtime gathering spaces. Local stone and timber was used to create canoes, spears, shields, weapons, digging sticks and containers while natural fibres were used to craft nets and bags. (Bonhomme, 1994 as cited in Godden Mackay Logan, 2009, p.5).

The first European settler in the region, the Reverend Lancelot Threlkeld, arrived in 1826. Threlkeld tried to operate a mission for the Aborigines during the 1820s and kept detailed records of his experiences including documentation of the language of the Awabakal people. Descendents of the Awabakal people recorded by Threlkeld remain in the area to this day.

Of special significance to the Aboriginal community is Belmont Lagoon which is the subject of an ancient Awabakal legend describing how the lagoon was formed when the Moon wept out of loneliness. The Moon found happiness upon realising the people would always be able to see his reflection in the lagoon of his tears. Creation of the lagoon was cause for celebration and became known by Aboriginal people as the place of joyous dancing (Haslam, undated; The Herald, 2006). A bronze casting designed by Ainslie Roberts, which details the story of *The Night the Moon Cried* was erected by BHP near the airshaft located on the Belmont Lagoon peninsula. This plaque has since been relocated to the Bahtabah Local Aboriginal Land Council at Blacksmiths.

### 5.2 European cultural heritage

Lake Macquarie has an industrial history dating back to 1839 when Reverend Threlkeld applied for permission to mine coal on the western side of Lake Macquarie. Threlkeld established the Ebenezer Coal Works and constructed a wharf at Coal Point and began shipping coal to Sydney in 1841, however the business became insolvent in 1844 following a period of drought and recession (The Herald, 2006).

Despite the closure of the Ebenezer Colliery it was apparent that the region had plentiful deposits of coal and a number of mining companies were set up around the lake. On the eastern side of Lake Macquarie, on what is now BWSP, land was granted to the Redhead Coal Mining Company Limited between 1883 and 1886 and permission was given to build a railway line on a raised embankment through the wetlands from Belmont to Adamstown (The Herald, 2006).

BHP leased the land from the Redhead Coal Mining Company Limited (now defunct) in 1925 and opened the John Darling Colliery on the site that is now the Belmont Christian College, directly west of BWSP. The Colliery extracted coal from both the Stockton Borehole and Victoria Tunnel Seams at depths of 265m and 197m respectively until closure of the BHP Collieries underground operations in 1987. A spur line to the John Darling Colliery was constructed in 1929 on a low embankment that is today indicated by remnants of gravel bedding. Little exists of the John Darling Platform which once acted as a junction between the main line and the John Darling Colliery however some metal artefacts associated with the switching of the two lines are thought to remain and the line itself is considered to be historically significant (Hassell, 1996).

During World War II, Blacksmiths Beach was seen as a likely invasion point and defence strategies to protect Newcastle were put into place as the southern defence barrier. Cold Tea Creek was excavated as an anti-tank ditch between Belmont Lagoon and Lake Macquarie, bisecting the lagoon into two unequal parts and enabling saline waters to enter the once fresh water lagoon (City of Lake Macquarie, 2001).

Twin rows of large tetrahedral concrete tank-traps, linked with interlocking wire cabling, were erected on the southern bank of the anti-tank ditch linking Lake Macquarie and Nine Mile Beach. Some of these structures still exist, partially buried by the sand. There is also anecdotal evidence that BWSP was used as an army

training ground during World War II. The hind dunes south of Redhead offered dense vegetation that was used to train soldiers for jungle warfare.



Photo 1: Aerial photograph of the area in 1941

Source: Adapted from Australian Section Imperial General Staff, 1941

Dredge mining of minerals occurred in the BWSP sand dunes between the late 1950s and 1967. BHP purchased the freehold title to the land from the Redhead Coal Mining Company Limited in 1963 and entered licensee agreements for silica sand mining with other operators including Hymix Industries, Pearce Sand Processing Pty Ltd, Blue Metal Gravel Country Pty Ltd and Ellisons Bulk Haulage Pty Ltd (BHP Steel, 1990).

The extraction of sand for the construction industry began in the mid 1970s resulting in significant disturbance to vegetation and terrain and the creation of large tracts of degraded land.

Although no major mining infrastructure remains at BWSP, concrete foundations and floor infrastructure remnants can be found across the site including the capped, concrete remains of BHP airshaft No. 4 on the Belmont Lagoon peninsula.

The former Redhead Coal Mining Company railway line is now known as the 'Fernleigh Track' and remains one of the most significant historical landmarks of BWSP. The 15.5km disused rail corridor extends from Adamstown Railway Station to Belmont via Kahibah, Whitebridge, Redhead and Jewells. The southern end of the Fernleigh Track runs as a spine through the BWSP between Kalaroo Road and George Street, Belmont, terminating at the former Belmont Railway Station, of which little remains. Originally constructed between the late 1880s and 1917 to transport coal, and later passengers between Lake Macquarie and Newcastle, the line was purchased by Lake Macquarie City Council and Newcastle City Council and is currently being converted to a pedestrian walkway and cycleway. The 5.5km section of the track between Adamstown and Whitebridge has already been completed and the section that traverses BWSP forms the

final stage of the Fernleigh Track's development (Stage 5 – Jewells Railway Station to Belmont Railway Station).



Photo 2: The Fernleigh Track



Photo 3: The Fernleigh Track entering Belmont Wetlands State Park

A walking trail known as 'The Burma Track' was formerly used by miners walking between Deane Street, Belmont and the John Darling Colliery. The name originates from the Thai-Burma railway track and was assigned by the New South Wales Government Geographical Names Board on 5 May 2006 (Geographical Names Board, 2009). The track, of approximately 900 metres is no longer maintained and has become overgrown with vegetation.

As mining activities drew to a close BHP began to consider options for the future development of the site. In the late 1990s, the Roads and Traffic Authority (RTA) considered several options for the development of a by-pass road extending through the site from Belmont South to Bennetts Green where it was proposed to link into the West Charlestown by-pass. This by-pass was not adopted and other development options for the site were subsequently explored by BHP (Connell Wagner, 1998).

BHP's initial proposal for a tourist development (BHP Steel, 1991) was abandoned after it became clear that a destination resort at the site would struggle to attract investors. A second proposal, for residential development, known as the 'Belmont Sands' project (BHP Steel, 1994) was opposed by the community and the land was transferred from BHP to the NSW Government in 2002. Further information on the history of BWSP is contained in Appendix A.

### 5.3 Current uses and users

There are currently no formal usage agreements in place at BWSP and no leases or licenses apply to the site. However, since mining operations ceased, the park has increasingly been used as a recreational resource by local residents and visitors with popular activities including walking, visiting the beach, fishing, surfing and camping. Horse riders use the site from time to time and four wheel drives, quad and trail bike riders are attracted to the sand dunes and former sand mining areas. The Fernleigh Track is used as a walking trail and has potential to become a popular recreation resource for walkers and cyclists.

While the majority of visitors respect the site's inherent values there are a small minority of users who engage in antisocial behaviours such as rubbish dumping and vandalism. Opportunities for rubbish dumping and burning-out vehicles are aided by the site's scale, relative remoteness and access from Nine Mile Beach.

No formal records of visitation to the park have been kept and beyond the local area it seems probable that awareness of the park is low, however, visitation is expected to increase as facilities are introduced and the park is promoted to the tourist market.

## **6.0 Condition of Land**

### **6.1 Landscape character**

The landscape at BWSP is diverse, consisting of a range of different areas, each with its own distinct character and land use history. For descriptive purposes the site has been divided into three (3) landscape character areas based on their natural values and land use history (Figure 7). These areas have been used as a guide to define the three (3) Management Zones discussed in Part C: Management Framework.

#### **6.1.1 Coastal wetland area**

A series of wetlands make up approximately 190 hectares, roughly one third of the BWSP. They occur in low lying areas behind the hind dune and are remnants of a once extensive wetland system fed by Jewells Swamp in the north and north-west. These wetlands represent a diverse mosaic of vegetation types, from relatively deep open water habitat, through rushes and wet heath to closed swamp forest and despite being disturbed in some areas the wetlands are considered to be of high ecological value. Three of these wetlands have been protected under State Environmental Planning Policy (SEPP) 14 legislation. Further information on coastal wetlands is contained in section 6.3.2.

#### **6.1.2 Sand dune area**

Approximately 280 hectares of BWSP comprises sand dunes in varying condition. Most of the sand dunes have been disturbed by past sand mining with the exception of a 100 meter setback from the property's boundary on Nine Mile Beach.

Large volumes of sand have been removed from the site since the mid 1970s resulting in irregular dune forms that have been significantly reduced in height. Prior to sand extraction operations the BWSP sand dunes are thought to have been up to 35m – 40m AHD high. Today, the remaining dunes have a maximum height of approximately 20m AHD. Sand extraction has left large, flat depressions in the hind dunes which have been surfaced with coal mine chitter and overburden spoil materials. These abandoned quarry pits commonly have steep, loose sandy edges and flat compacted soil surfaces devoid of vegetation.

The height and form of the sand dunes has also been affected by pressures such as wind erosion, the dominance of Bitou Bush and unauthorised off-road vehicle use within the park. Further information about the sand dunes at BWSP is contained in section 6.4.2.

#### **6.1.3 Coastal area**

BWSP adjoins Nine Mile Beach with approximately 4.5 kilometres of beach frontage occupying approximately 50 hectares. The Coastal area includes Nine Mile Beach and the foredunes extending approximately 100m inland from the property's eastern boundary.

Nine Mile beach is a wide, sandy beach consisting of sand deposited by long shore currents. A large, iconic sand dune of approximately 20m AHD exists in the north of the site where Third Creek discharges onto Nine Mile Beach. Further information on the coastal area at BWSP is contained in section 6.4.1.





Figure 7: Landscape character areas

Source: Adapted from Department of Lands, 2008 (b)

## 6.2 Geotechnical and Geological Conditions

### 6.2.1 Geology and soils

The coastal area of Lake Macquarie is comprised of a 1 kilometre wide belt of Quaternary dune sand which overlies sedimentary rocks of the Newcastle Coal Measure (Robert Carr & Associates, 1998).

The majority of soils at BWSP are deep (up to 50 metres), well drained siliceous sands with some acid peats associated with the wetland areas. However, as a result of past mining operations traditional soil profiles have been significantly disturbed. Mined areas generally occur throughout the centre of the site between the Fernleigh Track and a 100 metre setback from the site's eastern boundary. A section of land directly west of the Fernleigh Track has also been subject to past mining operations (Figure 9).

### 6.2.2 Acid sulfate soils

Acid sulfate soils are soils or sediments containing iron sulfides. When exposed to air as a result of drainage or disturbance, these soils produce sulfuric acid, often releasing quantities of iron, aluminum and heavy metals. High intensity rainfalls following long dry periods can trigger localised mobilisation of acid which can kill aquatic fauna, degrade habitat and change aquatic plant communities (Queensland Government, 2009).

Acid sulfate testing carried out at BWSP in 1998 indicated that acid sulfate soils are restricted to at, or below, the water table in the low lying wetland areas (Figure 8). No potential acid sulfate soils were identified in the former sand mining areas (Robert Carr & Associates, 1998).



**Figure 8: Areas of potential acid sulfate soils.**

*Source: Adapted from Department of Lands, 2008 (e)*

### 6.2.3 Mining operations

Three (3) different mining processes have occurred at BWSP in the past; coal mining, dredge mining of minerals and construction sand mining. Each of these operations has impacted on BWSP in different ways.

Coal mining was carried out beneath the site through two seams, the Victoria Seam at a depth of approximately 197 metres and the Borehole Seam at 265 metres. The mine is now closed and the airshafts associated with the colliery have been sealed. During mining operations overburden spoil and coal chitter were used to surface quarry pit floors and some filling with mine waste material has occurred around the southern wetland margins (Hassell, 1996).

The minerals rutile, zircon, monazite and ilmenite were mined in the hind dunes east of the wetlands from the late 1950s to 1967 (URS, 2000). Approximately 3% of the site's sand was removed during this process.

Extraction of sand for the construction industry commenced in the mid 1970s and continued until BHP vacated the site and large quantities of sand were removed from the site during this period. A number of abandoned quarry pits remain across the site, the largest of these is known locally as 'The Cauldron'.

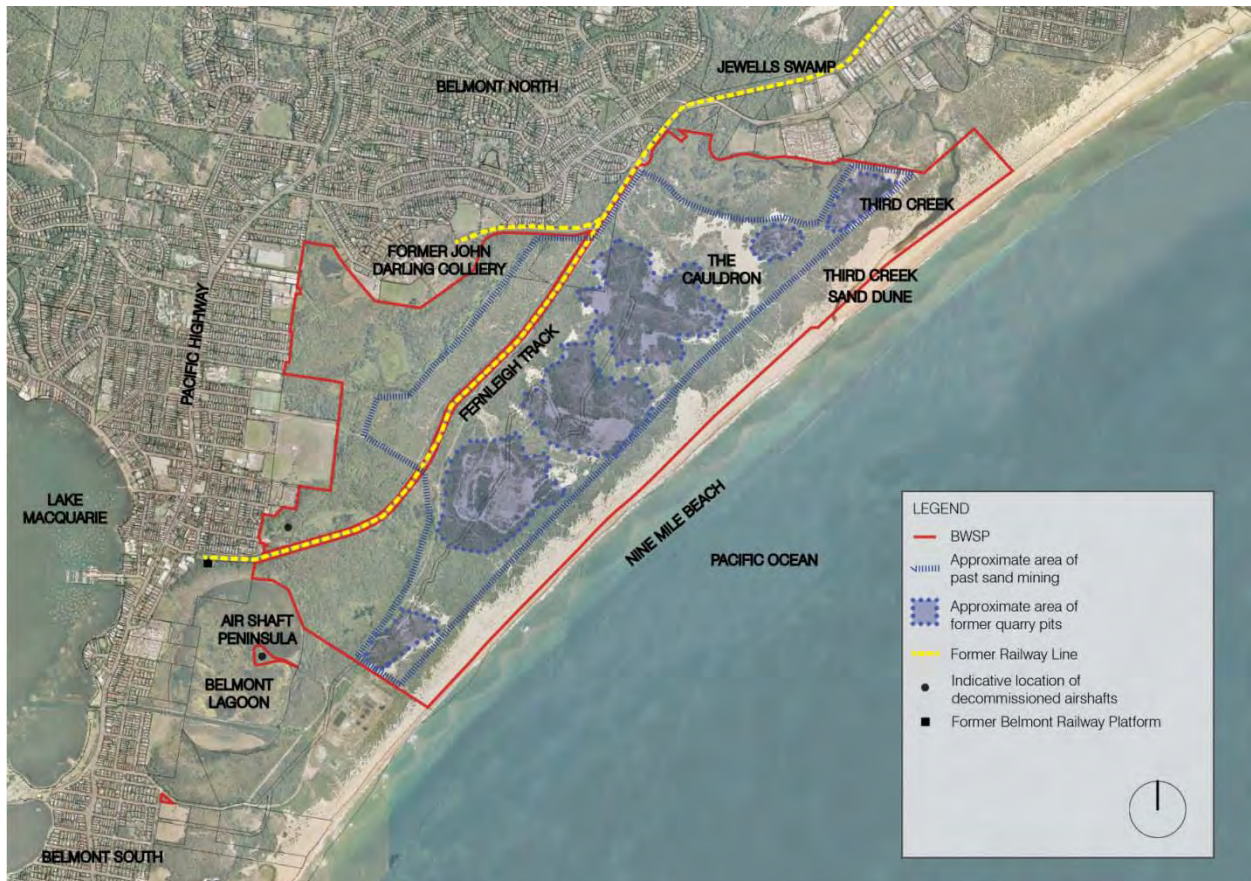


Figure 9: Former mining operations

Source: Adapted from Department of Lands, 2008 (b) and Hassell, 1996.



Photo 4: View looking into the quarry site known as 'The Cauldron'

#### 6.2.4 Mine ventilation shafts and Belmont Lagoon peninsula

Two disused mine ventilation shafts (No.3 and No.4 airshafts) are known to be located within the BWSP. The approximate location of these shafts is shown on Figure 9. No.1 and No.2 airshafts were located at the former John Darling Colliery (now the Belmont Christian College).

No. 4 Airshaft was built in 1980 on the Belmont Lagoon peninsula to facilitate extended coal mining activity at the John Darling Colliery (City of Lake Macquarie, 2001). The shaft was constructed on fill elevated above high water level and connected to the side of Belmont Lagoon by an embankment supporting a single lane access road. The shaft was decommissioned and capped in 1990 following closure of the colliery, although two concrete structures, in a state of disrepair, remain visible on the peninsula (Photo 6).



Photo 5: Access road on Belmont Lagoon peninsula



Photo 6: Decommissioned mining air shaft on Belmont Lagoon peninsula

### 6.2.5 Mine subsidence

A geo-technical report prepared by Longworth and MacKenzie consulting engineers in 1987 (cited in Development Planning and Management, 1990, p.24) stated that in view of the time which has elapsed since underground mining activities ceased it was considered “unlikely that any further significant ground movements associated with past mining is expected”.

### 6.2.6 Radiation

The process of dredge mining for minerals adopts physical sorting techniques to isolate and concentrate certain fractions of sand. No additional chemicals are added during this process however naturally occurring radioactive fractions of sand can potentially occur in the tailings (Hassell, 1996). In 1991, at the Jewells Crossing processing site, adjacent to the Kalaroo Road entrance, a concentration of peak radiation levels were found to exceed the National Health and Medical Research Council (NH&MRC) Action Level Criteria for dwellings, schools (including playgrounds), businesses, factories etc where occupancies by the same individuals occur regularly on a day to day basis. Some 25,000 tonnes of residues were removed from this area for further treatment at Hawks Nest. The Department of Health inspected the site and advised that the clean up satisfied the requirements of the NH&MCR and it was considered suitable for preparation as a recreation area or for other purposes where occupancy would be intermittent (APT Peddle Thorp, 1994). The area of the site that remains under this classification at the Jewells Crossing processing site is approximately 10m<sup>2</sup> (Hassell 1996, p.87). Further testing is recommended in areas where development is proposed to occur.

## 6.3 Hydrology

### 6.3.1 Drainage

The BWSP surface drainage system has two distinct paths. The larger portion of the catchment area of BWSP includes Belmont North to the north-west, which drains to the low-lying wetlands within the reserve and ultimately south to Belmont Lagoon. A small portion in the north of the site is outside of the Belmont Lagoon catchment and it drains north to Jewells Swamp (Figure 10).

Virtually all the rainfall that falls on the dune area infiltrates the sand aquifer system and is captured as groundwater. Groundwater gradients indicate that the stored water is then released relatively slowly to the wetlands, lagoons and ocean (Robert Carr & Associates, 1998).

The water regime of the BWSP has been altered considerably over the years. Internal drainage patterns within the park have been affected by the addition of physical barriers including embankments, channels and culverts. The following components of the catchments drainage system significantly influence the flow paths and rates within the BWSP:

- Five causeways located in the south of the park along the George Street fire trail embankment;
- Two culverts located along the former Redhead Coal Company's Railway embankment;
- A narrow constructed channel conveying runoff from Wetland 866 to Wetland 867 (Hassell, 1996).

Any alterations to the existing hydrological regime would have impacts on flora and fauna within the park and would require comprehensive investigations by suitably qualified personnel.



Figure 10: Hydrology

Source: Adapted from Department of Lands, 2008 (b) and URS, 2000.



Photo 7: Small area of connectivity between wetlands 866 and 867.



Photo 8: Former bridge crossing along the Fernleigh Track

### 6.3.2 Coastal wetlands

Wetlands are one of Australia's most important, yet endangered environments. They have a high environmental value and act as a natural buffer against coastal erosion, storm surges and flooding as well as providing food, habitat and breeding grounds for many plant and animal species. Approximately half of Australia's wetlands have been lost since human settlement and the need to protect wetlands in the coastal zone has resulted in the creation of State Environmental Planning Policy (SEPP) 14 – Coastal Wetlands (Wetland Care Australia). BWSP has three coastal wetlands protected under SEPP 14 legislation (Figure 10).

The wetlands in BWSP are part of the largest remaining coastal wetland system in the Lake Macquarie LGA (McEwan & McCord, 1995). They exist in three separate communities but are connected by groundwater interactions. They have a high conservation value and remain in relatively good condition despite being disturbed in some areas.



Photo 9: SEPP14 wetland 867



Photo 10: SEPP 14 wetland 861

In August 2000, BHP commissioned URS Australia Pty Ltd to conduct a site condition assessment of the wetlands at the site to assist in determining land valuation. URS rated the wetlands on factors such as substrate condition, water quality, hydrology, vegetation community integrity, fringing vegetation integrity, species integrity and habitat integrity. The following descriptions are based on this assessment:

- SEPP 14 wetland 861 (21.3ha) occurs in the northern section of the park that connects into the lower end of the Jewells Swamp and incorporates an ocean outfall. This wetland was considered to be in the poorest condition of the three large wetland complexes owing largely to external influences. The wetland has extensive areas of aquatic weeds in the eastern section and elevated nutrient loads which has resulted in a high water fowl population;

- SEPP 14 wetland 866 (56.4ha) occurs in the central west section of the park adjacent to the suburb of Belmont. The northern part of this wetland has previously been filled and developed beyond the BWSP property boundary. There is a high diversity and integrity of the vegetation community except for cleared areas on the urban fringe and localised areas of swamp forest dieback for unknown reasons; and
- SEPP 14 wetland 867 (64.0ha) occurs in the southern section of the park that connects with Belmont Lagoon. It is reported as being in relatively good condition with the large core area undisturbed. Fringing vegetation has been compromised by clearing and weed competition at the urban interface however species and habitat integrity were recorded as high. This wetland has been dissected by the Fernleigh Track however the biological integrity was described by URS as having recovered (URS, 2000).

An additional small wetland east of SEPP 14 wetland 866 has been modified substantially during mining operations and is described as being in a degraded state with low habitat and species values (URS, 2000).

Alterations to BWSPs water regime over the years have impacted heavily on the park's wetlands. Issues include weed infestations, physical obstructions to flow, past reclamation of the wetlands for playing fields and development and the influx of urban run-off which contributes elevated nutrient levels and introduces fine sediment and potentially other pollutants into the wetlands.

The habitat link between the lower section of SEPP14 wetland 861 and SEPP 14 wetland 866 is no longer continuous due to vegetation clearing for the installation of the Redhead Coal Mining Company Railway line. The area between SEPP 14 wetlands 866 and 867 also requires work to establish a viable habitat link between them.

The URS report (2000, p.2-2) suggests that the wetlands at BWSP are considerably more extensive than those currently encompassed by SEPP14 legislation (Figure 10). A review of the wetland boundaries is recommended to ensure the full extent of the wetlands is protected under this legislation.

### 6.3.3 Third Creek

Third Creek is part of the Jewells Swamp catchment. It passes through the northern section of BWSP and discharges into the ocean at Nine Mile Beach. Third Creek was constructed in the 1970s during sand mining operations to divert flow that originally discharged through Second Creek (Umwelt, 1999, p.73). Although the configuration of Third Creek through the dunes is relatively stable its outlet on the beach berm is dynamic and subject to cycles of migration (Hassell, 1996). Along the edges of the outlet extensive erosion has occurred to the toe of the adjacent sand dune resulting in steep, sparsely vegetated sides which are vulnerable to instability and ongoing erosion pressures. Stabilisation works such as revegetation or rock revetments may be required in the future.



Photo 11: Third Creek



Photo 12: Large sand dune on the western side of the Third Creek outlet on Nine Mile Beach.

#### 6.3.4 Belmont Lagoon and Cold Tea Creek

Belmont Lagoon is situated to the south of BWSP and is outside the boundaries of the park with the exception of a narrow access peninsula that extends into the lagoon and leads to the decommissioned BHP No.4 airshaft. The land is managed by Lake Macquarie City Council under a separate PoM which was prepared and adopted by Lake Macquarie City Council in 2001 (City of Lake Macquarie, 2001). Whilst the majority of Belmont Lagoon is located outside of the BWSP boundaries the BWSP Trust have expressed an interest in working with Lake Macquarie City Council with a view to incorporating it into the BWSP.

Belmont Lagoon is oval in shape and is 900 metres by 650 metres wide and is of shallow depth. It was a freshwater wetland for over 7000 years however, with the construction of Cold Tea Creek as an anti tank ditch during World War II a physical hydrologic connection between Lake Macquarie and Belmont Lagoon was created enabling Lake Macquarie saline waters to enter the lagoon which has altered its salinity and circulation pattern (City of Lake Macquarie, 2001).

The vegetation communities associated with Belmont Lagoon have been altered by the brackish water conditions that have prevailed over the past 67 years and the vegetation and associated fauna are typical of a natural succession found on the shoreline of a fresh to brackish lake. One of the distinctive features is the large body of water surrounded by a diversity of biotic communities formed under the previous freshwater lagoon conditions including Swamp Forest, Swamp Heath, Reed Swamp and Sedge Land. The open water areas contain seagrass species with Grey Mangroves and saltmarsh species around the edges associated with the increase in marine saline waters (City of Lake Macquarie, 2001).

It has been suggested that the Belmont Lagoon's hydrology could be altered to favour a fresh water regime by mitigating marine water inflow from Cold Tea Creek (City of Lake Macquarie, 2001). The water in the lagoon is derived only partially from surface flows. The ground water table is high and, typical of coastal wetlands, is affected by drought and infiltration of fresh and saline waters (City of Lake Macquarie, 2001). Further discussion and studies by suitably qualified personnel are recommended to determine the impacts and potential benefits of altering the lagoon's existing hydrology.



Photo 13: Belmont Lagoon



Photo 14: Sedgeland around the margins of Belmont Lagoon





Photo 15: Cold Tea Creek



Photo 16: Hydrologic connection between Cold Tea Creek and Belmont Lagoon

## 6.4 Coastal Sand Dune Barrier System

### 6.4.1 Coastal zone

The beaches in Lake Macquarie run along a 28 kilometre stretch of coastline between Leggys Point in the north and Catherine Hill Bay in the South. They are considered to be relatively stable in comparison to other beaches along the New South Wales coast (Umwelt, 1999).

The coastal zone at BWSP is characterised by a combination of vegetated and exposed dune system along approximately 4.5km of beach frontage. There are no buildings or infrastructure along this section of coastline and Nine Mile Beach is a highly valued recreation resource for the local community. It is a popular destination for swimming, surfing, fishing, picnicking and camping although there is currently no formal provision for beach access through BWSP and the area is unpatrolled by surf life saving organisations (Umwelt, 1999).

A large memorial cross is located on Nine Mile Beach to commemorate the death of a local boy who died in an accident on the site. This cross has become a fixture on the coastline and is recognised as a local marker (Photo 18).



Photo 17: View of Nine Mile Beach looking south from the Third Creek outlet



Photo 18: Memorial Cross on Nine Mile Beach

### 6.4.2 Sand dunes

Stable sand dunes play an important role in protecting the coastline. They act as a buffer against wave damage from storm events and protect the hinterland from salt water intrusion. The dunes also act as a reservoir of sand, to replenish and maintain the beach during times of erosion. However, they are vulnerable to damage by natural causes such as erosion, fire and storms or by human interference such as clearing, vehicles and the introduction of invasive species (Environment and Resource Management, 2009).

Approximately two thirds of BWSP comprises coastal sand dunes in varying condition. The original assemblage of transgressive dunes, massed together behind the coastal foredune, has been replaced by irregular, sparsely vegetated sand hills. Most of the sand dunes at BWSP have been disturbed by past mining activity with the exception of a 100 metre setback from the reserve's frontage on Nine Mile Beach. Natural dune profiles and native vegetation have been largely destroyed in the former sand mining areas leaving the site in a degraded condition with few original features remaining (Development Planning and Management, 1990).

What was once a pristine high dune system featuring mature heath and shrub vegetation has been subject to significant pressures including sand extraction, the dominance of Bitou Bush, wind erosion and the ad-hoc development of unauthorised off-road vehicle tracks.

Dune vegetation plays an important role in stabilising the sand dune landscape and the loss of dune vegetation is a major trigger for dune erosion. Dune vegetation traps windblown sand and holds it on the foredunes. Exposed, dry sand is easily mobilised by strong winds and large volumes can be rapidly transported, sometimes forming large depressions in the dunes, termed blowouts. Downwind from blowouts, drifting sand can migrate inland and this scenario is evident at BWSP where large depressions in the sand have occurred and the surrounding vegetation is being smothered (Photo 19).



Photo 19: Encroaching sand dunes smothering vegetation



Photo 20: Hummocks on the foredune

Bitou Bush plants that colonise dunes can lead to the formation of 'hummocks'. Hummocks are isolated mounds of sand held together by plant roots which form when sand is trapped around the base of the plant. As the hummocks start to form, wind is channelled through gaps between the hummocks, causing erosion which in turn increases the height of the hummocks. Often the original native species have long since died out of the seed bank, or been eroded away and do not re-colonise the sand. The formation of hummocks has occurred extensively in the foredunes at BWSP (Photo 20).

Fire and uncontrolled vehicle access have further contributed to destabilisation of the dune environment. An extensive network of informal, unauthorised vehicle trails criss-cross the park, threatening vegetation and causing erosion. Previous attempts by the BWSP Trust to close unauthorised access roads have resulted in the formation of new trails and further environmental damage.

Although the sand dune area faces significant challenges, these challenges also constitute significant opportunities. Previous mining activities have left a number of depressions in the landscape which have enormous potential for creative future development while the sites mining history tells a fascinating story about the regions industrial past. The juxtaposition of these man-made elements in a natural coastal landscape combine to offer a unique visitor experience.



Photo 21: Southern quarry site surfaced with coal chitter



Photo 22: Depressions in the sand dunes near Third Creek create a naturally sheltered area

## 6.5 Flora

Previous environmental studies conducted in the BWSP have described the area as floristically rich, with approximately 400 native plant species, with the wetlands and open forest providing most of the species (Peddle Thorp, 1994). Although large tracts of native flora have been disturbed by past mining activities, many areas, particularly around the SEPP 14 wetlands, remain in relatively good condition. Belmont wetlands are represented by a diverse mosaic of vegetation types, from relatively deep open water habitat, through rushes and wet heath to closed swamp forest (URS, 2000).

The NVA Act administered by the HCRCMA regulates the removal/clearing of all native vegetation. Approval from the HCRCMA is required prior to commencement of works affecting vegetation.

### 6.5.1 Native vegetation communities

Knowledge of the BWSP vegetation communities is incomplete. The most current vegetation mapping available for the BWSP is the Lower Hunter and Central Coast Regional Environmental Management Strategy (NSW National Parks and Wildlife Service, 2003). This mapping however, does have inadequacies. LHCCREMS is a major classification and mapping project that attempted to describe and map the vegetation diversity across seven LGAs in the Lower Hunter Valley and Central Coast. Maps produced were the result of modelling vegetation distribution in relation to 43 environmental variables, and consequently errors and inaccuracies were expected. There are twelve vegetation communities described by LHCCREMS as occurring within the BWSP (Table 3 and Figure 11). The three most dominant communities are Coastal Sand Scrub (132 Hectares), Swamp Mahogany – Paperbark Forest (90 Hectares) and Coastal Sand Apple – Blackbutt Forest (57 Hectares).

LHCCREMS define Coastal Sand Scrub as a relatively dense, low community with a main canopy species of *Leptospermum laevigatum* alongside *Banksia integrifolia* subsp. *integrifolia*, *Myoporum boninense* subsp. *australe* and *Acacia sophorae* amongst others. The Coastal Sand Scrub vegetation community has been mapped in areas where sand mining has occurred.

Swamp Mahogany – Paperbark Swamp Forest is mapped to the north of Belmont Lagoon on both sides of the Fernleigh Track, extending to the western boundary of the BWSP. Species common to this vegetation community include *Melaleuca quinquenervia*, *Eucalyptus robusta* and *Casuarina glauca*.

Coastal Sand Apple – Blackbutt Forest is mapped immediately west of the Fernleigh Track and in fragmented areas through the centre of the park below Jewells Swamp. Species common to this vegetation community include *Angophora costata*, *Eucalyptus pilularis* and *Banksia serrata*.

Detailed vegetation mapping for the Lake Macquarie LGA is currently being prepared by Bell and Driscoll (2008) on behalf of LMCC. Ground truthing of LHCCREMS vegetation mapping by Bell and Driscoll has not included the BWSP and further studies are recommended to increase the knowledge base of BWSP vegetation communities.

Table 3: Summary of native vegetation communities at BWSP

Source: LHCCREMS (2003)

Map Unit (MU)	Description	Common Species	Size (Ha)	Endangered Ecological Community (EEC) listing <sup>1</sup>
11	Coastal Sheltered Apple – Peppermint Forest	<i>Angophora costata</i> , <i>Eucalyptus piperita</i>	0.04	
30	Coastal Plains Smooth-barked Apple Woodland	<i>A. costata</i> , <i>Corymbia gummifera</i> , <i>Eucalyptus capitellata</i> , <i>Eucalyptus umbra</i>	1	
33	Coastal Sand Apple – Blackbutt Forest	<i>A. costata</i> , <i>E. pilularis</i> , <i>Banksia serrata</i>	57	
34	Coastal Sand Wallum Woodland – Heath	<i>Banksia aemula</i> , <i>Isopogon anemonifolius</i>	29	
37	Swamp Mahogany – Paperbark Forest	<i>Melaleuca quinquenervia</i> , <i>Eucalyptus robusta</i> , <i>Casuarina glauca</i>	90	Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregion
39	Apple – Palm Gully Forest	<i>Livistona australis</i> , <i>Eucalyptus resinifera</i> subsp. <i>resinifera</i> , <i>E. umbra</i>	0.03	
40a	Phragmites Rushland	<i>Phragmites australis</i>	10	Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions
41	Swamp Oak Sedge Forest	<i>C. glauca</i> , <i>Melaleuca linariifolia</i> , <i>Carex appressa</i>	1	Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions
42	Riparian Melaleuca Swamp Woodland	<i>Melaleuca sieberi</i> , <i>E. robusta</i>	4	Swamp sclerophyll forest on coastal floodplains of the NSW North coast, Sydney Basin and South East Corner bioregion
46	Freshwater Wetland Complex	<i>Ludwigia peploides</i> subsp. <i>montevidensis</i> , <i>Paspalum distichum</i> , <i>Eleocharis sphaelata</i> , <i>Juncus usitatus</i>	22	Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions
50	Coastal Sand Scrub	<i>Leptospermum laevigatum</i> , <i>Banksia integrifolia</i> subsp. <i>integrifolia</i>	132	
53	Beach Spinifex	<i>Spinifex sericeus</i>	1	
	Water bodies		16	

<sup>1</sup>These map units may potentially be defined as the Endangered Ecological Communities listed (as described under the TSC Act 1995).

**Note.** This study did not verify or ground truth the LHCCREMS (2003) mapping.

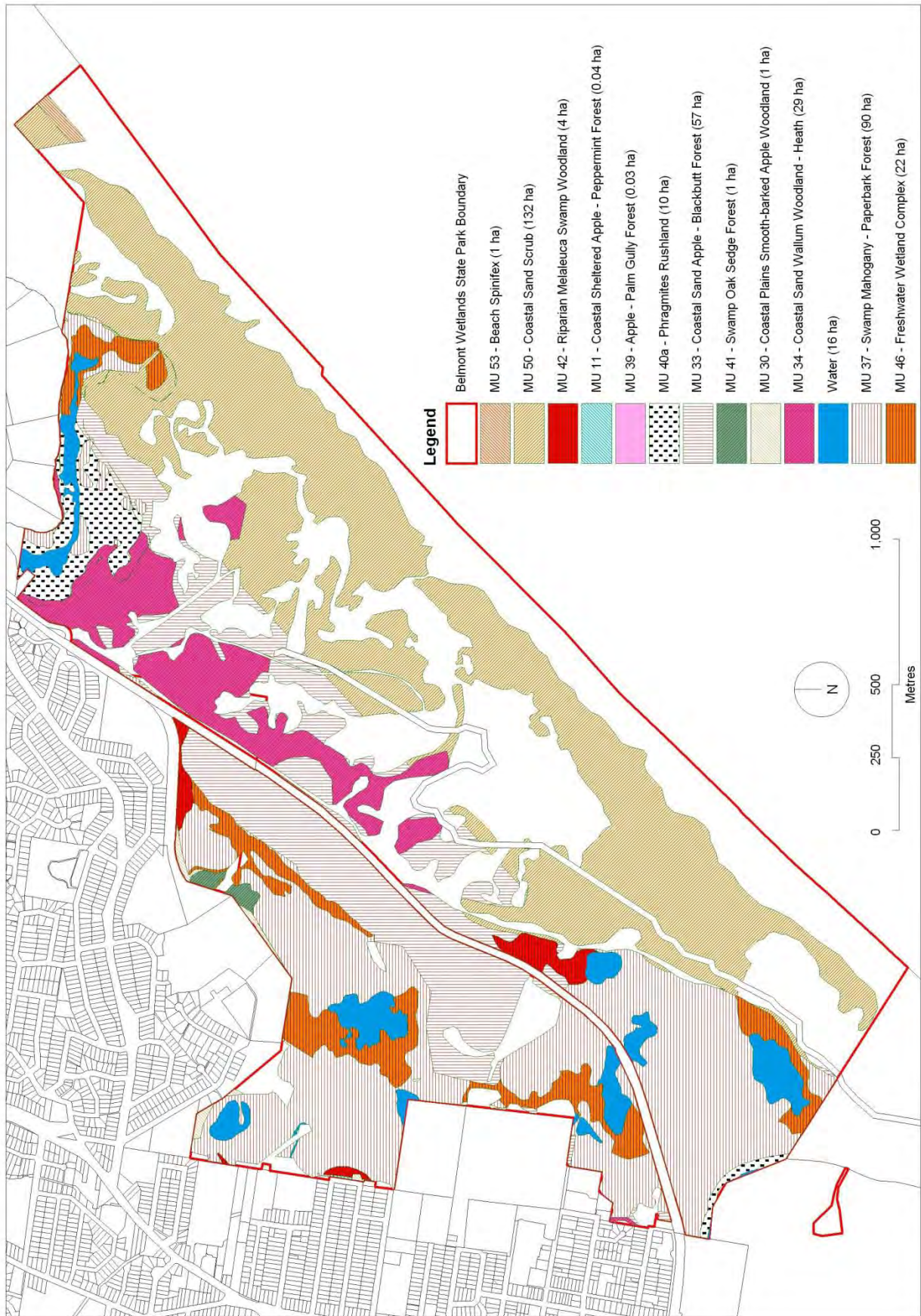


Figure 11 – Vegetation mapping by LHCCREMS (Source: NSW National Parks and Wildlife Service, 2003)

### 6.5.2 Endangered ecological communities

Knowledge about Endangered Ecological Communities (EECs) which occur at BWSP is limited. Based on LHCCREMS (NSW NPWS, 2003) vegetation mapping, four EECs pursuant to the TSC Act potentially occur in the BWSP including:

- Coastal saltmarsh in the NSW North Coast, Sydney Basin and South East Corner bioregions – endangered ecological community (NSW Scientific Committee, 2004a).
- Freshwater wetlands on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions – endangered ecological community listing (NSW Scientific Committee, 2004b).
- Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions – endangered ecological community listing (NSW Scientific Committee, 2004c).
- Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions – endangered ecological community listing (NSW Scientific Committee, 2004d).

Based on a desk top study Table 3 indicates where these EECs may be likely to occur.

Further studies are recommended to expand the knowledge base regarding EECs which may occur at BWSP.

### 6.5.3 Threatened flora species

Current searches of the Atlas of NSW Wildlife (DECC) pursuant to the Threatened Species Conservation (TSC) Act, 1995 and the Department of Environment and Heritage (DEH) Protected Matters Search tool pursuant to the Environmental Protection and Biodiversity Conservation (EPBC) Act, 1999 indicate that BWSP provides potential habitat for 13 threatened flora species under the TSC Act (DEWHA, 2009). Of these, two threatened flora species (Black-eyed Susan *Tetradlea juncea* and Sand Spurge *Chamaesyce psammogeton*) have been identified by the Atlas of NSW Wildlife as occurring within the BWSP. A list of the threatened species recorded on the Atlas of NSW Wildlife is included in Appendix E.

The submerged aquatic plant *Zannichellia palustris* has also been recorded (Winning, 1992 cited from Hassell, 1996) as occurring within the BWSP however it was not listed on the Atlas of NSW Wildlife.

### 6.5.4 Weeds

Weed infestation is a significant management issue for BWSP. Weeds are particularly prevalent in degraded areas and around the park's periphery.

The dominant weed species occurring within the park include:

- Bitou Bush and Boneseed, *Chrysanthemoides monilifera*<sup>(N)</sup> (Found predominantly on the foredune);
- Pine Trees, *Pinus sp*<sup>(E)</sup> (Found along the Merleview Fire Trial) ;
- Western Australian Golden Wattle, *Acacia saligna*<sup>(E)</sup> (Widespread in the former sand mining areas);
- Caster Oil Plant, *Ricinus communis*<sup>(E)</sup>
- Taiwan Lily *Lilium formosanum*<sup>(E)</sup>
- Exotic grasses such as Whiskey Grass, *Andropogon virginicus* Pampas Grass, *Cortaderia* species <sup>(N)</sup> (Widespread in the former sand mining areas); and
- Lantana sp. <sup>(N)</sup>

Aquatic weeds, found in the wetland areas, include:

- Water Hyacinth *Eichhornia crassipe* <sup>(N)</sup>;
- Alligator Weed *Alternanthera philoxeroides*<sup>(N)</sup>; and
- Parrots Feather *Myriophyllum aquaticum*<sup>(E)</sup> .

Key: (N): Weed declared noxious in the control area of Lake Macquarie City Council

(E): Environmental Weed

Some of these species (Bitou Bush and Western Australian Golden Wattle) were planted within BWSP as part of rehabilitation works during the 1960s and have successfully colonised and dominated the coastal dune areas. Others have entered the park through constructed water channels and neighbouring properties.

Bitou Bush is a weed of national significance. The species can out-compete and replace native flora, destroying the food source for native animals and creating an environment that is favourable for colonisation by other highly invasive weeds (Geoscience Australia, 2005). Bitou bush occurs extensively in the BWSP foredunes.

Despite the high incidence of weeds found across the site, some areas remain relatively weed free. Wetlands 866 and 867 were reported by URS (2000) as being in relatively good condition and are expected to be relatively weed free at their centres.

## 6.6 Fauna

The main fauna noted during previous studies conducted within the BWSP is the bird life associated with the wetland areas. A total of 81 species were identified by APT Peddle Thorp in an Urban Potential Study conducted for BHP in 1994, while a report on Jewells Wetland (Travers Morgan, 1992 – cited in APT Peddle Thorp, 1994, p.3-3) notes up to 170 species recorded in the area.

Native ground fauna are expected to include possums, swamp rats, water rats, swamp wallaby, bandicoots, bats, frogs, lizards and snakes. Introduced species such as mice, rats, foxes and cats are also known to be in the area. Wetland fauna include freshwater shrimp, gudgeon, mullet and mosquito fish (APT Peddle Thorp, 1994, p.3-3). LMCC maintain a database of fauna species recorded in the Lake Macquarie region. A total of 222 fauna species have been recorded either in the park or within 1 km of the BWSP (Appendix F).

### 6.6.1 Threatened fauna species

Current searches of the Atlas of NSW Wildlife (DECC) pursuant to the TSC Act (1995) and the Department of Environment and Heritage (DEH) Protected Matters Search tool pursuant to the EPBC Act (1999) indicates that BWSP provides potential habitat for 36 threatened fauna species under the TSC Act. Of these, two threatened fauna species (Squirrel Glider *Petaurus norfolcensis* and Grey-headed Flying Fox *Pteropus poliocephalus*) have been identified by the Atlas of NSW Wildlife as occurring within the BWSP.

Records from previous studies held in LMCCs Fauna Database indicate ten threatened fauna species (under the TSC Act) have been recorded as occurring within the BWSP although not all appeared on the Atlas of NSW Wildlife database search. Five bird, four mammal and one frog species have been recorded as listed in Table 4.

Table 4: Threatened fauna species at BWSP (under the TSA Act, 1995) as recorded on the Lake Macquarie City Council Fauna Database.

Common Name	Scientific Name	Category	Status
Black Bittern	<i>Dupetor flavicollis</i>	Aves	Vulnerable
Great Knot	<i>Calidris tenuirostris</i>	Aves	Vulnerable
Little Tern	<i>Sterna albifrons</i>	Aves	Endangered
Powerful Owl	<i>Ninox strenua</i>	Aves	Vulnerable
Swift Parrot	<i>Lathamus discolor</i>	Aves	Endangered
Eastern Bentwing-Bat	<i>Miniopterus schreibersii oceanensis</i>	Mammalia	Vulnerable
Little Bentwing-Bat	<i>Miniopterus australis</i>	Mammalia	Vulnerable
Eastern Pygmy-Possum	<i>Cercartetus nanus</i>	Mammalia	Vulnerable
Squirrel Glider	<i>Petaurus norfolcensis</i>	Mammalia	Vulnerable
Wallum Froglet	<i>Crinia tinnula</i>	Amphibian	Vulnerable

**Note:** Database accessed 1/4/2009, last updated 5/2/2009

Within a 10 kilometre radius of the BWSP, the Protected Matters Search Tool listed 43 Threatened species and 46 Migratory Species pursuant to the EPBC Act. The BWSP provides suitable foraging and nesting habitat for the majority of terrestrial and wetland migratory bird species listed by the Protected Matters Search Tool.

Review of the Department of Primary Industries (DPI) – NSW Fisheries threatened species database and a broad overview of BWSP habitat indicates that the park does not provide suitable habitat for any threatened species listed under the Fisheries Management (FM) Act, 1994.



### 6.6.2 Migratory birds

Wetlands provide important breeding, foraging and roosting habitat for a variety of birds, including migratory species. Australia is party to international agreements relating to migratory birds, including;

- An agreement between the Government of Australia and the government of Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment (JAMBA);
- An agreement between the Government of Australia and the People's Republic of China for Migratory Birds and their Environment (CAMBA); and
- An agreement between the government of Australia and the government of the Republic of Korea on the Protection of Migratory Birds (ROKAMBA).

BWSP contains a number of migratory bird species protected under these Agreements. Eighteen species listed on the JAMBA, CAMBA and ROKAMBA agreements have been recorded, either on the Lake Macquarie City Council Fauna Database or the Atlas of NSW Wildlife (Table 5).

Table 5: Migratory Birds recorded at or near BWSP

Common Name	Scientific Name	Migratory Bird Agreement Listing	Recorded
Bar-tailed Godwit	<i>Limosa lapponica</i>	ROKAMBA	LMCC Fauna Database
Broad-billed Sandpiper	<i>Limicola falcinellus</i>	ROKAMBA, CHINA	Atlas of NSW Wildlife
Cattle Egret	<i>Bubulcus ibis</i>	ROKAMBA, CAMBA, JAMBA	LMCC Fauna Database
Common Tern	<i>Sterna hirundo</i>	ROKAMBA	LMCC Fauna Database
Curlew Sandpiper	<i>Calidris ferruginea</i>	ROKAMBA, CAMBA, JAMBA	LMCC Fauna Database
Fleshy Footed Shearwater	<i>Puffinus carpeipes</i>	JAMBA	Atlas of NSW Wildlife
Great Knot	<i>Calidris tenuirostris</i>	CAMBA, JAMBA	Atlas of NSW Wildlife
Large Sand Plover	<i>Charadrius leschenaultia</i>	ROKAMBA, CAMBA	Atlas of NSW Wildlife
Latham's Snipe	<i>Capella hardwickii</i>	ROKABMA, CAMBA	LMCC Fauna Database
Little Tern	<i>Sterna albifrons</i>	ROKAMBA, CAMBA, JAMBA	LMCC Fauna Database, Atlas of NSW Wildlife
Masked Booby	<i>Sula dactylatra</i>	JAMBA	Atlas of NSW Wildlife
Red Knot	<i>Calidris canutus</i>	ROKABMA, CAMBA	LMCC Fauna Database
Sharp Tailed Sandpiper	<i>Calidris acuminata</i>	CAMBA	LMCC Fauna Database
Sooty Shearwater	<i>Puffinus luecomelas</i>	ROKAMBA	LMCC Fauna Database
Terek Sandpiper	<i>Xenus cinereus</i>	JAMBA, CAMBA, ROKAMBA	Atlas of NSW Wildlife
White Bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	ROKAMBA	LMCC Fauna Database
White Throated Needletail	<i>Hirundapus caudacutus</i>	ROKAMBA, CAMBA	LMCC Fauna Database
Pectoral Sandpiper	<i>Calidris melanotos</i>	ROKAMBA	LMCC Fauna Database

**Note:**

LMCC Fauna database: Lake Macquarie City Council Fauna Database lists species recorded either within the BWSP or within 1km of BWSP. (Accessed 1/4/2009, last updated 5/2/2009)

Atlas of NSW Wildlife: DECC Atlas of NSW Wildlife lists threatened species recorded within a 10km radius of BWSP.

### 6.6.3 Feral animals

Native fauna are vulnerable to direct attacks by uncontrolled domestic pets and face the threat of being out-competed by feral animals for food and habitat. As a large portion of the BWSP western boundary adjoins residential properties, domestic pets also pose threats to local indigenous species.

Records from previous studies held in LMCCs Fauna Database indicate that 13 exotic fauna species have been identified utilising the BWSP. These are listed in Table 6. Land and Property Management Authority staff have also identified feral cats within the park.

Table 6: Exotic Fauna Species at BWSP as recorded on the Lake Macquarie City Council Fauna Database

Common Name	Scientific Name
Black Rat	<i>Rattus rattus</i>
Brown Hare	<i>Lepus capensis</i>
Common Myna	<i>Acridotheres tristis tristis</i>
Common Starling	<i>Sturnus vulgaris vulgaris</i>
Dog	<i>Canis lupus familiaris</i>
Fox	<i>Vulpes vulpes</i>
House Mouse	<i>Mus musculus</i>
House Sparrow	<i>Passer domesticus domesticus</i>
Rabbit	<i>Oryctolagus cuniculus</i>
Rock Pigeon	<i>Columba livia</i>
Silvereye	<i>Zosterops lateralis</i>
Welcome Swallow	<i>Hirundo neoxena</i>

**Note:** Database accessed 1/4/2009, last updated 5/2/2009

## 6.7 Infrastructure

### 6.7.1 Services

The primary access road into BWSP is an unsealed vehicular trail along an easement corridor which dissects the park between Kalaroo Road in the north and the Hunter Water Corporation Wastewater Treatment Facility in the south (Referred to in the PoM as the Kalaroo fire trail) (Photo 23). To the west of the Kalaroo Fire Trail two other registered fire trails, George Fire Trail and Merleview Fire Trail respectively connect to George Street and Merleview Street, Belmont.

Access to the southern end of the park is via a service road (off Ocean Park Road) which extends through Hunter Water Corporation Land. This road is not open to the public and a locked gate restricts access to BWSP (Photo 24). An extensive network of informal, unauthorised vehicle trails criss-cross the park, particularly on the eastern side of the Fernleigh Track

Pedestrian access to the BWSP is currently available from multiple informal access points found around the periphery of the site. Although thick vegetation discourages direct access from many of the adjacent residential properties the site can be entered from a number of local streets including George Street, Glover Street, Deane Street, Stanley Street, Livingstone Street and Merleview Street (via Belmont Park). The reserve is accessible to pedestrians via the Fernleigh Track and access to Belmont Lagoon is available from Capri Close.

Sewage and electricity utilities are installed across the BWSP. Two underground and one above ground easement pipelines pump sewage from Gateshead, Toronto and Belmont to the Hunter Water Waste Treatment facility, the south of the BWSP boundary (Photo 25). A minimum 4 metre width easement is required for access and maintenance purposes.

An above ground high voltage electricity transmission line extends through BWSP between Kalaroo Road and the Swansea Electrical Sub-station (Photo 26). This high voltage power line also carries a domestic power supply across half the park length. An easement access of a hardstand road surface is required to be 10m around each pylon connected via a 6m wide track to the Kalaroo fire trail. Vegetation is permitted to a height of 4m around the pylon easement and beneath the overhead power lines.



Photo 23: Kalaroo fire trail near the Kalaroo Road park entrance



Photo 24: Gated access to the southern end of BWSP



Photo 25: Raised sewage pipeline along the George Fire Trail



Photo 26: A high voltage electricity transmission line runs through the Park



Figure 12: Services and infrastructure  
 Source: Adapted from Department of Lands, 2008 (b)

# Part C



## Management Framework

Part C outlines the framework within which Belmont Wetlands State Park is to be managed. For management purposes the site has been divided into three Management Zones based on natural attributes and proposed land use practices. General management strategies have been provided for the entire site and specific management strategies are proposed for each Management Zone. A Concept Masterplan is also contained in Part C.

## 7.0 Management Principles

Based on a review of the reserve's purpose and values, the following management principles have been established to guide the BWSP Trust in achieving the stated vision.

- Protect and enhance the environmental values of the BWSP;
- Recognise, protect, promote and appropriately interpret the Indigenous and non-Indigenous cultural heritage values of the BWSP;
- Permit a range of recreational activities compatible with the reserve's stated values and purpose;
- Establish an effective management framework under which appropriate recreational activities may be lawfully performed at BWSP;
- Encourage and promote public use and awareness through the provision of high quality, safe, accessible public spaces, appropriate signage and access ways;
- Provide opportunities for learning and education at BWSP;
- Recognise and promote the value of BWSP within its broader regional context, i.e. as part of the proposed *Lake Macquarie Coastal Wetlands Park*;
- Protect and enhance the visual amenity of the park and coastline;
- Encourage active community involvement in the development, management and long-term care of the BWSP;
- Undertake ongoing consultation and liaison with the Aboriginal Community, considering documents such as *The Draft Lake Macquarie Aboriginal Heritage Management Strategy*;
- Establish cooperative arrangements with adjoining landowners and other relevant agencies and stakeholders; and
- Establish and maintain sources of funding that ensure long-term economic viability for BWSP.

## 8.0 Management Zones

For management purposes, BWSP has been divided into three (3) Management Zones based on natural attributes and proposed land use practices. The Management Zones relate closely to the landscape character areas described in section 6.1 which have been used as a guide to determine their extent.

The PoM recognises that the BWSP Management Zones are not discrete and must be considered within the broader context of surrounding land holdings as shown in Figure 13. Accordingly, these other areas have been considered in the development of the objectives and strategies for BWSP. The strategies for Belmont Lagoon and the Fernleigh Track are to be read in conjunction with the Belmont Lagoon Reserve Plan of Management (City of Lake Macquarie, 2001) and the Fernleigh Track Implementation Plan (Lake Macquarie City Council et al, 1999).

The Management Zones for BWSP are:

1. Wetland Zone
2. Beach and Fore-dune Zone
3. Sand Plain Zone

Other relevant areas include:

- A. Fernleigh Track
- B. Jewells Swamp
- C. Lake Macquarie City Council Reserve
- D. Belmont Lagoon
- E. Hunter Water Corporation land
- F. Hunter Institute of TAFE land

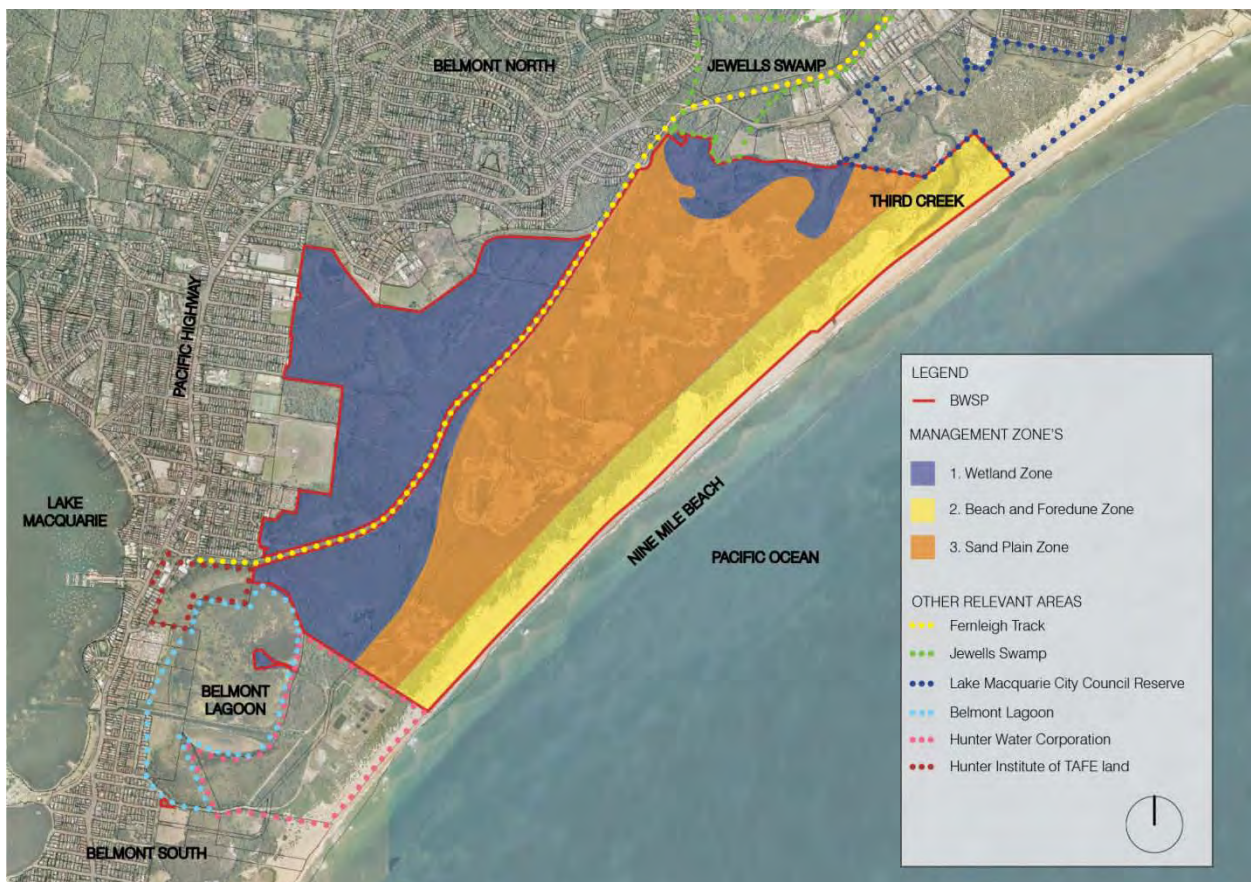


Figure 13: Management Zones and other relevant areas

Source: Adapted from Department of Lands, 2008 (b)

General Management Strategies and an Action Plan for the entire site are provided in Section 11. This is followed with an Action Plan for each Management Zone in Section 12.

The Action Plan tables include objectives and strategies for each area of the reserve. As a guide to the implementation of this PoM each strategy is attributed a priority ranking as outlined below:

<b>High priority</b>	Indicates works which are important to the parks effective management and should be undertaken as soon as possible.
<b>Medium priority</b>	Indicates works which, although considered important, are not immediately essential to the effective management of the BWSP.
<b>Low priority</b>	Indicates works which are required over the long term but may be undertaken following the completion of other works or when funding becomes available.
<b>Ongoing</b>	Indicates works to be carried out on a regular basis for maintenance or up-keep of the BWSP.
<b>Short term</b>	Indicates actions that may or may not be of high importance, but are able to be easily implemented with the Trust's current resources and will enhance the reserve in the short term.



## 9.0 Concept Masterplan

BWSP is at the beginning of its new life as a State Park. It has evolved from an industrial site with a history of degradation to a place with the potential to become a valued environmental, educational and recreational resource for the local community and visitors alike.

BWSP has a unique opportunity to become a place for people to gather, relax and celebrate, a place where children and adults can learn about the area's history and environment through hands-on activities and actively participate in rehabilitating the site for future generations to enjoy.

The BWSP Trust's vision is for a place that respects the unique coastal character of the site, where local residents and visitors are treated to a natural and rehabilitated environment of outstanding beauty. To achieve this vision a Concept Masterplan has been developed for BWSP. The Concept Masterplan complements the objectives and strategies outlined in the PoM and provides a vision for the future growth and development of the park.

Key features of the Concept Masterplan include (not in any order):

### FORMALISED ENTRY TO BELMONT WETLANDS STATE PARK

The main entry to BWSP is proposed to be located at the corner of Kalaroo Road and Railway Crescent. New signage and visual beacons will provide for logical navigation into the State Park. A temporary Visitor Centre at the park entrance will provide a focus for visitors and a source of information about the parks facilities. The Visitor Centre will play an administrative function and will have the potential to host school groups and act as a starting point for guided tours. The Visitor Centre will later be permanently located in the Beach Village area.

### BEACH VILLAGE

A Beach Village is proposed to facilitate activities such as dining, picnicking, bike hire, educational and cultural activities. Facilities within the Beach Village could include restaurants and beer gardens, conference facilities, galleries, small to medium sized event spaces, wedding reception facilities, picnic areas, playgrounds and research and education facilities. The Beach Village should develop a relaxed, pedestrian and cycle friendly 'village' atmosphere that relates strongly to the adjacent coastal and wetland landscapes. The Beach Village has been centrally sited to encourage visitors into the park and enable convenient access to the beach. As visitation increases the Visitor Centre will move from the park entrance to the Beach Village. A constructed wetland will be available for recreational and educational purposes and will form a natural focal point for the Beach Village.

### TOURIST ACCOMMODATION FACILITIES

BWSP will provide a range of tourist accommodation facilities, initially in the form of basic camping areas and later, if demand determines, more permanent holiday dwellings such as cabins or lodges. Dwellings should be contemporary in form and reflect the coastal character of the site and its surrounds. Visitors staying at BWSP will have the opportunity to become involved in education and site rehabilitation projects or simply relax and explore the wetlands and sand dunes at their own leisure.

### EVENTS SPACE

The Concept Masterplan provides areas for community events such as music festivals, markets, outdoor cinema, art exhibitions and the like, acting as a key attractor to the park. These spaces are multi-use and can be used as kick-about space and picnic areas when not being used for events. Situated close to the main entrance, the events spaces will make use of existing former sand quarries which possess a natural amphitheatre quality. The largest entertainment area is located near the Cauldron quarry area.

### ROAD NETWORK

BWSP will be accessed by one spine road which delivers visitors to each of the activity areas. Proposed roads and car parks will be provided on existing vehicular tracks or in degraded areas and traffic calming measures and signage are to be provided at intersections.

## **FERNLEIGH TRACK**

The Fernleigh Track is part of a walking/cycling corridor connecting Adamstown to Belmont. BWSP is proposed to become the final destination in this journey. The Tracks historical significance as a former rail line could be identified through the use of interpretive gestures and signage.

## **SHARED PEDESTRIAN/CYCLEWAYS**

A network of shared pedestrian/cycleways is proposed for BWSP. These shared access ways will branch off from the Fernleigh Track and weave through the key activity areas. Rest areas and viewing platforms will be provided at scenic locations along the way. In most cases cycleways will be independent of vehicular roads.

## **WALKING TRAILS AND BOARDWALKS**

Pedestrian only walking trails and boardwalks are proposed for the wetland areas and foredune. There is an opportunity to create themed trails and provide interpretive information in these areas.

Pedestrian beach access will be provided from the Beach Village, entertainment areas, campgrounds and tourist accommodation area. These walkways will link into the larger trail network provided elsewhere in the park.

## **VEHICULAR BEACH ACCESS**

Board and chain 4WD beach access is proposed from the Beach Village Carpark.

## **CONNECTIONS TO REGIONAL TRAILS AND CYCLEWAYS**

BWSP is well positioned to connect to a number of regional trails and cycleways in the Lake Macquarie region and beyond. Potential connections to Lake Macquarie, the Great North Walk and the Lake Macquarie Coastline walkway are proposed.

The Fernleigh Track follows the proposed route of the NSW Coastline Cycleway, a cycleway which connects towns along the length of the NSW coast. Signage to identify the track as part of this scheme is proposed.

## **BIRD ISLAND SANCTUARY ON BELMONT LAGOON**

The Concept Masterplan proposes that the peninsula leading to the decommissioned BHP airshaft be removed to create an island sanctuary for local and migratory birds. Belmont Lagoon may potentially be used for recreational and educational kayak tours under the guidance of qualified operators.

## **ON-SITE NURSERY AND SERVICES AREA**

A nursery to store and grow plants for on-site rehabilitation works is proposed. This area will incorporate a services depot and maintenance shed.

# Belmont Wetlands State Park Concept Masterplan

**ENTRY TO STATE PARK**  
The main entry to BWSP is proposed to be located at the corner of Kalaroo Road and Railway Crescent. New signage and visual beacons will provide for logical navigation into the State Park. A temporary Visitor Centre located near the entrance will provide information about the park's facilities. The Visitor Centre will later be permanently located in the Beach Village area.

**WALKING TRAILS AND BOARDWALKS**  
Pedestrian only walking trails and boardwalks are proposed for the wetland areas and foredune. There is an opportunity to create themed trails and provide interpretive information in these areas. Pedestrian beach access will be provided from the Beach Village, entertainment areas, campgrounds and accommodation area. These walkways will link into the larger trail network provided elsewhere in the park.

**WETLANDS AND SURROUNDS**  
The wetlands at BWSP are designated as significant Coastal Wetlands under State Environmental Planning Policies (SEPP 14). They offer exceptional education and recreation opportunities and will be maintained, protected, and enhanced with minimal impact.

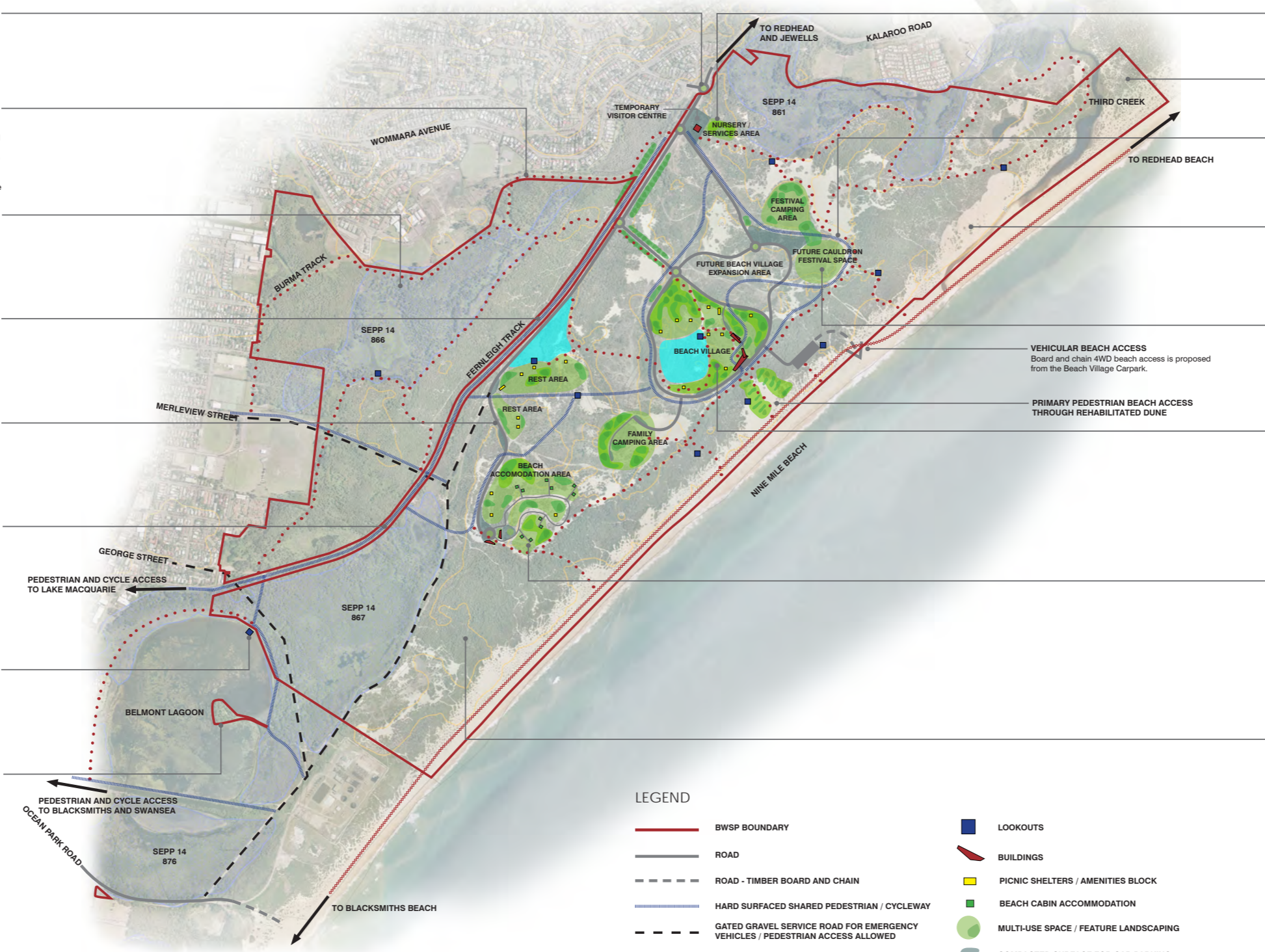
**THE FERNLEIGH TRACK**  
The Fernleigh Track is part of a walking/cycling corridor connecting Adamstown to Belmont. BWSP is proposed to become the final destination in this journey. Its historical significance as a former rail line could be identified through the use of interpretive gestures and signage.

**ROAD NETWORK**  
BWSP is accessed by one spine road which delivers visitors to each of the activity areas. Proposed roads and car parks will be provided on existing vehicular tracks or in degraded areas and traffic calming measures and signage are to be provided at intersections.

**CONNECTIONS TO REGIONAL TRAILS AND CYCLEWAYS**  
BWSP is well positioned to connect to a number of regional trails and cycleways in the Lake Macquarie region and beyond. Potential connections to Lake Macquarie, the Great North Walk and the Lake Macquarie Coastline walkway are proposed. The Fernleigh Track follows the proposed route of the NSW Coastline Cycleway, a cycleway which connects towns along the length of the NSW coast. Signage to identify the track as part of this scheme is proposed.

**BOARDWALKS AND LOOKOUTS**  
Scenic wetlands and lagoons play host to an exciting diversity of wildlife. Boardwalks and lookouts, positioned strategically around these areas, would provide opportunities for bird watchers, wildlife lovers, and the community alike to take in this wondrous asset.

**BIRD ISLAND SANCTUARY**  
The Concept Masterplan proposes that the peninsula leading to the decommissioned BHP airstair be removed to create an island sanctuary for local and migratory birds. Belmont Lagoon may potentially be used for recreational and education kayak tours under the guidance of qualified operators.



**ON-SITE NURSERY AND SERVICES AREA**  
A nursery to store and grow plants for on-site rehabilitation works is proposed for the southern end of the park. This area will incorporate a services depot and maintenance shed.

**OFF-LEASH DOG EXERCISE AREA**  
Provision of an off-leash dog exercise area north of Third Creek connecting with the area currently provided by Lake Macquarie City Council.

**SHARED PEDESTRIAN/CYCLEWAYS**  
A network of shared pedestrian/cycleways is proposed for BWSP. These shared accessways will branch off from the Fernleigh Track and weave through the key activity areas. Rest areas and viewing platforms will be provided at scenic locations along the way. In most cases cycleways will be independent of vehicular roads.

**SAND DUNE STABILISATION**  
Sand dune stabilisation works are proposed for those dunes most effected by erosion, blowouts and dune drift. Priority will be given to the Cauldron sand dune, the blowout near the Beach Village and the Third Creek sand dune.

**EVENTS SPACE**  
The Concept Masterplan provides areas for community events such as music festivals, markets, outdoor cinema and the like. These spaces are multi-use and can be used as kick-about space and picnic areas when not being used for events. The largest entertainment area is located in the former Cauldron quarry area.

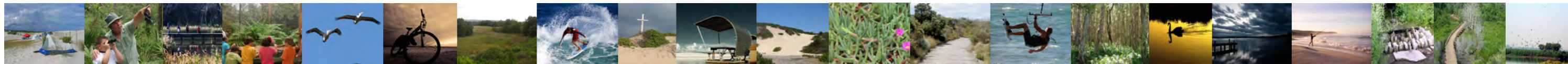
**BEACH VILLAGE**  
A Beach Village is proposed to facilitate activities such as dining, picnicking, bike hire, educational and cultural activities. The Beach Village has been centrally sited to encourage visitors into the park and enable convenient access to the beach. As visitation increases the Visitor Centre will move from the park entrance to the Beach Village. A constructed wetland will be available for recreational and educational purposes and will form a natural focal point for the Beach Village. Economic/commercial opportunities will be explored for this area to support the Trust and the Park's restoration and management.

**TOURIST ACCOMMODATION FACILITIES**  
BWSP will provide a range of tourist accommodation facilities, initially in the form of basic camping areas and later, if demand determines, more permanent holiday dwellings such as cabins or lodges. Cabins should be contemporary in form and reflect the coastal character of the site and its surrounds. Visitors staying at BWSP will have the opportunity to become involved in education and site rehabilitation projects or simply relax and explore the wetlands and sand dunes at their own leisure. Economic/commercial opportunities will be explored for this area to support the Trust and the Park's restoration and management.

**VEGETATION REHABILITATION**  
Extensive revegetation works are proposed across BWSP. Priority will initially be given to the foredune and wetland areas to enhance the environmental values of these areas. Rehabilitation works have already commenced at the front entrance and will continue into the park as other activity areas are activated. There are many opportunities for the community to become involved in rehabilitation works through various organisations such as Landcare.

- LEGEND**
- BWSP BOUNDARY
  - ROAD
  - - - ROAD - TIMBER BOARD AND CHAIN
  - HARD SURFACED SHARED PEDESTRIAN / CYCLEWAY
  - - - GATED GRAVEL SERVICE ROAD FOR EMERGENCY VEHICLES / PEDESTRIAN ACCESS ALLOWED
  - · · WALKING TRAILS
  - - - - - INFORMAL COASTAL WALKWAY
  - LOOKOUTS
  - BUILDINGS
  - PICNIC SHELTERS / AMENITIES BLOCK
  - BEACH CABIN ACCOMMODATION
  - MULTI-USE SPACE / FEATURE LANDSCAPING
  - COMPACTED SURFACE FOR CAR PARKING
  - CONSTRUCTED WETLAND

CONCEPT MASTERPLAN NOT TO SCALE



CLIENT: BELMONT WETLANDS STATE PARK TRUST

BELMONT WETLANDS STATE PARK  
Concept Masterplan  
08227 January 2010 SK01



Figure 14: Concept Masterplan

## 10.0 Staged Implementation

A site of this scale and complexity cannot be transformed overnight, with many of the strategies listed being dependent on obtaining sufficient funding. The management approach outlined in this PoM is therefore structured to provide BWSP with the flexibility to develop as resources become available. It is acknowledged that some infrastructure will be of a temporary nature and the programming of various spaces may evolve over time. All development would be subject to the relevant assessment process at the time of lodgement. Further documentation and assessment may be necessary at that time. The following sections describe how the park will develop over two (2) stages.

### Stage 1 – Activating spaces (1-5 Years)

During Stage 1 the development of basic infrastructure and provision of facilities such as camping areas will encourage visitation and raise the profile of the reserve. A temporary Visitor Centre near the park entry will create a site presence and provide a focus for visitors.

A hierarchy of roads, cycleways and pedestrian walkways will be established. A signage system will be introduced and the public will be encouraged to use the park for recreational and educational activities. As BWSP is opened up to the community through the provision of formalised access, public spaces will be activated and awareness of the park will increase. A full time Park Ranger will be engaged to oversee park activities, enforce regulations and coordinate maintenance works.

Rehabilitation works will begin to address pressures around the park's periphery, such as urban run-off, dune erosion, water pollution and access issues. Revegetation efforts will be focused around the wetlands and foredune, at the park's entry and in key public spaces including the camping area and Beach Village.

#### Key features of Stage 1

- Creation of a site presence through the provision of a temporary Visitor Centre near the park entrance.
- Provision of a self-sufficient camping area with composting toilets (Usage fees for this facility would apply).
- Provision of a graded access road to camping area and events space.
- Provision of pedestrian and 4WD beach access from the Beach Village area.
- Establishment of a permit system for 4WD beach access.
- Provision of directional, information and regulatory signage.
- Establishment of walking trails in wetland areas.
- Establishment of recreational cycleways.
- Rehabilitation works around park entry, camping area and Beach Village.
- Establishment of guided tours and education programs.
- Work with Lake Macquarie and Newcastle City Councils to complete their upgrading of the Fernleigh Track to a walkway/cycleway.
- Provision of a full time Park Ranger to be assisted by volunteer rangers.

A complete list of objectives and strategies for Stage 1 is provided in the following sections 11 and 12.

## Stage 2 – Strengthening key values (6-10 Years)

Stage 2 continues to build upon works commenced in Stage 1 to strengthen the park's intrinsic values. As awareness of BWSP grows and visitation increases the activation of key public spaces will become increasingly important. Infrastructure development will encourage usage and secure the parks long term financial viability. During Stage 2 the parks reputation as a unique visitor destination should be firmly established with a range of educational and recreational opportunities available. Rehabilitation works and development of key infrastructure will be ongoing throughout stages 1 and 2.

### Key features of Stage 2

- Upgrade to a permanent Visitor Centre located in the Beach Village.
- Development of the Beach Village Area. Facilities within this Management Zone could include education and research facilities, cafés, restaurants and beer gardens, conference facilities, galleries, small to medium sized outdoor entertainment spaces, wedding reception facilities and community gathering spaces. Picnic and BBQ areas, car parking, a constructed wetland and board and chain 4WD and pedestrian beach access will also be provided.
- Provision of eco-tourism accommodation facilities (if demand exists and funding can be obtained).
- Provision of a festival space at The Cauldron (large former sand quarry area).
- Establishment of walking trails around key activity areas.
- Ongoing rehabilitation works in key activity areas, on the foredune and in wetland areas.
- Belmont Lagoon Bird Sanctuary Island.
- Boardwalk around Belmont Lagoon with potential for themed walks and interpretive signage (in consultation with LMCC).
- Viewing platforms and bird hides.

A complete list of objectives and strategies for Stage 2 is provided in the following sections 11 and 12.

## 11.0 General Management Strategies

The management strategies discussed below are relevant to the entire site. They are provided to guide management of important issues which affect all of BWSP. Specific Management Strategies are provided for each Management Zone in section 12.

### 11.1 Connections to other wetlands, parks, trails and cycleways

BWSP is an important part of a larger system of parks, reserves and wetlands in the Lake Macquarie region. BWSP is the largest area of land included in the *Lake Macquarie Coastal Wetlands Park* proposal and has direct connections to areas including Jewells Swamp, Belmont Lagoon, the Awabakal Nature Reserve and Glenrock State Recreation Area (via the Fernleigh Track). BWSP is also within walking distance of Lake Macquarie. A number of opportunities exist to connect to these surrounding areas via a network of trails, cycleways and green corridors.

#### 11.1.1 NSW Coastline Cycleway

The NSW Coastline Cycleway project is coordinated by the Department of Planning (DOP). The route of the cycleway runs from the Queensland border to the Victorian boarder along the east coast of NSW with the ultimate objective of making cycling the entire east coast of NSW possible. The cycleway is a combination of on-road and off-road sections depending on the area it travels through. There is no overall character defined for the route and DOP encourage local Councils to determine a character that is in keeping with their local area. The route is loosely determined to pass through BWSP along the Fernleigh Track and into Belmont, then south to Swansea along roads such as Alick Street.

It is recommended that BWSP liaise with LMCC, Newcastle City Council and the DOP to formally recognise the Fernleigh Track as part of the NSW Coastline Cycleway with associated signage and promotional material.

#### 11.1.2 Lake Macquarie Coastline Walkway

The Lake Macquarie Coastline Walkway proposed by Umwelt (1999) links the entire Lake Macquarie Coastline in a way that emphasises the natural and man-made attractions which exist along the coastline. BWSP has the potential to become a significant attraction to walkers using this facility. The Concept Masterplan provides an informal walkway along Nine Mile Beach and several access points to BWSP from the beach.

#### 11.1.3 Great North Walk

The Great North Walk is a 250km walking track linking Sydney with Newcastle and the Hunter Valley. It was initially constructed as a celebration of Australia's bicentenary in 1988. The walk is managed by the Land and Property Management Authority who estimate that over 40 000 local, interstate and international visitors walk the track annually, either as a full 12-16 day hike or as shorter sections (Land and Property Management Authority, 2009).

The Great North Walk follows the coastline south from Newcastle, to Glenrock State Conservation Area before moving inland to Warners Bay and Lake Macquarie. The Great North Walk intersects the Fernleigh Track at Glenrock State Conservation Area and it is proposed that a connection to BWSP be established from this point. This would have the benefit of attracting hikers to BWSP to use the beach and camping facilities.

#### 11.1.4 Green corridors

LMCC has prepared mapping data displaying native vegetation that contributes significantly to the movement and viability of flora and fauna in Lake Macquarie City. The map identifies important existing wildlife corridors in addition to areas where rehabilitation would benefit fauna movement. The plan indicates a number of corridors of partly cleared vegetation within BWSP which could be rehabilitated to improve fauna movement. These corridors are indicated on Figure 15.

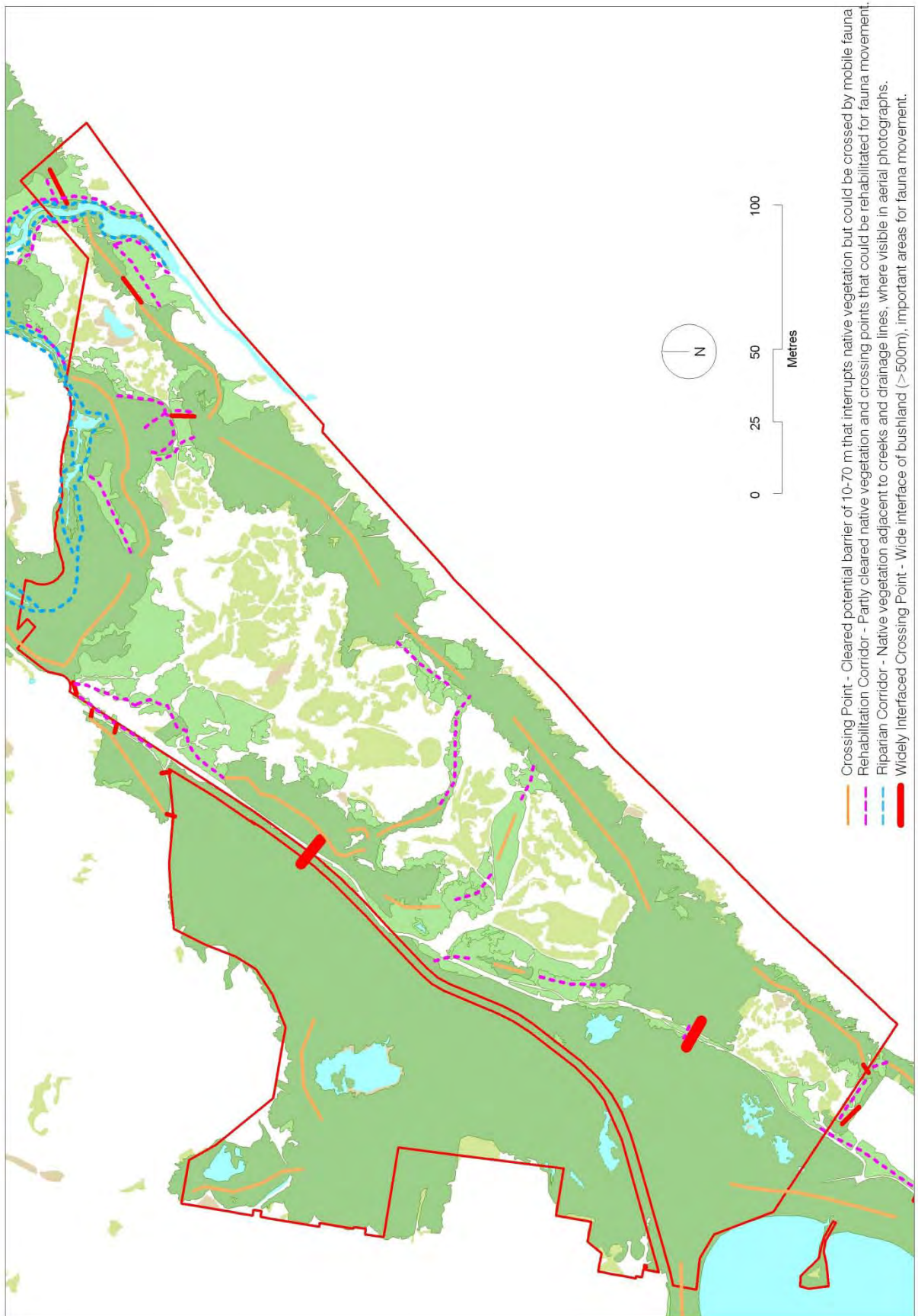


Figure 15: Potential rehabilitation corridors  
 Source: Lake Macquarie City Council

## 11.2 Vegetation rehabilitation

Extensive revegetation works are proposed for BWSP. Priority will initially be given to areas identified by LMCC as potential corridors for fauna movement, areas heavily affected by weeds along existing trails and exposed areas of the foredune (Figure 16). Where possible, locally occurring native species will be sourced and used in these works. Rehabilitation works have already commenced at the front entrance and will continue into the park as other activity areas are activated.

## 11.3 Sand dune stabilisation

Sand dune stabilisation works are proposed for those dunes most affected by erosion, blowouts and dune drift. Priority will be given to the Cauldron sand dune, the blowout near the proposed Beach Village and the Third Creek sand dune (Figure 16).



Figure 16: Priority rehabilitation areas

Source: Adapted from Department of Lands, 2008 (b)

### 11.3.1 Coastal processes and sea level rise

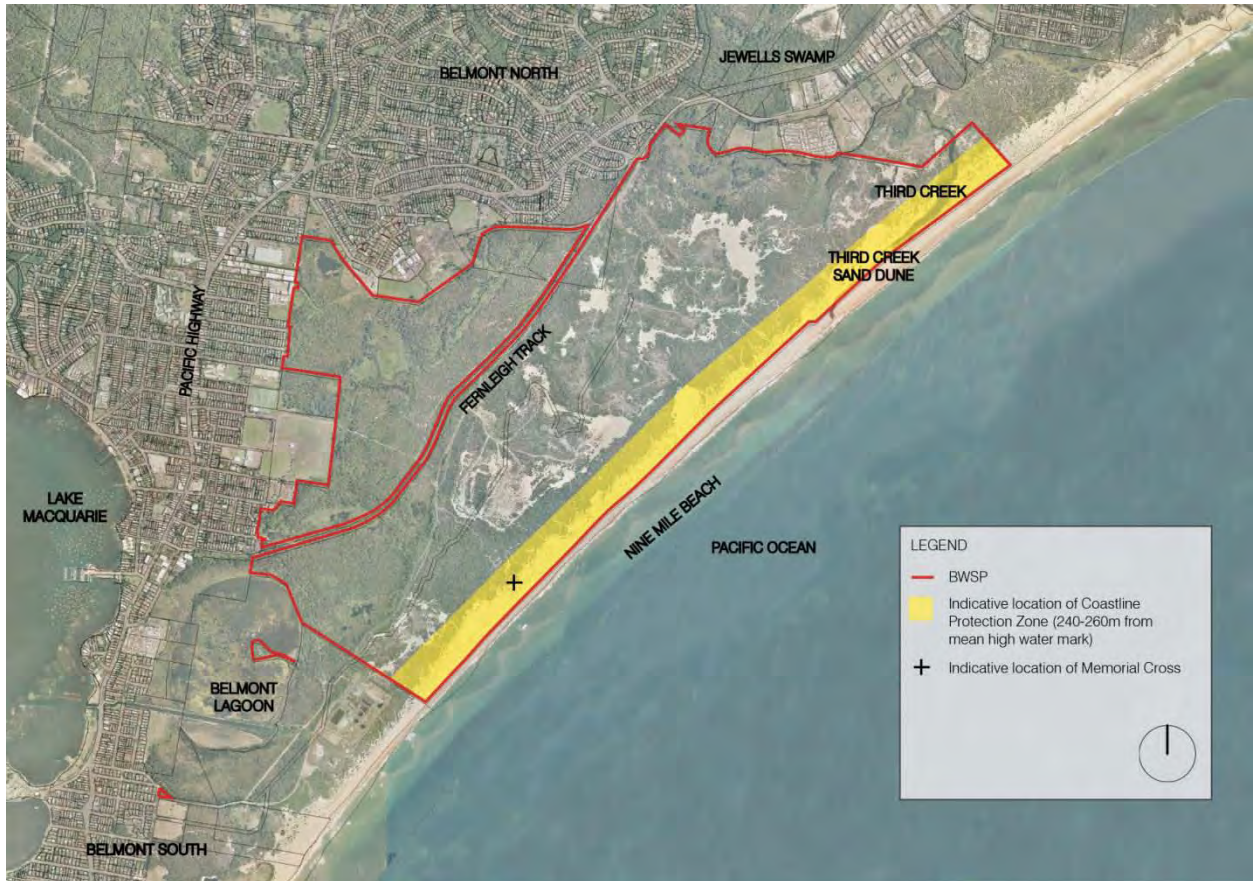
Coastlines are dynamic systems that are in a constant state of flux. They are subject to the ongoing forces of wind and waves which constantly change the shape of the coastline and are affected by natural hazards such as erosion, dune migration, coastline recession and coastal inundation.

The management of areas directly affected by coastal processes and relevant adjoining areas has been addressed in the Lake Macquarie Coastline Management Report prepared by Umwelt (Australia) in 1999. The plan provides a long term framework for the management and maintenance of land along the Lake Macquarie Coastline. An essential value of the plan is the maintenance of an adequate corridor along the beach and dunal system to allow for natural coastal processes to occur.



The Lake Macquarie Coastline Management Plan identifies a Coastline Protection Zone which allows management of the entire Lake Macquarie coastline to be undertaken as a contiguous land use unit, protecting the long term stability of the coastline and ensuring that development does not adversely affect the equilibrium of natural coastal processes. This is referred to by Umwelt (1999) as a 'whole of coastline' approach.

Sea level rise has been identified by the Australian government as a potential hazard effecting Australia's coastlines in the future. Storm events and sea level rise are projected to exacerbate the effects of coastal erosion and the subsequent inundation of low lying areas. The NSW Department of Environment and Climate Change (DECC) has projected sea level rises of up to 40cm above 1990 mean sea level by 2050 and 90cm by 2100 (DECC, 2008). The BWSP sand dunes have an important role to play in protecting the hinterland west of the coast from sea level rise, forming a protective buffer against erosion and inundation.



**Figure 17: Coastline Protection Zone**  
 Source: Adapted from Department of Lands, 2008 (b) and Umwelt, 1999.

### 11.4 Directory of Important Wetlands in Australia (DIWA)

The Directory of Important Wetlands in Australia (DIWA) is a cooperative project involving the Federal, State and Territory governments, coordinated by Environment Australia. The Directory identifies nationally important wetlands based on criteria agreed to by the Australian and New Zealand Environment and Conservation Council (ANZECC) Wetlands Network. At the time of writing, the BWSP Trust has applied for inclusion of the Belmont Wetlands in the DIWA.

### 11.5 Ramsar convention on wetlands

The Ramsar Convention on Wetlands is an intergovernmental treaty which provides a framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. To be considered for inclusion on the Ramsar List sites must contain representative, rare or unique wetland types or be of international importance for conserving biodiversity (The Ramsar Convention on Wetlands, 2009).

A review of the criteria for nomination to the Ramsar register indicates the Belmont Wetlands are unlikely to qualify for inclusion. However this situation may change if the Belmont Wetlands were included in a broader proposal to Ramsar incorporating the entire Lake Macquarie Coastal Wetlands Park.

### 11.6 Potential land swaps and acquisitions

BWSP landholdings include 0.3 hectares adjoining Belmont Cemetery known as Lot 3 DP 211142 Ocean Park Road, Belmont. This heavily vegetated parcel which is thought to be a remnant of the previous BHP holding, is separate from the rest of the study area and there is low connectivity between the two sites.

Given that the site is relatively isolated from the rest of BWSP it is recommended that the Trust investigate the potential for either disposal by sale or a land swap with neighbouring landholders for land parcels which are directly adjoining BWSP, including lands currently owned or managed by LMCC and HWC. Land parcels which could potentially be considered in future land swaps include Lot 2 DP228483 (LMCC), Lot 104, DP533297 (LMCC), Lot 1, DP537587 (LMCC), Lot 6, DP814551, Lot 10, DP548901 (LMCC), Lot 21 DP709388 (LMCC) and the western portion of Lot 1 DP433549 (HWC). The potential to acquire these adjoining publically owned lands would ensure they are protected under Crown Lands legislation and can be managed as a contiguous land unit.

### 11.7 Relationship with the community

The neighbours of BWSP are a source of local knowledge and support for the park and the local community possess a strong sense of ownership of the site and are supportive of its activities. There are a number of ways the community can contribute to the park; through volunteer and education initiatives, business partnerships and resource sharing.

Collaboration with external regulating authorities such as the NSW Police and LMCC Rangers is a way of drawing on existing resources in the community to manage the park. Ultimately, a permanent on-site presence in the form of a Park Ranger or Caretaker is recommended to oversee park activities, enforce regulations and coordinate maintenance works. This may be in the form of Volunteer Rangers or as a paid position, subject to funding availability.

Education programs have an important role to play in maintaining harmonious neighbour relationships. Adjoining residents have a responsibility to avoid encroachment of their lands into the park and ensure that domestic animals or weeds do not enter the park from their lands and education programs can ensure residents are aware of these responsibilities.

The Awabakal Traditional Owners Aboriginal Corporation, the Awabakal Descendants Traditional Owners Aboriginal Corporation and the Bahtabah Local Aboriginal Land Council (LALC) are a valuable source of knowledge about Aboriginal cultural heritage and archaeological sites in the locality. They have expressed an interest in being involved in the management, conservation and interpretation of Aboriginal cultural heritage at BWSP. The Aboriginal Community should be involved in an archaeological survey of land prior to development and assist with the interpretation of Aboriginal cultural heritage within BWSP. The Trust should prepare a consultation and representation strategy in conjunction with the Aboriginal Community.

### 11.8 Volunteers

Volunteers have an important role to play in the development of BWSP and the park has a history of support from a number of committed volunteers who have contributed knowledge and labour to the reserve in recent years.

The BWSP Trust board is made up of community volunteers responsible for managing the affairs of the reserve on behalf of the community and the Trust are supportive of volunteer involvement in the reserves management and maintenance. (See section 2.2 for the roles and responsibilities of the BWSP Trust)

Many local residents have campaigned strongly for the site's return to public land, the most prominent in recent times being Lake Macquarie Coastal and Wetlands Alliance, Belmont Lagoon Reserve Committee, Coastcare and the Lake Macquarie Coastal Wetlands Park Committee. These organisations have demonstrated an ongoing commitment to being involved in the decision making process regarding BWSPs future use and management.

Programs such as Landcare and Dunecare activate community interest and encourage a continued sense of park ownership by local residents. *Friends of the Wetlands Park* is a dedicated Landcare group involved in practical site rehabilitation works. This group (and other Landcare groups) have been responsible for weed removal and tree planting in wetland areas and along the park's Kalaroo Road entry.

Educational institutions such as schools, universities and TAFE colleges are encouraged to become involved in on-site research programs and may provide assistance with the production of interpretive education material.

Volunteer groups will only be permitted to work on the reserve with the approval of the BWSP Trust and must be under the direct supervision of suitably qualified personnel to ensure compliance with relevant legislation and appropriate insurance coverage.

### 11.9 Community awareness and site interpretation

As BWSP is a new State Park it seems probable that awareness of the park among the general community is quite low. A key priority for the BWSP Trust is to increase community awareness of the park's values and encourage and promote appropriate visitor use. A Communications Strategy has been prepared for BWSP by Dartnell Consulting and the Hunter Wetlands Centre (2008) to engage and activate community interest and participation in the restoration and development of BWSP. Included in the Communications Strategy are short, medium and long term strategies to achieve this aim.

There is considerable potential for interpretation of cultural heritage at BWSP (both Indigenous and non-indigenous). Interpretive information may be provided in a number of formats and need not be restricted to standard signage. A creative program of Aboriginal and European heritage interpretation is encouraged. Methods of presentation that encourage engagement with the site, for example, through guided tours, "themed" walking trails, incorporation of heritage elements into built forms and the like, are to be investigated. Literal reproduction of historic sites is to be avoided. It is recommended that the Trust establish an ongoing relationship with the Aboriginal Community to establish this form of signage.

A comprehensive signage system is recommended for BWSP. Proposed signage would include directional, informative, regulatory and interpretive signs at appropriate locations leading to and within BWSP. Signs are to follow a logical and consistent hierarchy that communicates the character of the State Park and provide clear information to visitors. Where possible, information should be combined to reduce the number of signs required throughout the park. The recommended signs for BWSP are as follows:

- Directional signage on the Pacific Highway guiding visitors to BWSP.
- Welcome signage located at the main entrance on Kalaroo Road.
- Reserve map highlighting park facilities and attractions, walking and cycling trails, and other points of interest (Located at the entrance and possibly at the Beach Village).
- Regulatory signage at pedestrian entry points (George Street, Merleview Street, Livingstone Street and at the southern park boundary) clearly indicating permitted and prohibited activities.
- Regulatory signage indicating rehabilitation areas where access is prohibited.
- Track markers are to be used as required to identify preferred pedestrian and cycle routes.
- Directional signage at track intersections.
- Signage at the Beach Village carpark indicating where 4WD beach access is permitted.
- Signage indicating connections to regional trails and cycle networks as they are developed (including the Great North Walk, Lake Macquarie Coastline Walkway and walkways around Lake Macquarie).
- Signage indentifying the Fernleigh Track as part of the NSW Coastline Cycleway (signs available from the Department of Planning).

- Signage at appropriate locations to advise users that the beach environment is dangerous and care must be taken at all times.

### 11.10 Off-road vehicle use

In this PoM the term off-road vehicle is used to describe vehicles including four wheel drives (4WD), trail bikes, quad bikes, motorcross bikes and minibikes.

BWSP has a long history of unauthorised off-road vehicle use both within the park and along Nine Mile Beach. Past attempts by the BSWP Trust to manage access have been met with disregard. Gates or barriers have repeatedly been vandalised or new tracks created to avoid the barriers. Anecdotal evidence suggests that off-road vehicle activity is most prevalent around the former sand mining areas and along the beach and foredune.

Vehicular use on beaches is a controversial issue within most coastal communities where it is permitted. The NSW Coastal Policy (NSW Government, 1997) recognises the use of vehicles in beach environments when such activity is approved under relevant legislation. All vehicles and drivers on beaches are subject to relevant acts and legislation, particularly with respect to licensing of drivers and registration of vehicles.

While there are a number of opportunities within the Hunter and Mid-North Coast regions for beach driving, including Stockton Beach and Myall Lakes National Park, there are limited opportunities for off-road vehicular beach access between Sydney and Newcastle. Community consultation revealed a strong desire by many park users to legitimately access Nine Mile Beach by off-road vehicle. Vehicular beach access is particularly popular with surfers and recreational fishers who currently access this area from Ocean Park Road or via a number of unauthorised trails through BWSP.

Off-road vehicles can impact on the natural and cultural environment and the recreational experience of some visitors. Illegal vehicle access to dune systems can threaten fauna and cause loss of vegetation cover, dune instability, erosion and sand migration (Department of Land and Water Conservation, 2001). Particularly significant impacts occur between the high water mark and the established foredune vegetation line, where pioneer plants grow which may be damaged or killed by vehicles. Repeated damage can lead to severe beach erosion and the impeded regeneration and growth of new plants that are particularly sensitive to disturbance.

The challenge for BWSP is finding an appropriate balance between the provision of recreational opportunities and ensuring appropriate levels of environmental protection. In developing this PoM a number of options for off-road vehicle access were considered, ranging from a total ban of off-road vehicles on the beach to formalised beach access at controlled points for 4WD vehicles only.

Community consultation revealed the priority for four wheel drivers is to gain access to Nine Mile Beach for activities such as surfing and fishing. To accommodate this legitimate use, board and chain 4WD beach access is proposed from the Beach Village carpark. To encourage responsible driving practices, it is proposed that a permit system (developed in conjunction with Lake Macquarie City Council and the Land and Property Management Authority) be implemented. Drivers will be required to purchase a permit and abide by a Code of Conduct for beach driving.

A number of strategies can be employed to reduce the impacts of off-road vehicles on beaches. These strategies include;

- Clear signposting of accessible and prohibited areas;
- Implementation of a permit system and Code of Conduct for Beach Driving (in consultation with key stakeholders);
- Hardening of entry and exit points;
- Speed limits;
- Temporary beach closures following storm events to reduce erosion;
- Seasonal beach closures (as appropriate) to protect fauna and other beach users; and
- Driver education programs.

Refer to Section 12.2.5 for specific strategies regarding 4WD beach access.

Unregistered trail bikes, motorcross bikes, minibikes and quad bikes can impact on pedestrian safety and visitor experience and the noise coming from these vehicles can be disruptive to other park users. As these vehicles have the potential to cause conflict with other users and damage sensitive dune landscapes by driving off designated roads, it is proposed that they are not permitted at BWSP, with the exception of registered road bikes driving on formed roads or in designated Trust approved areas.

### 11.11 Dog exercise areas

Dog walking is a popular activity and large areas for exercising dogs in urban areas are highly valued by the dog owning community. Dogs are to be permitted off-leash at BWSP north of Third Creek and on-leash in the Sand Plain Zone and on the Fernleigh Track. This is subject to review and may change at the discretion of the BWSP Trust as visitation to the park increases.

As uncontrolled dogs can disturb wildlife and other park visitors, dog owners should follow some simple guidelines to ensure their pet does not interfere with others enjoyment of the park:

- Dogs are required to be kept on a leash in all areas unless signposted otherwise;
- Owners are responsible for supervising their dog and keeping it under control at all times; and
- Owners are required to clean up after their dog.

### 11.12 Horseriding

There are no official data records on the number of people using the site for horseriding, however anecdotal evidence suggests that horseriding does occur at BWSP from time to time.

Opportunities for recreational horse riding elsewhere in the region are considerable including areas of State Forest (Bulahdelah, Ourimbah, Watagan and Myall River) and on private property. There are also a number of pony clubs and commercial operators in the Lake Macquarie, Newcastle and Central Coast areas.

Horseriding can have a detrimental effect on natural areas, including damage to vegetation, unauthorised track formation, erosion and soil compaction (National Parks Association, 1999). These impacts are dependent on the frequency and number of riders using the area. Horse riders typically require either a large open space or trails of a suitable width and surface on which to ride. Parking areas for horse floats and access to drinking water are also generally required.

Given BWSPs focus on walkers, cyclists and passive family recreation, the provision of horseriding facilities is considered to be compatible with other proposed uses only under a permit access system, developed and administered by the Trust or their nominated representatives, on designated pathways and areas.

### 11.13 Irrigation

It is proposed that extensive areas of BWSP be rehabilitated and an adequate water supply will be required to establish and maintain plants throughout the park.

A key objective in Hunter Water's Environmental Management Plan is the productive reuse of recycled water where it is economically and environmentally feasible (Hunter Water, 2008). Hunter Water has two underground and one above ground sewage pipelines extending through BWSP from which water could potentially be extracted for irrigation purposes. Effluent received at the Belmont Waste Water Treatment Facility is treated to secondary level and further treatment would likely be required to comply with relevant DECC guidelines for the use of recycled water. A land capability assessment would also be required.

It is proposed that further investigations are carried out to determine the economic and environmental feasibility of using recycling water at BWSP.

### 11.14 Bush fire management

Fire, originating from both natural and human sources can have considerable affects on vegetation communities, human life and property. The BWSP Trust has statutory obligations under the *Rural Fires Act 1997* (section 63) to protect both life and property on its lands. Under the Act it must also ensure the protection of the natural and cultural values of the reserve. It is the duty of the land owner to take practicable steps to prevent the occurrence of bushfires and to minimise the danger of the spread of bushfires on their land.

Different vegetation communities have different responses to fire and the fire Biodiversity Threshold is used as a measure to determine the optimum burning frequency for various vegetation types. While some vegetation communities have evolved to be tolerant of frequent burning, others are sensitive and may be severely damaged by a single fire. The fire Biodiversity Threshold for saline wetlands is zero and an interval between controlled burns of a minimum of 10 years and a maximum of 35 years is recommended for freshwater wetlands.

Uncontrolled vehicle access has resulted in localised fires in BWSP due to arson and burning of stolen vehicles. Prior to the erection of gates at major access points, localised fires were occurring almost annually resulting in deteriorated habitat quality in a number of areas. The provision of locked gates at entry points has significantly reduced the incidence of arson within the park.

The Land and Property Management Authority has been responsible for bush fire management within BWSP and have developed bush fire management strategies for the reserve in collaboration with the BWSP Trust board and the NSW Rural Fire Service.

A Bush Fire Management Infrastructure Plan has been developed for BWSP which identifies fire trails and Asset Protection Zones (APZ) within the reserve and this is considered adequate for current needs (Figure 18). APZs must comply with relevant bushfire standards and at the same time minimise the loss of biodiversity and vegetation.

A map of the known fire history has also been prepared, however it is acknowledged that the map reflects only a small portion of fires which have occurred in the park (Figure 18). There is a need to continue to gather information on the burn history and overlay this information with strategies for future fire management. Additional APZs and bush fire management trails may need to be established within and around the boundary in consultation with the Land and Property Management Authority and NSW Rural Fire Service to meet the evolving patterns of natural and built assets within BWSP. This work is not urgent, provided the above measures are put in place.



**Figure 18: Bushfire map**  
 Source: Adapted from Department of Lands, 2008 (f) and (g).

### 11.15 Action Plan – Entire Site

The objectives and strategies listed below apply to the entire site. These strategies should be read in conjunction with the specific strategies for each Management Zone, and the Concept Masterplan included at Section 9.

#### FLORA AND FAUNA MANAGEMENT

Objective	Strategy	Priority	Stage
Develop an improved knowledge base about the type, location and abundance of native plants and animals within BWSP.	1. Undertake comprehensive vegetation mapping of the BWSP in association with the vegetation mapping commissioned by Lake Macquarie City Council.	Medium	Stage 1
	2. Undertake fauna studies and record the occurrence of Threatened Species (under the TSC Act.)	Medium	Stage 1
Protect and enhance aquatic, terrestrial and avian habitat within BWSP.	1. Identify the location of Endangered Ecological Communities and threatened flora species listed under the TSC Act (1995).	High	Stage 1
	2. Prepare a Vegetation Management Plan to rehabilitate degraded areas and appropriately manage weed infestations, with a long term intent and commitment to implementing a VMP over the entire BWSP site.	High	Stage 1
	3. Undertake discussions with the Fernleigh Track Committee (Lake Macquarie City Council/Newcastle City Council) to protect existing vegetation along the Track that is in good condition.	High	Stage 1
	4. Implement recovery plans as prepared under the TSC Act (1995) for communities, species and populations listed as endangered or vulnerable.	Medium	As required
	5. Investigate having BWSP acknowledged within an international migratory bird route status under agreements with the Japan-Australia Migratory Bird Agreement (JAMBA), the China-Australia Migratory Bird Agreement (CAMBA) and the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).	Low	N/A
	6. Control pest fauna species in accordance with the Australian Government's Australia Pest Animal Management Program (APAMP).	Ongoing	All stages
	7. Retain, and where possible, enhance wildlife corridors within BWSP.	Ongoing	All stages

## HYDROLOGY AND WETLAND MANAGEMENT

Objective	Strategy	Priority	Stage
To protect and enhance water quality, wetland biodiversity and hydrologic function.	<ul style="list-style-type: none"> <li>Encourage and assist LMCC and other relevant stakeholders to prepare a Storm Water Management Plan designed to minimise the impact of the surrounding urban catchment on the wetlands. Include a review of the effectiveness of existing gross pollutant traps and sediment control devices at discharge points into the BWSP along with consideration of alternative techniques (such as retention basins) and ways to control non-point pollution sources entering the park.</li> </ul>	Medium	Stage 1
	<ul style="list-style-type: none"> <li>Undertake a study of all physical obstructions impeding hydrologic patterns within the park to determine the implications and potential benefits of rehabilitating hydrologic systems. The study should include estimates of the time it would take systems to readjust to any proposed changes.</li> </ul>	Medium	Stage 2



## CULTURAL HERITAGE

Objective	Strategy	Priority	Stage
Protect and enhance Aboriginal cultural values and heritage sites.	1. Liaise with the Aboriginal community to identify any known Aboriginal heritage sites and take protective measures to secure them against future damage.	High	All stages
	2. Consult the Aboriginal community regarding the management of Aboriginal sites, places and values	High	All stages
	3. Facilitate ongoing consultation with the Aboriginal Community regarding issues of Awabakal Culture and Heritage.	High	All stages
	4. Register any known Aboriginal sites with the National Parks and Wildlife Service Aboriginal Heritage Information Management System (AHIMS).	As required	All stages
	5. Develop a creative program of site interpretation which covers important aspects of BWSP's Aboriginal heritage.	Medium	All stages
	6. Subject to funding, prepare an Aboriginal Cultural Heritage Management Plan (ACHMP) to manage Aboriginal cultural issues that may arise during ongoing development.	Ongoing	All stages
Protect and enhance European cultural and heritage values.	1. Identify and document sites of cultural significance.	Medium	All stages
	2. Develop a creative program of site interpretation which covers important aspects of BWSP's European cultural heritage.	Medium	All stages
	3. Promote the history of BWSP and protect important heritage values.	Ongoing	All stages

## RESEARCH AND EDUCATION

Objective	Strategy	Priority	Stage
Demonstrate a commitment to increasing knowledge and understanding about the BWSP's natural and cultural values.	1. Support institutions and individuals conducting research into the parks natural and cultural values. Approval is required before research may be conducted.	Ongoing	All stages
	2. Make contact with and encourage visitation from a range of education institutions.	Short term	Stage 1
	3. Encourage the core education values of the BSWP including: <ul style="list-style-type: none"> <li>• Environmental stewardship and rehabilitation;</li> <li>• Wetland education;</li> <li>• Community involvement and participation;</li> <li>• Access to and interpretation of historic sites;</li> <li>• Research and study opportunities – e.g. coastal processes, wetland hydrology, management of public recreation and natural resources; and</li> <li>• Establishment of mutually beneficial partnerships with neighbouring landholders and education institutions.</li> </ul>	Ongoing	All Stages

## FACILITIES AND INFRASTRUCTURE

Objective	Strategy	Priority	Stage
Provide an appropriate level of infrastructure to support park activities.	1. Install and maintain an appropriate level of infrastructure to suit the specific requirements of each Management Zone.	High	All stages
	2. Install car parking facilities to support key activity areas.	Medium	All stages
	3. Investigate opportunities to use recycled water for irrigation in conjunction with Hunter Water Corporation.	Medium	Stage 1
	4. Ensure all facilities and infrastructure meet high standards of energy efficiency and environmentally sustainable design (ESD) principles (e.g. encourage the use of recycled water for irrigation purposes, solar power generation).	Ongoing	All stages
	5. Ensure facilities and infrastructure are designed according to Crime Prevention through Environmental Design (CPTED) principles.	Ongoing	All stages
	6. Develop waste management strategies that encourage recycling and waste separation at source.	Ongoing	All stages

## BUSINESS, PLANNING AND OPERATIONAL MANAGEMENT

Objective	Strategy	Priority	Stage
Ensure the BWSP is managed in a way that is environmentally, socially and financially sustainable.	1. Workshop ideas with the local community to identify business opportunities that will benefit local people.	Short term	Stage 1
	2. Maximise funding opportunities through grants, sponsorship and other appropriate partnerships.	High	All stages
	3. Prepare and implement a Works Program for ongoing reserve maintenance.	High	All stages
	4. Prepare a Land Capability Assessment for areas where development and/or re-vegetation are proposed to occur.	Medium	As required
	5. Encourage the use of shared facilities such as car parking with other local stakeholders such as Lake Macquarie City Council and the Hunter Institute of TAFE, Belmont Campus.	Medium	All stages
	6. Develop and implement measures which address specific problems such as alcohol restriction and hours of use within the BWSP.	Medium	Stage 1
	7. Subject to funding, employ a full-time Park Ranger/Caretaker to oversee park activities, enforce regulations and coordinate maintenance works.	High	Stage 1
	8. Establish a program of volunteer rangers/caretakers to support the Ranger in overseeing park activities.	Medium	All stages
Disposal of assets which have a low value to BWSP.	1. Investigate the possibility of exchanging the BWSP owned land adjoining Belmont Cemetery (Lot 3, DP211142) with publicly owned land directly adjoining BWSP.	Short term	Stage 1
Increase the BWSP landholdings to include publically owned land adjoining BWSP.	1. Discuss with adjoining Government landholders the opportunity to acquire land. (Parcels which should be considered include Lot 2 DP228483 (LMCC), Lot 104, DP533297 (LMCC), Lot 1, DP537587 (LMCC), Lot 6, DP814551, Lot 10, DP548901 (LMCC), Lot 21 DP709388 (LMCC) and the western portion of Lot 1 DP433549 (HWC).	Low	N/A

## ACCESS

Objective	Strategy	Priority	Stage
Provide vehicular and pedestrian access to appropriate areas of BWSP.	1. Develop a coherent system of managed access to BWSP with a main entry at Kalaroo Road and a clear hierarchy of vehicular, pedestrian and cycle movements.	High	Stage 1
	2. Upgrade the Merleview Fire Trail to a pedestrian/cycleway and incorporate wetland rehabilitation initiatives into the track design (i.e. small bridges may become a design feature showcasing water cleansing initiatives). Emergency vehicle access to be maintained.	Medium	Stage 2
	3. Control unauthorised access to inappropriate areas using measures such as fencing, vegetation, signage and visual markers.	High	All stages
	4. Prohibit access of trail bikes, quad bikes, motorcross bikes and minibikes in all areas of BWSP and restrict 4WD beach access to a board and chain road originating at the Beach Village.	High	Stage 1
	5. Provide adequate and appropriate access for people with disabilities.	Medium	All stages
	6. Promote BWSP as a destination for Fernleigh Track users.	Medium	Stage 1
	7. Promote links from BWSP to the Great North Walk.	Low	Stage 2
	8. As visitation increases, support additional public transport services to and from BWSP in conjunction with key stakeholders.	As required	All stages
	9. Require all vehicles to have the appropriate permits and licenses (see section 12.2.5).	Ongoing	All stages

## INFORMATION AND PUBLIC AWARENESS

Objective	Strategy	Priority	Stage
Facilitate and support community involvement in managing the BWSP.	1. Implement the strategic actions listed in the Belmont Wetlands State Park Communications Strategy (2008).	Short term and Ongoing	All stages
	2. Provide information to the community about the site, including development projects and upcoming events in which they can become involved (e.g. through newsletters, brochures and websites).	Short term and Ongoing	All stages
	3. Provide suitable opportunities for volunteer involvement.	Short term and Ongoing	All stages
	4. Subject to funding availability, develop a dedicated website for BWSP.	High	Stage 1
	5. Work collaboratively with the 'Friends of the Wetlands Park' Landcare group to undertake rehabilitation works and raise the profile of the park.	High	All stages
Promote community awareness of the BWSP and an appreciation of the reserve's facilities and values.	1. Encourage community understanding and appreciation of the park's natural and cultural values through ongoing education programs as outlined in the Belmont Wetlands State Park Communication strategy (2008).	Ongoing	All stages
	2. Actively encourage the community to participate in rubbish removal through events such as Clean Up Australia Day.	Ongoing	All stages

## REGULATION OF ACTIVITIES

Objective	Strategy	Priority	Stage
Reduce the incidence of Illegal rubbish dumping, littering and burning of stolen vehicles.	1. Remove existing rubbish found within BWSP and swiftly remove any rubbish or vandalism which occurs thereafter.	High	Stage 1
	2. Install and maintain litter bins, with recycling compartments, at appropriate locations, (i.e. Track entries).	High	All stages
	3. Maintain a regular rubbish collection service.	High	All stages
	4. Ensure prohibited activities are adequately signposted.	High	All stages
	5. Increase public activity within the Park to improve natural surveillance and discourage antisocial behaviour.	High	All stages
	6. Exercise powers under the Crown Lands Act and other laws to issue penalty notices or prosecute offenders.	Ongoing	All stages
	7. Develop public education programs discouraging anti-social behaviour in partnership with key stakeholders.	Ongoing	All stages
Reduce adverse impacts resulting from proximity of adjoining residents to BWSP.	1. Implement public education programs in partnership with key stakeholders covering issues such as the appropriate control of domestic pets and minimising weed spread.	Ongoing	All stages
	2. Clearly identify the BWSP boundaries using signage and appropriate design devices along the northern, western and southern park boundaries.	Medium	Stage 1
Assist the above by managing access to limit visitation and vehicle use to appropriate areas.	1. Install appropriate access control measures at strategic points.	High	Stage 1

## SAFETY AND RISK MANAGEMENT

Objective	Strategy	Priority	Stage
Proactively manage risk to protect park uses and limit liability of the BWSP Trust.	1. Plan and maintain an Operational Risk Assessment process at all levels of park management, including a Public Safety Management Plan to identify and control all reasonably foreseeable risks to public safety.	High	Stage 1
	2. Test radioactivity levels in areas where development is proposed.	As required	N/A
	3. Maintain a vegetated buffer zone of 400m around the Hunter Water Corporation Waste Water Treatment Plant to prevent odours affecting developed areas.	Ongoing	N/A
Minimise bush fire risk within BWSP to safeguard human life and property, protect the conservation of biodiversity and safeguard heritage sites and assets.	1. Maintain adequate bush fire mitigation measures, including APZs and fire trails throughout BWSP in conjunction with the Land and Property Management Authority and the NSW Rural Fire Service.	High	Stage 1
	2. Prepare a Bushfire Management Plan in accordance with NSW Rural Fire Service, <i>Planning for Bushfire Protection 2006</i> .	Medium	Stage 1
	3. Continue to maintain a record of fire burn history in conjunction with the Land and Property Management Authority and NSW Rural Fire Service.	Ongoing	All stages
	4. Implement bush fire hazard reduction and ecological burns in accordance with the Bush Fire Management Plan and Biodiversity Thresholds for all vegetated areas.	Ongoing	All stages

## 12.0 Management Strategies – Management Zones

### 12.1 Management Zone 1: Wetland Zone

Management Zone 1 is defined as the western portion of BWSP including the wetlands and adjacent areas. It incorporates the southern section of Jewells Swamp and part of Third Creek.

Management Zone 1 also includes the island peninsula that extends into Belmont Lagoon, and considers the surrounding land including the lagoon itself and the wetland margins.



Figure 19: Management Zone 1: Wetland Zone

#### 12.1.1 Aim

To manage and enhance the site's natural values and to provide a range of high quality passive recreation and education opportunities that are consistent with the area's environmental and conservation values.

### 12.1.2 Issues

- Restoration of habitat connectivity between the wetlands;
- Mitigating the effects of existing urban run-off, and run-off from any new development, into the wetland system;
- Managing aquatic and terrestrial weed infestations;
- Rehabilitation of Third Creek;
- Addressing the number of informal tracks and constructed service drains throughout the wetland areas that act as vectors for weed invasion; and
- Rehabilitation of hydrologic systems, where appropriate.

### 12.1.3 Desired future character

This Management Zone is proposed to be managed and enhanced as an area of high environmental conservation value, whilst offering a range of appropriate passive recreation and education opportunities for park visitors.

Management efforts should initially focus on addressing pressures around the Park's edge by mitigating the impacts of urban run-off followed progressively by; weed removal around the wetland margins, the restoration of habitat links and improvements in wetland water quality.

Visitors to this Management Zone will enjoy the opportunity to explore a range of wetlands in a coastal setting. Educational activities such as guided tours, wetland study and wildlife observation will occur in tandem with recreational facilities including walking and cycling trails and scenic viewing platforms. The wetlands offer significant opportunities for hands-on educational workshops and these may be developed in partnership with local educational institutions. Visitors may also explore the Belmont Lagoon by kayak or canoe under the guidance of an approved operator.

Many people have expressed their passion and concern for the environment and are keen to actively participate in the park's management and maintenance. Community involvement in this Management Zone is to be encouraged, under the guidance of suitably qualified organisations, such as Landcare. Potential community involvement may include rehabilitation works, monitoring impacts on the park (i.e. water quality), weed management and habitat protection.

There is considerable scope to provide visitor information on the parks natural and cultural heritage throughout this Management Zone. This information may be provided through guided tours, interpretive displays, self-guided walks, brochures and information sheets or creatively incorporated into the design of visitor facilities.

### 12.1.4 Permissible activities

The following table provides examples of permissible activities within Management Zone 1: Wetland Zone.

Table 7: Wetland Zone - Permissible activities

Permissible Activities	Prohibited Activities
<ul style="list-style-type: none"> <li>• Passive recreation in approved areas (boardwalks over wetlands, cycling)</li> <li>• Rehabilitation works (Rehabilitation approved by BWSP Trust only)</li> <li>• Wetland study and research (approval from BWSP Trust required)</li> <li>• Guided tours (approved operators only)</li> <li>• Kayaking/canoeing on wetlands (approved operators only)</li> <li>• Fire management activities</li> <li>• Asset protection activities (e.g. perimeter barrier structures/observation towers/barrier fences)</li> </ul>	<ul style="list-style-type: none"> <li>• Motorised vehicle access (other than authorised emergency service and maintenance vehicles)</li> <li>• Hunting/Use of firearms</li> <li>• Gas/electric and open wood fires</li> <li>• Littering, rubbish dumping, vandalism</li> <li>• Camping</li> <li>• Dogs are prohibited in this Management Zone with the exception of the Fernleigh Track, where on-leash dogs are permitted</li> <li>• Adjoining land holder encroachment into BWSP lands</li> </ul>

**Note:** Refer to SEPP 14 - Coastal Wetland legislation for permissible activities within SEPP14 wetland areas.



## 12.1.5 Action Plan

## FLORA AND FAUNA MANAGEMENT

Objective	Strategy	Priority	Stage
Protect, maintain and enhance wetland biodiversity.	1. Prepare and implement a Weed Control Plan to manage aquatic and other weeds impacting on wetland and water bodies following a review and upgrade of the gross pollutant traps and sediment control devices that drain into the wetlands.	High	Stage 1
	2. Prepare a Vegetation Management Plan to rehabilitate degraded areas and appropriately manage weed infestations, with a long term intent and commitment to implementing a VMP over the entire BWSP site.	High	Stage 1
	3. Subject to an analysis by a suitably qualified ecologist re-establish the vegetative links between the wetlands.		
	4. Revegetate Third Creek margins using locally occurring riparian species.	Medium	Stage 2
	5. Create a bird island sanctuary on the Belmont Lagoon airshaft peninsula and restrict general access.	Medium	Stage 2
	6. Monitor rehabilitation works within the wetlands.	Ongoing	All stages
	7. In association with the Rural Fire Service, undertake any required ecological and hazard reduction burns within biodiversity thresholds.	Ongoing	All stages

## RECREATION FACILITIES

Objective	Strategy	Priority	Stage
Provide a range of sustainable recreational facilities for park visitors.	1. Provide access to appropriate passive recreation facilities such as walking and cycling trails and viewing decks for bird watching.	High/ Medium	All stages
	2. Liaise with LMCC and the the Aboriginal Community to authorise the use of kayaks and canoes on Belmont Lagoon for tourism, recreation and/or educational purposes under the guidance of recognised environmental managers.	Medium	Stage 2

## ACCESS AND CIRCULATION

Objective	Strategy	Priority	Stage
Provide pedestrian and cycle access to appropriate areas within the Wetland Zone.	1. Liaise with LMCC and the Department of Planning to encourage the development of the Fernleigh Track as an all weather walkway/cycleway and promote as part of the NSW Coastline Cycleway route.	High	Stage 1
	2. Rehabilitate and reopen the historic Burma Track as a local walking trail and provide connectivity to the Fernleigh Track.	High	Stage 1
	3. Construct and maintain pedestrian boardwalks in appropriate wetland areas. Restrict pedestrian access in environmentally sensitive areas.	Medium	All stages
	4. Prohibit motorised vehicular access in this Management Zone with the exception of authorised emergency and maintenance vehicles.	Ongoing	N/A

## HYDROLOGY AND WETLAND MANAGEMENT

Objective	Strategy	Priority	Stage
Improve water quality and sediment control.	1. Identify point and non-point sources of pollution to the wetlands.	High	Stage 1
	2. Prepare and implement a long term water quality and biological monitoring program to assist in the assessment of wetland health in conjunction with HCRCMA and other relevant agencies.	Ongoing	All stages
	3. Avoid exposure of acid sulfate soils by prohibiting development in areas where exposure of these soils is expected to occur.	Ongoing	All stages
Rehabilitate hydrologic systems, where appropriate.	1. Prepare a Wetland Services Rehabilitation Plan, in association with the HWC along the George Street pipeline easement to allow the enhanced connection of Belmont Lagoon to SEPP14 wetland 867.	Medium	Stage 2
	2. Commission a comprehensive review by suitably qualified personnel to assess the advantages and disadvantages of returning the majority of Belmont Lagoon to its original fresh water status by mitigating marine water inflow.	Medium	Stage 1
	3. Prepare groundwater and catchment studies to determine if and where Jewells Swamp catchment Flood Flows may be directed into the BWSP wetland environment.	Low	Stage 2
Ensure the SEPP14 wetland boundaries reflect the full extent of the BWSP wetlands.	1. Prepare and implement a SEPP 14 boundary definition program aimed at re-defining the SEPP 14 boundaries in consultation with relevant stakeholders to ensure accurate delineation and protection of these assets.	Medium	Stage 2

**CULTURAL HERITAGE**

Objective	Strategy	Priority	Stage
Protect and enhance Aboriginal cultural values and heritage sites.	1. It is possible that burials may still exist in undisturbed areas around wetland margins. Advise representatives of the Aboriginal Community if any human skeletal remains are located.	Ongoing	All stages
Protect and enhance European cultural values and heritage sites.	1. Liaise with LMCC as they implement plans for the conversion of the Fernleigh Track into a pedestrian walkway/cycleway. 2. Investigate the extent of remains of the old Belmont Railway Station and John Darling Colliery Railway Line for archaeological significance. Any artefacts found are to be protected and may potentially be incorporated into an interpretive heritage feature. Literal reproduction of historic sites is to be avoided.	High Medium	Stage 1 All stages

**BUSINESS AND OPERATIONAL MANAGEMENT**

Objective	Strategy	Priority	Stage
Consider incorporating Belmont Lagoon into the BWSP landholding.	1. Liaise with Lake Macquarie City Council to promote the incorporation of Belmont Lagoon and BWSP into one overall land management parcel.	High	N/A

## 12.2 Management Zone 2: Beach and Foredune Zone

Management Zone 2 includes the foredune and coastal strip along Nine Mile Beach extending inland approximately 300 metres from the site's eastern boundary. It incorporates the outlet of Third Creek and the iconic Third Creek Sand Dune.



Figure 20: Management Zone 2: Beach and Foredune Zone

### 12.2.1 Aim

To protect and enhance the natural and cultural values of the coastal zone and to provide opportunities for recreation and access to Nine Mile Beach.

### 12.2.2 Issues

- Bitou Bush control;
- Foredune protection, stabilisation and rehabilitation;
- Provision of controlled vehicle and pedestrian access;
- Erosion of the toe of the sand dune on the western bank of Third Creek; and
- Visitor safety and experience.

### 12.2.3 Desired future character

The management challenge for the Beach and Foredune Zone is to ensure the protection of the coast's environmental values while providing for some recreational activity. While Nine Mile Beach and its associated foredune should remain accessible to the public for recreational activities such as swimming, surfing, fishing and walking, the public's desire for access must be balanced against the need for environmental protection and rehabilitation.

The major focus of this Management Zone should be on balancing the environmental and cultural values of the coastal zone by developing a system of managed access that compliments dune stabilisation and

rehabilitation efforts. People enjoy Nine Mile Beach for its relative remoteness and scenic beauty. The provision of recreation opportunities should therefore respect these values and strive to maintain the special coastal character of the area.

It is proposed that off-road vehicle access to Nine Mile Beach be restricted to one designated access road originating from the Beach Village. Drivers would be required to purchase a permit and agree to abide by a Code of Conduct for beach driving. As recreational use of the beach for swimming, surfing and walking increases, potential conflicts between vehicle usage and pedestrian usage are likely to occur. To address these potential conflicts regular review of the coastal access policy is recommended to ensure public safety is maintained.

The BWSP coastline is not an isolated unit and should be managed in accordance with the Whole of Coastline approach advocated in the Lake Macquarie Coastline Management Plan (Umwelt, 1999).

**12.2.4 Permissible activities**

The following table provides examples of permissible activities within Management Zone 2: Beach and Fore-dune Zone.

Table 8: Beach and Fore-dune Zone – Permissible activities

Permissible Activities	Prohibited Activities
<ul style="list-style-type: none"> <li>• Pedestrian beach access</li> <li>• Passive recreation (Walking, picnics, swimming, fishing, surfing)</li> <li>• Registered off-road vehicles permitted only on designated access ways or areas approved by the BWSP Trust (Beach access is via a designated board and chain track with a permit only)</li> <li>• Park and beach wedding ceremonies (with approval from BWSP Trust only)</li> <li>• Commercial hire activities (activities approved by BWSP Trust only)</li> <li>• Rehabilitation works (rehabilitation approved by BWSP Trust only)</li> <li>• Public art and cultural installations (activities approved by BWSP Trust only)</li> <li>• Erosion control works</li> <li>• Fire management activities</li> <li>• Asset protection activities (e.g. perimeter barrier structures/observation towers/barrier fences)</li> <li>• Horseriding along the beach in areas approved by the BWSP Trust</li> <li>• Dogs – on-leash (off-leash area available north of Third Creek)</li> </ul>	<ul style="list-style-type: none"> <li>• Camping</li> <li>• Open wood fires</li> <li>• Motor bikes (Minibike, quad bike and motorcross bike) and any unregistered vehicle</li> <li>• Hunting/Use of firearms</li> <li>• Littering, rubbish dumping, vandalism</li> <li>• Horseriding on the fore-dune</li> </ul>

## 12.2.5 Action Plan

## VEGETATION MANAGEMENT

Objective	Strategy	Priority	Stage
Protect and enhance native dune vegetation.	1. Prepare and implement a Coastal Vegetation Management Plan aimed at gradually phasing out Bitou Bush and other weeds with replacement planting of local provenance plant stock.	High	Stage 1
	2. Prepare a Vegetation Management Plan to rehabilitate degraded areas and appropriately manage weed infestations, with a long term intent and commitment to implementing a VMP over the entire BWSP site.	High	Stage 1
	3. Maintain habitat through the control of introduced fauna and flora.	Ongoing	All stages

## VISUAL AMENITY

Objective	Strategy	Priority	Stage
To protect and enhance the visual amenity of the coastal zone.	1. Provide viewing platforms, pedestrian pathways and rest areas that take advantage of scenic view corridors and do not detract from those residents who have views over the park.	Medium	All stages

## ACCESS AND CIRCULATION

Objective	Strategy	Priority	Stage
Provide opportunities to drive 4WD vehicles within designated areas.	1. Provide a formalised board and chain beach access point for 4WD vehicles.	High	Stage 1
	2. Develop, in consultation with LMCC, NSW Police, LPMA and Hunter Water a beach access permit system with an appropriate fee structure.	High	Stage 1
Provide formal pedestrian beach access ways separate from vehicular activity.	1. Provide beach access at defined points for pedestrians, separate from vehicular roads.	High	Stage 1
Provide connectivity with surrounding Management Zones and other walkways in the region.	1. Provide access along the beach and foredune for future development of the Lake Macquarie Coastline Walkway.	Medium	Stage 2
	2. Provide pedestrian links to surrounding areas including Lake Macquarie, Blacksmiths Beach and Redhead.	Ongoing	Stage 2

## REGULATION OF ACTIVITIES

Objective	Strategy	Priority	Stage
Permit conditional 4WD vehicle access to Nine Mile Beach and encourage responsible driver behaviour.	1. Develop and introduce a beach driving permit system in consultation with LMCC and review regularly. Permits will be required to drive on Nine Mile Beach in designated areas where and when beach driving is permitted.	High	Stage 1
	2. Drivers are required to purchase a permit prior to accessing the beach which is to be clearly displayed at all times. Information about beach driving is to be provided to drivers at the time of purchase.	High	Stage 1
	3. Prepare information and a Code of Conduct for beach driving and include with the literature provided to permit holders at the time of purchase. The permit will be revoked if drivers fail to comply with the conditions of the permit.	High	Stage 1
	4. Vehicle travel on Nine Mile Beach to be restricted to below high water mark. Speed limits of 30km/hr or 15km/hr within 50m of another beach user are to be imposed.	High	Stage 1
	5. Implement beach closures to sections where threatened species are found to nest.	High	All stages
	6. Enforce compliance via issue of penalty notices and/or permit cancellations for repeat or serious offences.	High	Stage 1
	7. Identify sensitive areas and exclude vehicle use by various techniques such as fencing, bollards, mounding and the like.	High	Stage 1

## RECREATION FACILITIES

Objective	Strategy	Priority	Stage
To provide and maintain access to public recreation areas.	1. Provide access to Nine Mile beach for swimming, walking, fishing, surfing and other appropriate recreational activities.	High	Stage 1
	2. Since the beach will be relatively remote and un-patrolled, install appropriate signage regarding hazards.	High	Stage 1

## INFORMATION AND PUBLIC AWARENESS

Objective	Strategy	Priority	Stage
Enhancement of visitor understanding of coastal processes and knowledge of the appropriate recreational use of the coastal zone.	1. Provide education opportunities and interpretive information about the role and value of the coastal zone within the park and across the region.	Ongoing	Stage 1
	2. Provide information and regulatory signage at beach access points and other key locations.	High	Stage 1
	3. Provide markers and signage to clearly identify areas where off-road vehicle access is permitted or prohibited.	High	Stage 1

## SAND DUNE MANAGEMENT

Objective	Strategy	Priority	Stage
Identify, restore and rehabilitate degraded sand dunes.	1. Prepare a Coastal Vegetation Management Plan (CVMP) for the rehabilitation of the BWSP foredune. Include within this plan an assessment of the feasibility of importing material to restore the natural dune profiles and if feasible provide workable techniques for stabilising imported and in-situ material.	Low	All stages
	2. Included in the CVMP strategies to restore and stabilise existing blow out erosion sites.	Medium	N/A
Manage coastal erosion while allowing for natural coastal processes to occur.	1. Close and rehabilitate disturbed areas and illegally formed vehicular tracks and implement a formal system of vehicle and pedestrian access across the foredune to Nine Mile Beach.	High	N/A
	2. Design and situate beach access points to minimise wind erosion and subsequent vegetation and dune damage.	High	N/A
	3. Liaise with LMCC to close beach access and repair damage as necessary following storm events.	As required	N/A
	4. When heavy seas remove considerable quantities of sand and travel is not possible at high tide, the beach is to be closed to vehicles until sand returns and adequate beach width is restored.	As required	N/A

## SAFETY AND RISK MANAGEMENT

Objective	Strategy	Priority	Stage
Enable safe pedestrian and vehicle access to Nine Mile Beach.	1. Liaise with LMCC to develop a Risk Assessment and Management Program for coastline access.	Medium	All stages
Effectively manage coastal hazards while allowing for natural coastal processes to occur.	1. Liaise with LMCC to develop a Risk Assessment and Management Plan to reduce coastal hazards for the whole coastline, in line with the Lake Macquarie Coastline Management Plan's Whole of Coastline approach.	High	Stage 1



### 12.3 Management Zone 3: Sand Plain Zone

Management Zone 3 is in the hind dune of BWSP and includes areas which have been subject to past mineral and construction sand mining operations. It extends to the west of Management Zone 2 to meet the existing Kalaroo Road fire trail which runs north-south through the BWSP. Third Creek forms the northern boundary of this Management Zone.



Figure 21: Management Zone 3: Sand Plain Zone

#### 12.3.1 Aim

Provide a range of high quality recreational, educational and tourist facilities in a rehabilitated coastal sand dune environment.

#### 12.3.2 Issues

- Protection, stabilisation and rehabilitation of the hind dune;
- Weed control;
- Provision of controlled vehicle and pedestrian access;
- Visitor safety and experience;
- Rubbish dumping, vandalism and anti-social behaviour; and
- Provision of visitor services and facilities.

### 12.3.3 Desired future character

This Management Zone is proposed to develop as a high quality recreational and tourist orientated area in a rehabilitated coastal sand dune environment. To reduce the impact on the ecology of the Park, and reduce possible additional clearing of vegetation, the majority of development is proposed in previously disturbed and degraded areas.

Future development would be subject to a separate and rigorous approval process. As part of this assessment, the potential development would be considered subject to the applicant providing further documentation and studies to support the proposal.

Degraded quarry areas offer opportunities for iconic built forms and structures that blend with existing landscape features and celebrate the coastal character of the park. The design and architectural features of buildings and landscaping in this Management Zone may be subject to an international design competition which encourages the use of best practice sustainable design and construction methods. The urban design of this Management Zone should aim to create a unified pedestrian and cycle friendly 'village' atmosphere that relates strongly to the coastal and wetland landscapes. Where possible, facilities should aim for high levels of self sufficiency through the use of passive solar power generation, grey water recycling for irrigation and composting toilets.

Facilities within this Management Zone could include low impact tourist and visitor accommodation, commerce, education and research facilities, cafés, restaurants and beer gardens, conference facilities, galleries, small to medium sized outdoor entertainment spaces, wedding reception facilities, community gathering spaces, picnic areas, playgrounds and dog exercise areas. Supporting infrastructure such as car parking, cycleways and visitor amenities would also be required in this Management Zone. Visitors can drive around a network of sealed roads, however beach access is limited to authorised permit holders of 4WD vehicles.

The preparation of Design Guidelines will enable the area to develop cohesively and respond sensitively to the unique sand dune environment, where possible incorporating natural resources available on site into the design.

Interpretation programs within this area should focus on telling the story of the site's mining history using creative means to communicate with park visitors.

### 12.3.4 Permissible activities

The following table provides examples of permissible activities within Management Zone 3: Sand Plain Zone.

Table 9: Sand Plain Zone – Permissible activities

Permissible Activities	Prohibited Activities
<ul style="list-style-type: none"> <li>• Tourist accommodation (e.g. cabins, huts, caravan sites)</li> <li>• Passive recreation (Walking, cycling, picnics, barbeques, community gatherings and social functions)</li> <li>• Commerce, restaurants, cafés and beer gardens (activities approved by BWSP Trust only)</li> <li>• Education and study facilities</li> <li>• Wedding reception facilities</li> <li>• Commercial hire activities (activities approved by BWSP Trust only)</li> <li>• Dogs (on-leash in designated areas)</li> <li>• Special events (events approved by BWSP Trust only)</li> <li>• Rehabilitation works (rehabilitation Approved by BWSP Trust only)</li> <li>• Public art and cultural installations (activities approved by BWSP Trust only)</li> <li>• Dune rehabilitation and erosion control programs</li> <li>• Fire management activities</li> <li>• Horseriding within areas designated by the BWSP Trust</li> <li>• Asset protection activities (e.g. perimeter barrier structures/observation towers/barrier fences)</li> <li>• Registered off-road vehicles permitted on designated access ways or areas approved by the BWSP Trust</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial development that is not in keeping with the reserve's stated values and objectives</li> <li>• Open wood fires</li> <li>• Hunting/Use of firearms</li> <li>• Littering, rubbish dumping, vandalism</li> <li>• Motor bikes (Minibike, quad bike and motorcross bike) and any unregistered vehicle</li> </ul>

## 12.3.5 Action Plan

## VEGETATION AND HABITAT MANAGEMENT

Objective	Strategy	Priority	Stage
Rehabilitate degraded areas to a high standard.	1. Progressively remove dominant weed species and rehabilitate degraded areas with local provenance plant stock.	Low	All stages
	2. Non invasive exotic species are permitted around key development areas where a maintenance program is implemented.	Low	All stages
	3. Undertake ecological and hazard reduction burns within biodiversity thresholds.	Ongoing	All stages

## RECREATION FACILITIES

Objective	Strategy	Priority	Stage
Provide a variety of high quality recreation opportunities that satisfy a range of visitor expectations.	1. Provide and maintain public recreation facilities in existing degraded areas, including: <ul style="list-style-type: none"> <li>• Picnic areas with gas/electric barbeques</li> <li>• Public toilets and drinking fountains</li> <li>• Children's playground</li> <li>• Public entertainment areas</li> <li>• Viewing platforms</li> <li>• Pedestrian walkways</li> <li>• Cycleways</li> <li>• Bike racks</li> <li>• Signage</li> </ul>	High/ Medium	All stages
	2. Provide and maintain camping areas accessible for a fee.	High	Stage 1
	3. Encourage small to medium sized outdoor entertainment activities such as music performances, outdoor theatre/cinema etc.	Medium	All stages

## HERITAGE

Objective	Strategy	Priority	Stage
Protect and enhance cultural heritage values.	1. Focus on interpretation that tells the story of the park's natural and industrial heritage within this Management Zone.	Low	All stages

## REGULATION OF ACTIVITIES

Objective	Strategy	Priority	Stage
Reduce the incidence of anti-social behaviour and discourage inappropriate activities.	1. Rubbish bins to be placed in strategic locations and include a recycling component.	High	Stage 1
	2. Install gas/electric barbecues and discourage open fires within the park.	Medium	All stages
	3. Dogs are permitted on-lead within this Management Zone.	Medium	Stage 1

## SERVICES AND INFRASTRUCTURE

Objective	Strategy	Priority	Stage
Provide services and infrastructure in a manner that respects the park's key values.	1. Situate facilities such as roads and carpark in existing degraded areas and ensure they harmonise with their surroundings and are visually unobtrusive.	High/ Medium	All stages
	2. Locate car parking facilities close to main access roads to limit the extent of hard surfaces within the park.	Medium	All stages
	3. For developments that are remote from services, investigate on-site treatment of waste water and the use of alternative energy sources such as solar power.	N/A	N/A
	4. Select materials that are in keeping with the coastal character of the BWSP such as sand, timber and native grasses. Exotic turf species are to be avoided. Non permeable surfaces are to be minimised.	N/A	All stages
	5. New infrastructure is to be contemporary in form and reflect the coastal character of the site and its environs'.	N/A	All stages

## ECONOMIC SUSTAINABILITY

Objective	Strategy	Priority	Stage
To ensure the long term financial viability of BWSP.	1. Provide areas for commercial development that are in keeping with the park's values and character.	High	All stages
	2. Foster the development of commercial activities which would enhance the use of the park.	High	All stages
	3. Ensure that all commercial leases and licenses represent a sound financial return reflecting full land value.	High	All stages
	4. Identify and access funding available through government grant programs.	As required	All stages
	5. All significant commercial developments to be subject to a competitive tendering process to ensure a competitive financial return.	N/A	All stages

## EDUCATION

Objective	Strategy	Priority	Stage
To enhance visitor understanding of the park's natural and cultural values and provide research and educational opportunities.	1. Provide facilities and infrastructure that support learning, such as; <ul style="list-style-type: none"> <li>• A Visitor Centre</li> <li>• Guided tours (including cultural heritage tours in conjunction with:               <ul style="list-style-type: none"> <li>▪ Bahtabah Local Aboriginal Land Council;</li> <li>▪ Awabakal Traditional Owners Aboriginal Corporation; and</li> <li>▪ Awabakal Descendants Traditional Owners Aboriginal Corporation</li> </ul> </li> <li>• Interpretive signage</li> </ul>	Medium	Stage 2

# Part D



## Implementation and Review

Part D considers the implementation of this Plan of Management and contains information on potential funding sources, reporting, evaluation and review.

## 13.0 Funding

Funding is integral to the implementation of this PoM. An objective of this Plan is to establish and maintain sources of funding that ensure the long-term economic viability of BWSP while keeping its uses in accordance with the reserve's stated values and purpose.

Under section 106 of the *Crown Lands Act 1989* revenue generated from a Crown reserve (i.e. through the sale of assets and from commercial leases and licenses) should be directed to improving the reserve or for the general purposes of the Reserve Trust, unless the Minister makes a specific direction.

The Trust may seek funding from a variety of sources to support its activities, as outlined below.

### 13.1 Development opportunities

The BWSP Trust recognises the importance of securing the park's long term financial position without relying on ongoing capital funding from Government. While Government support will be required to kickstart initial investment in park infrastructure, the Trust has determined to seek funding from external entrepreneurial sources to ensure a regular income is generated to support the park's activities.

The following income generating opportunities will be further investigated:

- Provision of tourist accommodation facilities, initially in the form of basic camping areas and later, if demand dictates, more permanent holiday dwellings such as cabins or lodges.
- Provision of areas for community events such as music festivals, markets, outdoor cinema and the like.
- Creation of a central Beach Village to facilitate activities such as dining, picnicking, bike hire, commerce, educational and cultural activities.

### 13.2 Potential sources of grant funding

Loans and grants are available from a number of sources to assist with capital works and improvements to the BWSP. At the time of writing, available grants include, but are not limited to, the sources listed in Table 10:

Table 10: Potential Sources of Grant Funding (correct as at December 2009)

FEDERAL		
Organisation Title	Grant	Details
Department of Environment, Heritage, Water and the Arts	Caring for Our Country	Environmental and natural resource management projects. Envirofund: small community-based projects tackling important local coastal and marine natural resource management problems. Bushcare Program: conserving and restoring habitat for native flora and fauna. Coastcare: regeneration and associated construction works, and educational and awareness programs.
Attorney Generals Department – Emergency Management Australia	Bushfire Mitigation Fund	Funding for the construction, maintenance and signage of fire trail networks.
Wetland Care Australia – funded by the Natural Heritage Trust	Living Wetlands Fund	Allocates funds aimed at protecting and conserving wetlands and associated habitats.
Department of Resources Energy and Tourism	TQUAL	A grants program providing assistance to businesses in the tourism industry.



Department of Infrastructure, Transport, Regional Development and Local Government	Community Infrastructure Program	The funding is for local government to stimulate growth and economic activity across Australia and support national productivity and community well-being.  Funding would need to be accessed under the auspices of Lake Macquarie City Council
Department of Agriculture, Fisheries and Forestry	National Landcare Program	Supports the Landcare movement and the sustainable use and management of natural resources. This program is mainly directed at farmers but there may be possibilities for BWSP.
Department of Agriculture, Fisheries and Forestry	Recreational Fishing Community Grants Program	Improvements to fishing infrastructure (fish cleaning tables, tracks to fishing places), protecting sensitive habitats, education and awareness raising.
Department of Environment and Water Resources; Dept. of Agriculture, Fisheries and Forestry	Community Water Grants	Projects related to water saving and efficiency, water recycling, and water treatment.
<b>STATE</b>		
<b>Organisation Title</b>	<b>Grant</b>	<b>Details</b>
Department of Planning	NSW Coastline Cycleway grants program	Funding is available for the development and implementation of cycleways along the NSW Coastline Cycleways route.
NSW Heritage Office	Heritage study and promotion	Grants are offered for research, management and conservation of significant heritage items.
NSW Heritage Office	Heritage Incentives Program	Identification, conservation, management and promotion of NSW heritage.
NSW Land and Property Management Authority	Public Reserves Management Fund	Loans and grants are available for the development, maintenance and protection of Crown Reserves throughout NSW. The PRMF is self funding and so funding and grants are generally in the form of loans.
NSW Rural Fire Service	Bushfire Mitigation Works Fund	Assistance with fire prevention and mitigation measures.
Department of Environment and Climate Change	Environmental Trust	Supports restoration, rehabilitation, research and education programs.
Department of Environment and Climate Change	Coastal Management Program	Preparation of coastal studies and coastline management plans; construction of works for conservation/ improvement of beaches and public reserves; management measures and works to reduce potential damage from coastal processes in existing developed areas.
Department of Environment and Climate Change	Estuary Management Program	Management and restoration of rivers and lakes.
Department of Arts, Sport and Recreation	Capital Assistance Program	Community-oriented sporting and / or recreational facilities.
Department of State and Regional Development	'Your Community – Your Future' Community Economic Development (CED) Program	Program to support increased business and economic activity for regional populations over 2000 people.
NSW Maritime	Better Boating Program	Provide waterways infrastructure (foreshore improvements, construction of boat ramps and jetties, foreshore access) for the boating community.

NSW Office of Liquor, Gaming and Racing	Community Development and Support Expenditure Scheme	Encourages larger registered clubs in NSW to contribute to the provision of front-line services and community projects.
HCRCMA	Implementation of Catchment Action Plan	Provides assistance with revegetation works.
<b>OTHER</b>		
<b>Organisation</b>	<b>Grant</b>	<b>Details</b>
Energy Australia	Energy Australia Conservation Awards	Provides recognition for outstanding conservation projects across NSW.

### 13.3 Local Government Funding

Local Councils make direct financial contributions to sites such as BWSP and also act as a conduit for obtaining funds from State Government authorities.

Lake Macquarie City Council, in conjunction with Newcastle City Council will coordinate funding of the final stage of the Fernleigh Track development which traverses BWSP (Lake Macquarie City Council and Newcastle City Council, 1999).

### 13.4 Other Sources of Funding

There are a number of possibilities for obtaining contributions from the community. Local businesses and government authorities may be approached for sponsorship either for specific activities, for example, wetland rehabilitation, or for the BWSP as a whole.

Fundraising activities are a good way of encouraging the community to become involved in supporting the BWSP. Establishment of an organisation such as Friends of the Wetlands Park with membership fees and regular fund raising events is an appropriate way to encourage community participation.

### 13.5 Future leases and licenses

Under the *Crown Lands Act 1989*, Trusts may enter into leases and licenses with individuals, companies, incorporated associations or local government bodies for all or part of the lands to which this PoM applies, provided;

- a) the lessee or licensee uses the reserve in a way that is consistent with the reserves stated purposes;
- b) the use or occupation of the land is in accordance with the provisions of the *Crown Lands Act 1989*; and
- c) the use or occupation of the land is in accordance with this PoM.

The Minister's consent to enter a lease or license agreement is required unless it is for short term, low impact use, in which case a temporary license may be granted. Temporary licenses (up to one year) are permitted under section 108 of the *Crown Lands Act 1989*. The purposes for which a temporary license may be granted are listed in clause 31 of the *Crown Lands Regulation, 2006*.

## **14.0 Reporting, Evaluation and Review**

### **14.1 Reporting**

The BWSP Trust is required to produce a report on its activities at the end of each financial year in accordance with section 122 of the *Crown Lands Act 1989*. The contents of the report are outlined in clause 32 of the *Crown Lands Regulation 2006*. The Minister may direct certain reporting from the Trust or may carry out an audit on the affairs of the Trust if or when it is deemed necessary.

### **14.2 Evaluation**

The objectives and strategies outlined in the PoM will form the framework for qualitative reporting on performance. Evaluation of performance should coincide with the end of year report produced by the Trust board.

### **14.3 Review**

Under section 115 of the *Crown Lands Act 1989* the PoM may be altered and should be subject to regular review. A full review may be required from time to time to keep up to date with government legislation and policy changes and to ensure the Plan of Management remains relevant and useful. Reviews should occur at regular intervals.

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# Appendices



Appendix A: Historical Chronology of BWSP

Appendix B: BWSP Agencies and Stakeholders


Appendix C: Legislation, Policy and Plans

Appendix D: Zoning


Appendix E: Threatened Species Database Search

Appendix F: Lake Macquarie City Council Fauna Database

## APPENDIX A: Historical Chronology of BWSP

DATE	EVENT	SOURCE
	<p>The Lake Macquarie region was the traditional home of the Awabakal people who occupied the coastal territory between Tuggerah Lakes and the Hunter Valley. Archaeological digs and missionary reports indicate the Awabakal people were well provided for by nature with food sources including fish, shellfish, small mammals, birds and reptiles.</p>  <p><b>Figure 1:</b> Plaque telling the Aboriginal story of 'The Night the Moon Cried', a dreaming legend about the creation of Belmont Lagoon.</p>	<p>The Herald, 2006, 'Lake Macquarie Life and Times', Herald Supplement.</p> <p>Image Source: Source: Lake Macquarie City Council, accessed online 9 June 2009, <a href="http://www.lakemac.infohunt.nsw.gov.au/lmphotos/lak006/lak00635.htm">http://www.lakemac.infohunt.nsw.gov.au/lmphotos/lak006/lak00635.htm</a></p>
1825	<p>European settlement commences in the Lake Macquarie region with the arrival of Reverend Lancelot Threlkeld in 1825. Threlkeld established an Aboriginal mission and carefully documented the Awabakal language although the mission eventually failed. Threlkeld also established the Ebenezer Coal works at Coal Point which shipped coal to Sydney until the early 1840's.</p>	<p>The Herald, 2006, 'Lake Macquarie Life and Times', Herald Supplement.</p> <p>Clouten, K, 1967, <i>Reids Mistake – The Story of Lake Macquarie from its discovery until 1890</i>, Lake Macquarie Shire Council.</p>
1883-1886	<p>Land west of Nine Mile Beach was granted to the Redhead Coal Mining Company Limited and a railway line was constructed northwest of Belmont Lagoon through the wetlands to Adamstown (Now known as the Fernleigh Track). The line was used to transport coal until it was closed in 1991.</p>	<p>Lake Macquarie City Council, 2009, 'History of Redhead', available online &lt;<a href="http://www.lakemac.infohunt.nsw.gov.au">www.lakemac.infohunt.nsw.gov.au</a>&gt;.</p>
December 1916	<p>First passenger train runs along the Fernleigh Track.</p>	<p>Newcastle Cycleways Movement, 2009 available online &lt;<a href="http://users.hunterlink.net.au/~magsb/FernleighTrack.htm#History">http://users.hunterlink.net.au/~magsb/FernleighTrack.htm#History</a>&gt;.</p>
1925	<p>BHP leased the land from the Redhead Coal Mining Company Limited and opened the John Darling Colliery on the site that is now the Belmont Christian College. The John Darling Colliery extracted coal from both the Stockton Borehole and the Victoria Tunnel seams at depths of 265m and 197m respectively until closure of the BHP Collieries underground operations in 1987.</p>	<p>BHP Steel, 1991, <i>Belmont Sands, An Introduction</i>, Promotional Report.</p>
1939-1945	<p>An army camp and jungle training facility were reportedly established on the site near Kalaroo Road.</p>	<p>BHP, <i>Belmont Site Project Information Report</i>, July 1994.</p>



DATE	EVENT	SOURCE
1939-1945	During WW11 the Department of Defence dredged Cold Tea Canal, dividing Belmont Lagoon into two unequal parts and allowing saline waters from Lake Macquarie to enter the once freshwater lagoon.	Conroy, B.A. (Dr) & Linich, M.A. 1983, <i>An Evaluation for Belmont Lagoon and Surrounding Wetlands: A report to Lake Macquarie Council and The Broken Hill Propriety Company Limited.</i>
Late 1950's	Dredge mining of minerals commenced on the site. Coffs Harbour Rutile NL was granted permission to extract rutile and zircon from the sand dunes. Dredge mining of minerals concluded in 1967.	Lake Macquarie Coastal and Wetlands Alliance, <i>Belmont Wetlands Coastal Reserve: Submission to the NSW Premier's Department</i> , undated.
August 1963	BHP purchased the freehold title to the land from the Redhead Coal Mining Company Limited.	BHP, <i>Belmont Site Project Information Report</i> , July 1994.
Late 1960's	Site rehabilitation was undertaken using a mixture of native and exotic species including Bitou Bush and Western Australian Black Wattle which have successfully colonised the site and are now considered to be significant weeds.	
1967	BHP concluded dredge mining of minerals on site.	BHP, <i>Belmont Site Project Information Report</i> , July 1994.
Late 1960's	Hymix Industries leased the site from BHP.	Lake Macquarie Coastal and Wetlands Alliance, <i>Belmont Wetlands Coastal Reserve: Submission to the NSW Premier's Department</i> , undated.
Early 1970's	BHP purchased the freehold title to the John Darling Colliery land.	BHP, <i>Belmont Site Project, Information Report</i> , July 1994.
April 1971	Last passenger train service ran between Belmont and Adamstown.	Lake Macquarie City Council & Newcastle City Council, <i>Implementation Plan for the Fernleigh Track</i> , February 1999.
	 <p><b>Figure 2:</b> Aboard the last passenger train to Belmont 8<sup>th</sup> April, 1971.</p>	Image Source: <i>Lake Macquarie City Council</i> , accessed online 9 June 2009, <a href="http://www.lakemac.infohunt.nsw.gov.au/Imphotos/lak030/lak03093.htm">http://www.lakemac.infohunt.nsw.gov.au/Imphotos/lak030/lak03093.htm</a>
Mid 1970's	Hymix Industries commenced extraction of sand for the construction industry.	URS, <i>Belmont Sands Site Condition Assessment</i> , Prepared for BHP Pty Ltd, 8 September 2000.
1987	Closure of the John Darling Colliery.	BHP Steel, 1991, <i>Belmont Sands, An Introduction</i> , Promotional Report.

DATE	EVENT	SOURCE
April 1991	The John Darling Pit Top site with its heritage buildings was sold to the Belmont Christian School.	BHP, <i>Belmont Site Project, Information Report</i> , July 1994.
December 1991	The Fernleigh Track ceases to be used to transport coal following the closure of the Lambton B Colliery at Redhead.	Lake Macquarie City Council & Newcastle City Council, <i>Implementation Plan for the Fernleigh Track</i> , February 1999.
1991	BHP proposed a tourist development including hotels, conference centre, 18 hole golf course and sports centre.	BHP Steel, 1991, <i>Belmont Sands, An Introduction</i> , Promotional Report.
Late 1992	Proposed tourist development concept was abandoned.	BHP, <i>Belmont Sands Community Consultation</i> , Appendix 1, A Briefing Paper, 1994.
1993-1999	BHP proposed residential development of the site which was strongly opposed by the local community.	BHP, <i>Belmont Site Project, Information Report</i> , July 1994.
1998	Various options for an East Belmont road bypass were considered with a view to connecting into the proposed Belmont Sands development.	Connell Wagner Pty Ltd, 1998, <i>Proposed Belmont Sands Development, Traffic Assessment and Belmont Bypass Investigation</i> , BHP Steel – Property section.
2000	Lake Macquarie Coastal and Wetlands Alliance prepared a submission to the NSW Premier's Department calling for the site to become 'Belmont Wetlands Coastal Reserve'.	Lake Macquarie Coastal and Wetlands Alliance, <i>Belmont Wetlands Coastal Reserve: Submission to the NSW Premier's Department</i> , undated.
July 2000	NSW Government and BHP signed a Memorandum of Understanding for the transfer of BHP lands at Belmont, Kooragang Island, Newcastle Steelworks Main site and West Wallsend to the NSW Government.	Media Release, Hon J R Face, MP Minister Assisting the Premier on Hunter Development, 3 July 2000.
October 2001	BHP vacated the site.	Lake Macquarie Coastal Wetlands Park, 2007, LRO Publications
2001	Former BHP land at Belmont transferred to NSW Government.	Media Release, Hon J R Face, MP Minister Assisting the Premier on Hunter Development, 3 July 2000.
2003	Northern section of the Fernleigh Track Cycleway opens.	The Herald, 2006, 'Lake Macquarie Life and Times', Herald Supplement.
February 2003	Premier Carr appoints a Community Consultative Committee to provide advice on suitable management and access arrangements for the former BHP land.	Media Release, Belmont Wetlands; Community to Have Say, Milton Orkopoulos MP, 16 February, 2003.
2004	Belmont Wetlands Advisory Committee recommends to the NSW Premier that the former BHP land between Belmont and Redhead be dedicated as a Crown Reserve under Part 5 of the Crown Lands Act 1989 for the purposes of conservation, recreation and ecotourism and that a community Trust board be established under Section 92 of the Crown Lands Act 1989 to manage the Reserve.	Belmont Wetlands Advisory Committee, <i>Advice to the Premier of New South Wales, Future Management of Former BHP Lands Between Redhead and Belmont</i> , October 2004.
3 March 2006	NSW Minister for Lands Tony Kelly declared the establishment of the Belmont Wetlands State Park Trust.  BWSP was proclaimed as Crown Reserve No.1011388 for Coastal Environmental Protection, Public Recreation and Tourism and Services.	
2009	Preparation of Summary Issues Paper and PoM for BWSP.	

## APPENDIX B: BWSP Agencies and Stakeholders

Various agencies and stakeholders have an important role to play in the implementation, review and evaluation of this PoM. Table 1 lists the roles and responsibilities of key agencies and stakeholders.

Table 1: Agencies and Stakeholders of BWSP

STAKEHOLDER	ROLES AND RESPONSIBILITIES
1. NSW Land and Property Management Authority	<ol style="list-style-type: none"> <li>1. Land owner</li> <li>2. Approval role (under delegation of the Minister for Lands) for various matters, including; reservation of land, trust appointment, PoM adoption, development consent, approval for leases or licenses entered</li> <li>3. Provide an assisting role in the ongoing management of the park</li> <li>4. Promote and raise awareness of BWSP facilities and services</li> <li>5. Provide statutory and legislative planning advise to the Trust for effective management of Crown Land</li> <li>6. Provide operational support</li> <li>7. Monitor grant funding opportunities and assist the Trust with grant applications where appropriate</li> <li>8. Ensure consistent management with adjacent Crown Land not in BWSP</li> <li>9. Support BWSP Trust in seeking state government funding</li> </ol>
2. Belmont Wetlands State Park Trust	<ol style="list-style-type: none"> <li>1. Manage the affairs of BWSP, i.e. care, control and management of the reserve</li> <li>2. 'Land owner' in terms of a range of matters</li> <li>3. Implement this Plan of Management in accordance with the objectives and strategies outlined</li> <li>4. Manage lessees and licensees</li> <li>5. Manage financial matters of the reserve</li> <li>6. Promote BWSP</li> <li>7. Submit a board report to the Minister each financial year</li> <li>8. Provide an indication of the relevant community attitudes and issues with the management of BWSP</li> </ol>
3. Lake Macquarie City Council	<ol style="list-style-type: none"> <li>1. Neighbouring landholder</li> <li>2. Promote the park as a recreational resource</li> <li>3. Promote the park as an environmentally sustainable asset</li> <li>4. Provide infrastructure and amenity to improve connectivity</li> <li>5. Assist with the management of the park</li> <li>6. Ensure that existing and future planning strategies affecting the park and adjacent lands do not prejudice the future of BWSP</li> <li>7. Liaise with Newcastle City Council, joint owner of the Fernleigh Track corridor which traverses the park</li> </ol>

4. Hunter Water Corporation	<ol style="list-style-type: none"> <li>1. Neighbouring land holder</li> <li>2. Provide information and advice on the operation of their assets and potential impacts</li> <li>3. Participate in decisions that directly affect their land or are believed to have an impact on BWSP</li> <li>4. Ensure that future upgrades of existing infrastructure are compatible with the Parks management objectives</li> <li>5. Hold and manage utility easements within BWSP</li> </ol>
5. Hunter-Central Rivers Catchment Management Authority	<ol style="list-style-type: none"> <li>1. Provide advice on linking to the Hunter Central Rivers Catchment Action Plan</li> <li>2. Monitor relevant grant funding opportunities and advise the Trust</li> <li>3. Provision of environmental expertise</li> </ol>
6. The Aboriginal Community	<ol style="list-style-type: none"> <li>1. Provide information pertaining to culturally sensitive sites</li> <li>2. Participate in and promote the local awareness for the land and its indigenous flora and fauna and cultural values</li> <li>3. Regularly liaise with the Trust regarding management actions which impact on items of indigenous heritage</li> </ol>
7. Department of Environment and Climate Change (DECC)	<ol style="list-style-type: none"> <li>1. Provide information / recommendations for legislation and policy making for BWSP particularly in relation to climate change, conservation and environmental impacts</li> <li>2. Provide advice on the management of site clearing, cleaning and stabilisation for future use</li> <li>3. Advise the Trust of potential hazards and pollution which may affect the Park</li> </ol>
8. Energy Australia	<ol style="list-style-type: none"> <li>1. Hold and maintain utility easements within BWSP</li> <li>2. Provide and manage infrastructure for electricity and gas</li> <li>3. Ensure that infrastructure upgrades reduce environmental impact on existing Park users and the environment</li> </ol>
9. Fernleigh Track Committee	<ol style="list-style-type: none"> <li>1. Continue support, funding, and awareness among the community for the successful installation of subsequent stages of the Fernleigh Track</li> <li>2. Appropriately integrate management of the track with BWSP</li> <li>3. Monitor the development and operations of the Track within the Park and regularly inform the Trust</li> </ol>
10. Neighbouring Landholders	<ol style="list-style-type: none"> <li>1. Source of local knowledge and support for BWSP activities</li> <li>2. Assist with surveillance and reporting of any inappropriate activity within BWSP</li> <li>3. Respect and create awareness for access and proper use of BWSP</li> <li>4. Ensure that domestic animals or weeds do not enter the Park from their lands</li> <li>5. Avoid any encroachments onto the park from their lands</li> </ol>
11. Lessees and Licensees	<ol style="list-style-type: none"> <li>1. Attract a greater portion of users to BWSP through provision of services</li> <li>2. Ensure compliance with operating terms of licences and lessees in a timely manner</li> <li>3. Help to promote the values of the park and the Trust's role and activities</li> </ol>

12. Visitors	<ol style="list-style-type: none"> <li>1. Create a friendly and sociable environment by using BWSP facilities responsibly</li> <li>2. Provide feedback to the Trust on the needs of the park users over time</li> <li>3. Act in a manner that does not damage the Park and its environment</li> <li>4. Do not create any conflicts with the Parks neighbours</li> </ol>
13. Volunteer community groups	<ol style="list-style-type: none"> <li>1. Participate in and assist the Trust's roles and activities</li> <li>2. Provide funding and resources for management activities</li> <li>3. Ensure that their actions are consistent with the management plan</li> </ol>
14. The wider community	<ol style="list-style-type: none"> <li>1. Promote BWSP as a friendly environment for all ages</li> <li>2. Create community groups to occupy and enjoy BWSP's natural assets</li> <li>3. Provide feedback to the Trust on ways to further improve the experience of the Park</li> </ol>

## APPENDIX C: Legislation, Policy and Plans

### NSW Crown Lands Act (1989)

As the Belmont Wetlands State Park is Crown Land, the *Crown Lands Act 1989* applies to any works proposed. Just under half of NSW is Crown Land. The Act provides for the assessment, allocation, use and management of the NSW Crown estate. It provides for the reservation of Crown Lands for various public purposes, appointment of reserve trusts, adoption of Plan's of Management and where appropriate, the leasing, licensing and sale of land. The overall principles of this Act are as follows:

- (a) that environmental protection principles be observed in relation to the management and administration of Crown land,*
- (b) that the natural resources of Crown land (including water, soil, flora, fauna and scenic quality) be conserved wherever possible,*
- (c) that public use and enjoyment of appropriate Crown land be encouraged,*
- (d) that, where appropriate, multiple use of Crown land be encouraged,*
- (e) that, where appropriate, Crown land should be used and managed in such a way that both the land and its resources are sustained in perpetuity, and*
- (f) that Crown land be occupied, used, sold, leased, licensed or otherwise dealt with in the best interests of the State consistent with the above principles.*

### Heritage Act (1977)

A number of Heritage items are located on the subject site. No specific Aims or Objectives are specified within the legislation.

### Environmental Protection and Biodiversity Conservation Act

The *Environmental Protection and Biodiversity Conservation Act* applies to proposed development. The aims and objectives of the Act are as follows.

- to conserve biological diversity and promote ecologically sustainable development*
- to prevent the extinction and promote the recovery of threatened species, populations and ecological communities to protect the critical habitat of those threatened species, populations and ecological communities that are endangered*
- to eliminate or manage certain processes that threaten the survival or evolutionary development of threatened species, populations and ecological communities*
- to ensure that the impact of any action affecting threatened species, populations and ecological communities is properly assessed*
- to encourage the conservation of threatened species, populations and ecological communities by the adoption of measures involving co-operative management.*

### NSW Coastal Protection Act (1979)

The *Coastal Protection Act* governs all development within the Coastal Zone. As the Belmont Wetlands State Park fronts onto Nine Mile Beach to the east a substantial portion of the site will be subject to assessment under this legislation. The objects of this act are as follows:

*The objects of this Act are to provide for the protection of the coastal environment of the State for the benefit of both present and future generations and, in particular:*

- (a) to protect, enhance, maintain and restore the environment of the coastal region, its associated ecosystems, ecological processes and biological diversity, and its water quality, and*
- (b) to encourage, promote and secure the orderly and balanced utilisation and conservation of the coastal region and its natural and man-made resources, having regard to the principles of ecologically sustainable development, and*
- (c) to recognise and foster the significant social and economic benefits to the State that result from a sustainable coastal environment, including:*
  - (i) benefits to the environment, and*
  - (ii) benefits to urban communities, fisheries, industry and recreation, and*
  - (iii) benefits to culture and heritage, and*
  - (iv) benefits to the Aboriginal people in relation to their spiritual, social, customary and economic use of land and water, and*
- (d) to promote public pedestrian access to the coastal region and recognise the public's right to access, and*
- (e) to provide for the acquisition of land in the coastal region to promote the protection, enhancement, maintenance and restoration of the environment of the coastal region, and*
- (f) to recognise the role of the community, as a partner with government, in resolving issues relating to the protection of the coastal environment, and*
- (g) to ensure co-ordination of the policies and activities of the Government and public authorities relating to the coastal region and to facilitate the proper integration of their management activities, and*
- (h) (Repealed)*

### **NSW Native Vegetation Act 2003**

The *Native Vegetation Act* applies to all non-urban zoned land within the state. This Act has increased the role of the local CMA in the process of managing vegetation on affected land. Consultation with the HCRCMA will need to be undertaken. The objects of this Act are:

- (a) to provide for, encourage and promote the management of native vegetation on a regional basis in the social, economic and environmental interests of the State, and*
- (b) to prevent broadscale clearing unless it improves or maintains environmental outcomes, and*
- (c) to protect native vegetation of high conservation value having regard to its contribution to such matters as water quality, biodiversity, or the prevention of salinity or land degradation, and*
- (d) to improve the condition of existing native vegetation, particularly where it has high conservation value, and*
- (e) to encourage the revegetation of land, and the rehabilitation of land, with appropriate native vegetation, in accordance with the principles of ecologically sustainable development.*

### **NSW Coastal Crown Lands Policy 1991**

This Policy governs all Crown Land development in Coastal locations. Given the BWSP has direct access to Nine Mile Beach and directly adjoins this coastal area this Policy applies to the site. The aims and objectives of this Policy are as follows:

*Conserve and maintain the intrinsic environmental and cultural qualities of coastal Crown lands;*

*Retain all coastal Crown lands, of an environmentally sensitive nature and/or required for a public purpose, in public ownership;*

*Optimise public access and use of Coastal crown lands;*

*Provide Crown lands, as appropriate, for recreation, tourism, residential and commercial coastal development, with due regard to the nature and consequences of coastal processes;*

*Encourage the rehabilitation of degraded coastal Crown lands; and*  
*Continue to acquire for future public use significant coastal lands into Crown ownership*

### **NSW Coastal Policy**

As the site is located in a coastal area the NSW Coastal Policy applies. This focuses on the Ecologically Sustainable Development of Coastal regions.

*Protecting, rehabilitating and improving the natural environment of the coastal zone.*

*Recognising and accommodating the natural processes of the coastal zone.*

*Protecting and enhancing the aesthetic qualities of the coastal zone.*

*Protecting and conserving the cultural heritage of the coastal zone.*

*Providing for ecologically sustainable development and use of resources.*

*Providing for ecologically sustainable human settlement in the coastal zone.*

*Providing for appropriate public access and use.*

*Providing information to enable effective management of the coastal zone.*

*Providing for integrated planning and management of the coastal zone.*

### **NSW SEPP 14 – Coastal Wetlands**

The site is mapped as including SEPP 14 wetlands 861, 866 and 867. Although it is noted that the Directory of Important Wetlands of Australia (DIWA) maps a more extensive range than SEPP 14, this is not a Legislative Document.

### **NSW SEPP 71 – Coastal Protection**

The site is located within the Coastal Zone, and as a result, SEPP 71, Coastal Protection applies to the subject site. The aims and objectives of this policy are:

(1) This Policy aims:

- (a) to protect and manage the natural, cultural, recreational and economic attributes of the New South Wales coast, and
- (b) to protect and improve existing public access to and along coastal foreshores to the extent that this is compatible with the natural attributes of the coastal foreshore, and
- (c) to ensure that new opportunities for public access to and along coastal foreshores are identified and realised to the extent that this is compatible with the natural attributes of the coastal foreshore, and
- (d) to protect and preserve Aboriginal cultural heritage, and Aboriginal places, values, customs, beliefs and traditional knowledge, and
- (e) to ensure that the visual amenity of the coast is protected, and
- (f) to protect and preserve beach environments and beach amenity, and
- (g) to protect and preserve native coastal vegetation, and
- (h) to protect and preserve the marine environment of New South Wales, and
- (i) to protect and preserve rock platforms, and
- (j) to manage the coastal zone in accordance with the principles of ecologically sustainable development (within the meaning of section 6 (2) of the *Protection of the Environment Administration Act 1991*), and



(k) to ensure that the type, bulk, scale and size of development is appropriate for the location and protects and improves the natural scenic quality of the surrounding area, and

(l) to encourage a strategic approach to coastal management.

(2) This Policy:

(a) identifies State significant development in the coastal zone, and

(b) requires certain development applications to carry out development in sensitive coastal locations to be referred to the Director-General for comment, and

(c) identifies master plan requirements for certain development in the coastal zone.

(3) This Policy aims to further the implementation of the Government's coastal policy.

### **NSW Lower Hunter Regional Strategy**

The Lower Hunter Regional Strategy applies to the subject site. The area is mapped as being Rural Land and Environmental Assets. This strategy is mainly concerned with the provision of land for residential development and environmental corridors. Although the site is mapped as being suitable for neither of these forms of development the provision of a PoM for a State Park will be consistent with the overall aims and objectives of the Strategy.

### **Lake Macquarie Coastline Management Plan**

The Lake Macquarie Coastline Management Plan focuses on areas of the Lake Macquarie coastline that are directly affected by coastal processes and those adjoining areas that are intrinsically linked to the coastline through hydrological, ecological, geological, cultural, recreational or visual attributes (Umwelt et al, 1999, p.1). The Plan proposes a 'Whole of Coastline' approach to management under which a Coastline Protection Zone would be established along the entire coastline of Lake Macquarie. Any recommendations for activities within the zone should take into consideration the objectives and strategies outlined in this Plan.

### **Lake Macquarie Coastal Wetlands Park Proposal**

The Lake Macquarie Coastal Wetlands Park Proposal advocates the recognition of ten (10) separate areas of land in east of Lake Macquarie as part of one Coastal Wetland Park system. The proposal aims to ensure the lands are in secure land tenure, are co-operatively co-managed and secure ongoing funding. The BWSP is included in this proposal and when considered as part of this linked system of parks and reserves its significance is amplified and opportunities for the sites long term protection and rehabilitation are increased. The overall aims and objectives of this proposal should be taken into consideration when managing BWSP.

## APPENDIX D: Zoning

ZONE AIMS AND OBJECTIVES	WITHOUT DEVELOPMENT CONSENT	WITH DEVELOPMENT CONSENT	PROHIBITED
<p><b>5 (Infrastructure)</b></p> <ul style="list-style-type: none"> <li>• provide land for future infrastructure needs such as roads, drainage and other utilities, and</li> <li>• provide land required for the expansion of existing community facilities or the development of new community facilities, and</li> <li>• provide for limited development within the zone where it can be demonstrated that the development will not prejudice or have the potential to prejudice the intended future infrastructure development of that land, and</li> <li>• ensure that development on adjacent or adjoining land zoned infrastructure does not prejudice future infrastructure development within that zone, and</li> <li>• provide for sustainable water cycle management</li> </ul>	<p>Exempt development as provided in Schedule 1 (Appendix C).</p>	<p>agriculture (other than intensive agriculture), airline terminals, airports, bus stations, car parking facilities, cemeteries and crematoriums, child care centres, community facilities, drainage, earthworks, educational establishments, emergency services facilities, energy generation works, entertainment facilities, environmental facilities, helipads, heliports, hospitals, medical centres, motels, places of public worship, rail lines, restaurants, roads, signs, stormwater management facilities, telecommunications facilities, transport terminals, utility installations, veterinary hospitals</p>	<p>Development not listed as either Without Development Consent or With Development Consent</p>

ZONE AIMS AND OBJECTIVES	WITHOUT DEVELOPMENT CONSENT	WITH DEVELOPMENT CONSENT	PROHIBITED
<p><b>7(1) Conservation (Primary)</b></p> <ul style="list-style-type: none"> <li>• provide and conserve land having ecological, scientific, geological, educational, faunal, floristic or aesthetic values, and</li> <li>• preserve and enhance areas of significant vegetation and habitat to promote the regeneration of ecosystems and eradication of invasive species that compete with native flora and fauna, and</li> <li>• conserve, enhance and manage corridors to facilitate species movement, dispersal and interchange of genetic material, and</li> <li>• exclude activities which would prejudice the ongoing conservation or rehabilitation of land, and</li> <li>• encourage activities that meet conservation objectives, and</li> <li>• protect land within this zone from impacts from development on adjoining zones, and</li> <li>• provide for sustainable water cycle management.</li> </ul>	<p>Exempt development as provided in Schedule 1 (Appendix C).</p>	<p>bed and breakfast establishments, drainage, dwelling houses, earthworks, environmental facilities, home businesses, home industries, roads, signs, stormwater management facilities, utility installations</p>	<p>Development not listed as either Without Development Consent or With Development Consent</p>
<p><b>7(2) Conservation (Secondary)</b></p> <ul style="list-style-type: none"> <li>• protect, conserve and enhance land that is environmentally important, and</li> <li>• protect, manage and enhance corridors to facilitate species movement, dispersal and interchange of genetic material, and</li> <li>• enable development where it can be demonstrated that the development will not compromise the ecological, hydrological, scenic or scientific attributes of the land or adjacent land in Zone 7 (1), and</li> <li>• ensure that development proposals result in rehabilitation and conservation of environmentally important land, and</li> <li>• provide for sustainable water cycle management.</li> </ul>	<p>Exempt development as provided in Schedule 1 (Appendix C)</p>	<p>bed and breakfast establishments, community facilities, drainage, dual occupancies— attached, dwelling houses, earthworks, eco-tourism facilities, emergency services facilities, environmental facilities, home businesses, home industries, roads, roadside stalls, signs, stormwater management facilities, telecommunications facilities, utility installations</p>	<p>Development not listed as either Without Development Consent or With Development Consent</p>

ZONE AIMS AND OBJECTIVES	WITHOUT DEVELOPMENT CONSENT	WITH DEVELOPMENT CONSENT	PROHIBITED
<p><b>7(3) Environmental Conservation</b></p> <ul style="list-style-type: none"> <li>maintain and enhance biodiversity, scenic quality and native riparian vegetation and habitat, and</li> <li>protect, manage and enhance corridors to facilitate species movement, dispersal and interchange of genetic material, and</li> <li>ensure that development and land management practices do not have an adverse effect on water quality, land surface conditions and important ecosystems such as waterbodies, waterways, wetlands and rainforests, and</li> <li>protect and enhance natural, rural and heritage landscapes, and</li> <li>provide for sustainable water cycle management, and</li> <li>encourage rehabilitation and conservation of environmentally important land.</li> </ul>	<p>Exempt development as provided in Schedule 1 (Appendix C)</p>	<p>agriculture (other than intensive agriculture), bed and breakfast establishments, community facilities, drainage, dual occupancies— attached, dwelling houses, earthworks, eco-tourism facilities, educational establishments, emergency services facilities, environmental facilities, forestry, home businesses, home industries, places of public worship, retail plant nurseries, roads, roadside stalls, signs, stormwater management facilities, telecommunications, facilities, utility installations</p>	<p>Development not listed as either Without Development Consent or With Development Consent</p>
<p><b>7(4) Environmental (Coastline).</b></p> <ul style="list-style-type: none"> <li>provide and conserve an area for natural coastal processes, and</li> <li>permit appropriate development where consistent with the Coastal Impact Zone (as identified in the <i>Lake Macquarie Coastline Management Plan 1999</i>), and</li> <li>conserve and enhance the scenic values and natural, Aboriginal and European heritage associated with the coastline, and</li> <li>minimise disturbance of the coastline environment, and</li> <li>encourage ongoing dune stabilisation and rehabilitation of native vegetation, and</li> <li>ensure that development facilitates public access to the coastline and supports the optimum and efficient development of the coastal walk (as identified in the <i>Lake Macquarie Coastline</i>)</li> </ul>	<p>Exempt development as provided in Schedule 1 (Appendix C)</p>	<p>car parking facilities, clubs, community facilities, drainage, earthworks, emergency services facilities, environmental facilities, helipads, restaurants, roads, signs, sporting facilities, stormwater management, facilities, utility installations</p>	<p>Development not listed as either Without Development Consent or With Development Consent</p>

<p><i>Management Plan 1999</i>), and</p> <ul style="list-style-type: none"><li>• ensure that development is sympathetic in design, bulk and scale with the coastline environment, and</li><li>• provide for sustainable water cycle management, and</li><li>• protect, enhance and manage corridors to facilitate species movement, and the dispersal and interchange of genetic material.</li></ul>			
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## APPENDIX E: Threatened Species Database Search (10 km radius) & Habitat Consideration

Source: DECCW Atlas of NSW Wildlife, 2009

The Atlas of NSW Wildlife contains recorded sightings of plants, mammals, birds, reptiles, amphibians, and endangered invertebrates in New South Wales. A search of the Atlas indicates that BWSP provides potential habitat for 13 threatened flora species and 36 threatened fauna species under the Threatened Species Conservation (TSC) Act. Of these, two threatened flora species and two threatened fauna species have been identified by the Atlas of NSW Wildlife as occurring within the BWSP. These species are highlighted in the table below.

The columns indicating Habitat Potential and Quality are based on Andrews Neil UDG site visits and a review of the Lower Hunter and Central Coast Regional Environmental Management Strategy (LHCCREMS) Vegetation Community profiles (NSW National Parks and Wildlife Service, 2003).

Species	TSC Act			EPBC Act	Habitat Potential			
	Status	Count	Location ≤ 5km	Status	A	B	C	Quality
<b>FLORA</b>								
<i>Cynanchum elegans</i> White-flowered Wax Plant	E	2	✓	E	✓	✓	✓	1
<i>Rutidosis heterogama</i> Heath Wrinklewort	V	5	-	V	✓	✓	✓	1
<i>Senecio spathulatus</i> Coast Groundsel	E	1	✓	-	✓	✓	✓	1
<i>Tetradlea glandulosa</i>	V	1	-	V	-	-	-	3
<i>Tetradlea juncea</i> Black-eyed Susan #	V	364	✓	V	✓	✓	✓	1
<i>Epacris purpurascens</i> var. <i>Purpurascens</i>	V	1	✓	-	-	-	-	3
<i>Chamaesyce psammogeton</i> Sand Spurge #	E	1	✓	-	✓	✓	✓	1
<i>Pultenaea maritime</i> Coast Headland Pea	V	1	-	-	✓	✓	✓	1
<i>Angophora inopina</i> Charmhaven Apple	V	8	-	V	-	-	✓	2
<i>Callistemon linearifolius</i> Netted Bottle Brush	V	1	-	-	✓	✓	✓	1
<i>Eucalyptus camfieldii</i> Heart-leaved Stringybark	V	2	✓	V	-	✓	✓	1
<i>Melaleuca biconvexa</i> Biconvex Paperbark	V	2	-	V	✓	✓	✓	1
<i>Syzygium paniculatum</i> Magenta Lilly Pilly	V	9	✓	V	-	-	✓	2
<i>Corybas dowlingii</i> Red Helmet Orchid	E	1	-	-	-	-	-	3

Species	TSC Act			EPBC Act	Habitat Potential			
	Status	Count	Location ≤ 5km	Status	A	B	C	Quality
<i>Cryptostylis hunteriana</i> Leafless Tongue Orchid	V	1	-	V	✓	✓	✓	1
<i>Diuris praecox</i> Rough Double Tail	V	14	✓	V	✓	✓	✓	1
<i>Muehlenbeckia costata</i> Scrambling Lignum	V	1	-	-	✓	-	✓	2
<i>Grevillea parviflora</i> subsp. <i>parviflora</i> Small-flower Grevillea	V	4	-	V	✓	✓	✓	1
<i>Zannichellia palustris</i> #	E	1	✓	-	-	✓	-	1
<b>FAUNA</b>								
<b>AMPHIBIA</b>								
<i>Crinia tinnula</i> Wallum Froglet	V	9	✓	-	✓	✓	✓	1
<i>Pseudophryne australis</i> Red-crowned Toadlet	V	1	✓	-	✓	✓	✓	1
<b>AVES</b>								
<i>Pandion haliaetus</i> Osprey	V	14	-	-	✓	✓	✓	1
<i>Ixobrychus flavicollis</i> Black Bittern	V	6	-	-	✓	✓	✓	1
<i>Burhinus grallarius</i> Bush Stone-curlew	E	1	-	-	✓	✓	✓	1
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo	V	2	✓	-	✓	✓	✓	1
<i>Calyptorhynchus lathamii</i> Glossy Black-Cockatoo	V	4	✓	-	✓	✓	✓	1
<i>Charadrius leschenaultia</i> Greater Sand-plover	V	5	-	-		✓	✓	1
<i>Charadrius mongolus</i> Lesser Sand-plover	V	21	-	-		✓	✓	1
<i>Ephippiorhynchus asiaticus</i> Black-necked Stork	E	1	-	-	✓	✓	✓	1
<i>Diomedea exulans</i> Wandering Albatross	E	7	✓	V				n/a
<i>Thalassarche cauta</i> Shy Albatross	V	1	-	V				n/a
<i>Thalassarche melanophris</i> Black-browed Albatross	V	2	✓	V				n/a

Species	TSC Act			EPBC Act	Habitat Potential			
	Status	Count	Location ≤ 5km	Status	A	B	C	Quality
<i>Haematopus fuliginosus</i> Sooty Oystercatcher	V	9	✓	-	✓	✓	✓	1
<i>Haematopus longirostris</i> Pied Oystercatcher	V	15	✓	-	✓	✓	✓	1
<i>Irediparra gallinacea</i> Comb-crested Jacana	V	1	-	-	✓	✓	✓	1
<i>Sterna albifrons</i> Little Tern	E	8	✓	-	✓	✓	✓	1
<i>Sterna fuscata</i> Sooty Tern	V	1	✓	-				n/a
<i>Xanthomyza Phrygia</i> Regent Honeyeater	E	7	✓	E		✓		2
<i>Macronectes giganteus</i> Southern Giant Petrel	E	5	✓	E				n/a
<i>Macronectes halli</i> Northern Giant-Petrel	V	1	-	V				n/a
<i>Puffinus carneipes</i> Flesh-footed Shearwater	V	3	✓	-				n/a
<i>Lathamus discolor</i> Swift Parrot	E	21	✓	E		✓	✓	1
<i>Neophema pulchella</i> Turquoise Parrot	V	2	-	-	✓	✓	✓	2
<i>Calidris tenuirostris</i> Great Knot	V	3	✓	-		✓	✓	1
<i>Limicola falcinellus</i> Broad-billed Sandpiper	V	4	-	-		✓	✓	1
<i>Xenus cinereus</i> Terek Sandpiper	V	1	-	-		✓		1
<i>Ninox connivens</i> Barking Owl	V	3	✓	-	✓	✓	✓	1
<i>Ninox strenua</i> Powerful Owl	V	39	✓	-	✓	✓	✓	1
<i>Sula dactylatra</i> Masked Booby	V	1	✓	-				n/a
<i>Tyto novaehollandiae</i> Masked Owl	V	9	✓	-		✓		2
<i>Tyto tenebricosa</i> Sooty Owl	V	2	✓	-		✓		2



Species	TSC Act			EPBC Act	Habitat Potential			
	Status	Count	Location ≤ 5km		Status	A	B	C
<b>MAMMALIA</b>								
<i>Eubalaena australis</i> Southern Right Whale	V	1	✓	E				n/a
<i>Dasyurus maculatus</i> Spotted-tailed Quoll	V	2	-	E		✓		2
<i>Dugong dugon</i> Dugong	E	3	✓	E				n/a
<i>Mormopterus norfolkensis</i> Eastern Freetail-bat	V	5	-	-	✓	✓	✓	1
<i>Petaurus norfolcensis</i> Squirrel Glider#	V	56	✓	-	✓	✓	n/a	1
<i>Phascolarctos cinereus</i> Koala	V	17	✓	-	✓	✓	✓	1
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox#	V	38	✓	V	✓	✓	✓	1
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	V	1	-	V		✓		2
<i>Falsistrellus tasmaniensis</i> Eastern False Pipistrelle	V	3	-	-	✓	✓	✓	1
<i>Miniopterus australis</i> Little Bentwing-bat	V	29	✓	-		✓		1
<i>Miniopterus schreibersii</i> <i>oceanensis</i> Eastern Bentwing-bat	V	30	✓	-		✓		1
<i>Myotis adversus</i> Large-footed Myotis	V	2	-	-	✓	✓	✓	1
<i>Scoteanax rueppellii</i> Greater Broad-nosed Bat	V	5	-	-	✓	✓	✓	1
<i>Vespadelus troughtoni</i> Eastern Cave Bat	V	3	-	-		✓		2
<b>REPTILIA</b>								
<i>Caretta caretta</i> Loggerhead Turtle	E	1	✓	E				n/a
<i>Chelonia mydas</i> Green Turtle	V	29	✓	V				n/a

\* Key

Section	Symbol	Description
Acts	E	Endangered
	V	Vulnerable
	M	Migratory
	L	Listed

Section	Symbol	Description	
Habitat Potential	O	Listed-Overfly marine area	
		<b>Plants</b>	<b>Animals</b>
	A	Associated vegetation	Breeding
	B	Landscape	Foraging
	C	Soil	Denning / Roosting
	1	Good	
	2	Moderate	
	3	Poor	
	#	Previously recorded within BWSP;	

## APPENCIX F: Lake Macquarie City Council Fauna Database

This table shows that a total of 222 fauna species have been recorded either in the BWSP or within 1 km of the BWSP. This includes 13 exotic species, eight migratory bird species and ten threatened species.

This data has been collected by Lake Macquarie City Council from various sources including DA submissions, flora and fauna surveys and reports received by Council.

*Note: Database held and maintained by the Sustainability Department, Lake Macquarie City Council. Accessed 1/4/2009, last updated 5/2/2009.*

*The category column has been added to the table by Andrews Neil UDG and was not provided by Lake Macquarie City Council.*

Common Name	Scientific Name	Category	Status
Anomalopus swansoni	<i>Anomalopus swansoni</i>	Reptilia	
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>	Aves	
Australasian Shoveler	<i>Anas rhynchotis</i>	Aves	
Australian Hobby	<i>Falco longipennis</i>	Aves	
Australian Koel	<i>Eudynamys cyanocephala</i>	Aves	
Australian Magpie	<i>Gymnorhina tibicen tibicen</i>	Aves	
Australian Magpie-lark	<i>Grallina cyanoleuca cyanoleuca</i>	Aves	
Australian Pelican	<i>Pelecanus conspicillatus</i>	Aves	
Australian Raven	<i>Corvus coronoides coronoides</i>	Aves	
Australian Reed-Warbler	<i>Acrocephalus australis</i>	Aves	
Australian Spotted Crake	<i>Porzana fluminea</i>	Aves	
Australian White Ibis	<i>Threskiornis molucca</i>	Aves	
Azure Kingfisher	<i>Alcedo azurea</i>	Aves	
Bandicoot sp.	<i>Bandicoot sp.</i>	Mammalia	
Bar-shouldered Dove	<i>Geopelia humeralis</i>	Aves	
Bar-tailed Godwit	<i>Limosa lapponica</i>	Aves	
Bearded Dragon	<i>Pogona barbata</i>	Reptilia	
Bell Miner	<i>Manorina melanophrys</i>	Aves	
Black Bittern	<i>Dupetor flavicollis</i>	Aves	V
Black Rat	* <i>Rattus rattus</i>	Mammalia	
Black Swan	<i>Cygnus atratus</i>	Aves	
Black-faced Cuckooshrike	<i>Coracina novaehollandiae</i>	Aves	
Black-faced Monarch	<i>Monarcha melanopsis</i>	Aves	M
Black-fronted Dotterel	<i>Euseiornis melanops</i>	Aves	
Black-shouldered Kite	<i>Elanus axillaris</i>	Aves	
Black-winged Stilt	<i>Himantopus himantopus</i>	Aves	
Bleating Tree Frog	<i>Litoria dentata</i>	Amphibian	
Bluebonnet (Yellow-vented-south-western)	<i>Northiella haematogaster haematogaster</i>	Aves	
Brown Falcon	<i>Falco berigora</i>	Aves	
Brown Gerygone	<i>Gerygone mouki richmondi</i>	Aves	
Brown Goshawk	<i>Accipiter fasciatus fasciatus</i>	Aves	
Brown Hare	* <i>Lepus capensis</i>	Mammalia	
Brown Honeyeater	<i>Lichmera indistincta ocularis</i>	Aves	
Brown Quail	<i>Coturnix ypsilophora</i>	Aves	
Brown Thornbill	<i>Acanthiza pusilla pusilla</i>	Aves	
Brush Bronzewing	<i>Phaps elegans</i>	Aves	
Buff-banded Rail	<i>Gallirallus philippensis</i>	Aves	
Bush Rat	<i>Rattus fuscipes</i>	Mammalia	
Caspian Tern	<i>Sterna caspia</i>	Aves	

Cat	* <i>Felis catus</i>	Mammalia	
Cattle Egret	<i>Ardea ibis</i>	Mammalia	M
Channel-billed Cuckoo	<i>Scythrops novaehollandiae</i>	Aves	
Chestnut Teal	<i>Anas castanea</i>	Aves	
Chocolate Wattled Bat	<i>Chalinolobus morio</i>	Mammalia	
Collared Sparrowhawk	<i>Accipiter cirrocephalus</i>	Aves	
Common Bronzewing	<i>Phaps chalcoptera</i>	Mammalia	
Common Brushtail Possum	<i>Trichosurus vulpecula vulpecula</i>	Mammalia	
Common Coot	<i>Fulica atra</i>	Aves	
Common Eastern Toadlet	<i>Crinia signifera</i>	Amphibian	
Common Greenshank	<i>Tringa nebularia</i>	Aves	
Common Myna	* <i>Acridotheres tristis tristis</i>	Aves	
Common Ringtail Possum	<i>Pseudocheirus peregrinus</i>	Mammalia	
Common Starling	* <i>Sturnus vulgaris vulgaris</i>	Aves	
Common Tern	<i>Sterna hirundo</i>	Aves	
Common Tree Snake	<i>Dendrelaphis punctulata</i>	Reptilia	
Crested Pigeon	<i>Geophaps lophotes</i>	Aves	
Crested Shrike-tit	<i>Falcunculus frontatus frontatus</i>	Aves	
Crested Tern	<i>Sterna bergii</i>	Aves	
Curlew Sandpiper	<i>Calidris ferruginea</i>	Aves	
Dingo	<i>Canis lupus dingo</i>	Mammalia	
Dingo/ Dog	* <i>Canis lupus familiaris</i>	Mammalia	
Dollarbird	<i>Eurystomus orientalis</i>	Aves	
Double-barred Finch	<i>Taeniopygia bichenovii bichenovii</i>	Aves	
Dusky Moorhen	<i>Gallinula tenebrosa</i>	Aves	
Dusky Woodswallow	<i>Artamus cyanopterus cyanopterus</i>	Aves	
Eastern Bentwing-bat	<i>Miniopterus schreibersii oceanensis</i>	Mammalia	V
Eastern Blue-tongued Lizard	<i>Tiliqua scincoides</i>	Reptilia	
Eastern Brown Snake	<i>Pseudonaja textilis</i>	Reptilia	
Eastern Dwarf Tree Frog	<i>Litoria fallax</i>	Amphibian	
Eastern Pygmy-possum	<i>Cercartetus nanus</i>	Mammalia	V
Eastern Rosella	<i>Platycercus eximius</i>	Aves	
Eastern Spinebill	<i>Acanthorhynchus tenuirostris tenuirostris</i>	Aves	
Eastern Stone Gecko	<i>Diplodactylus vittatus</i>	Reptilia	
Eastern Water Skink	<i>Eulamprus quoyii</i>	Reptilia	
Eastern Whipbird	<i>Psophodes olivaceus olivaceus</i>	Aves	
Eastern Yellow Robin	<i>Eopsaltria australis australis</i>	Aves	
Fairy Martin	<i>Hirundo ariel</i>	Aves	
Fan-tailed Cuckoo	<i>Cacomantis flabelliformis</i>	Aves	
Figbird	<i>Sphecotheres viellotti viellotti</i>	Aves	
Fluttering Shearwater	<i>Puffinus gavia</i>	Aves	
Fox	* <i>Vulpes vulpes</i>	Mammalia	
Freycinet's Frog	<i>Litoria freycineti</i>	Amphibian	
Galah	<i>Eolophus roseicapillus</i>	Aves	
Garden Skink	<i>Lampropholis guichenoti</i>	Reptilia	
Golden Whistler	<i>Pachycephala pectoralis</i>	Aves	
Golden-headed Cisticola	<i>Cisticola exilis exilis</i>	Aves	
Gould's Wattled Bat	<i>Chalinolobus gouldii</i>	Mammalia	
Grass Skink	<i>Lampropholis delicata</i>	Reptilia	
Great Cormorant	<i>Phalacrocorax carbo</i>	Aves	
Great Egret	<i>Ardea albus</i>	Aves	M

Great Knot	<i>Calidris tenuirostris</i>	Aves	V
Green Tree Frog	<i>Litoria caerulea</i>	Amphibian	
Grey Butcherbird	<i>Cracticus torquatus torquatus</i>	Aves	
Grey Fantail	<i>Rhipidura fuliginosa</i>	Aves	
Grey Goshawk	<i>Accipiter novaehollandiae</i>	Aves	
Grey Shrike-thrush	<i>Colluricincla harmonica harmonica</i>	Aves	
Grey Teal	<i>Anas gracilis</i>	Aves	
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Mammalia	
Hardhead	<i>Aythya australis</i>	Aves	
Hoary-headed Grebe	<i>Poliocephalus poliocephalus</i>	Aves	
Horsfield's Bronze-Cuckoo	<i>Chrysococcyx basalis</i>	Aves	
House Mouse	* <i>Mus musculus</i>	Mammalia	
House Sparrow	* <i>Passer domesticus domesticus</i>	Aves	
Intermediate Egret	<i>Ardea intermedia</i>	Aves	
Jacky Lizard	<i>Amphibolurus muricatus</i>	Reptilia	
Jervis Bay Tree Frog	<i>Litoria jervisiensis</i>	Amphibian	
Lace Monitor	<i>Varanus varius</i>	Reptilia	
Large Forest Bat	<i>Vespadelus darlingtoni</i>	Mammalia	
Latham's Snipe	<i>Gallinago hardwickii</i>	Aves	M
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	Aves	
Leaden Flycatcher	<i>Myiagra rubecula rubecula</i>	Aves	
Lewin's Honeyeater	<i>Meliphaga lewinii lewinii</i>	Aves	
Lewin's Rail	<i>Lewinia pectoralis pectoralis</i>	Aves	
Little Bentwing-bat	<i>Miniopterus australis</i>	Mammalia	V
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	Aves	
Little Eagle	<i>Hieraaetus morphnoides</i>	Aves	
Little Egret	<i>Egretta garzetta</i>	Aves	
Little Forest Bat	<i>Vespadelus vulturnus</i>	Mammalia	
Little Grassbird	<i>Megalurus gramineus goulburni</i>	Aves	
Little Pied Cormorant	<i>Phalacrocorax melanoleucos</i>	Aves	
Little Red Flying-fox	<i>Pteropus scapulatus</i>	Mammalia	
Little Tern	<i>Sterna albifrons</i>	Aves	E,M
Little Wattlebird	<i>Anthochaera chrysoptera chrysoptera</i>	Aves	
Long-nosed Bandicoot	<i>Perameles nasuta</i>	Mammalia	
Mallard	<i>Anas platyrhynchos</i>	Aves	
Maned Duck	<i>Chenonetta jubata</i>	Aves	
Masked Lapwing	<i>Vanellus miles</i>	Aves	
Mistletoebird	<i>Dicaeum hirundinaceum hirundinaceum</i>	Aves	
Mormopterus sp. 1	<i>Mormopterus sp. 1</i>	Mammalia	
Nankeen Kestrel	<i>Falco cenchroides</i>	Aves	
Nankeen Night-Heron	<i>Nycticorax caledonicus</i>	Aves	
New Holland Honeyeater	<i>Phylidonyris novaehollandiae novaehollandiae</i>	Aves	
New Holland Mouse	<i>Pseudomys novaehollandiae</i>	Mammalia	
Noisy Friarbird	<i>Philemon corniculatus</i>	Aves	
Noisy Miner	<i>Manorina melanocephala melanocephala</i>	Aves	
Olive-backed Oriole	<i>Oriolus sagittatus sagittatus</i>	Aves	
Ornate Burrowing Frog	<i>Limnodynastes ornatus</i>	Amphibian	
Osprey	<i>Pandion haliaetus</i>	Aves	
Pacific Baza	<i>Aviceda subcristata</i>	Aves	
Pacific Black Duck	<i>Anas superciliosa</i>	Aves	

Peaceful Dove	<i>Geopelia placida</i>	Aves	
Pectoral Sandpiper	<i>Calidris melanotos</i>	Aves	
Peregrine Falcon	<i>Falco peregrinus</i>	Aves	
Peron's Tree Frog	<i>Litoria peronii</i>	Amphibian	
Pheasant Coucal	<i>Centropus phasianinus</i>	Aves	
Pied Butcherbird	<i>Cracticus nigrogularis nigrogularis</i>	Aves	
Pied Cormorant	<i>Phalacrocorax varius</i>	Aves	
Pied Currawong	<i>Strepera graculina graculina</i>	Aves	
Pink-eared Duck	<i>Malacorhynchus membranaceus</i>	Aves	
Powerful Owl	<i>Ninox strenua</i>	Aves	V
Purple Swamphen	<i>Porphyrio porphyrio</i>	Aves	
Rabbit	* <i>Oryctolagus cuniculus</i>	Mammalia	
Rainbow Lorikeet	<i>Trichoglossus haematodus haematodus</i>	Aves	
Red Knot	<i>Calidris canutus</i>	Aves	
Red Wattlebird	<i>Anthochaera carunculata carunculata</i>	Aves	
Red-bellied Black Snake	<i>Pseudechis porphyriacus</i>	Reptilia	
Red-browed Finch	<i>Neochmia temporalis temporalis</i>	Aves	
Red-necked Avocet	<i>Recurvirostra novaehollandiae</i>	Aves	
Red-rumped Parrot	<i>Psephotus haematonotus</i>	Aves	
Red-whiskered Bulbul	<i>Pycnonotus jocosus jocosus</i>	Aves	
Richard's Pipit	<i>Anthus novaeseelandiae</i>	Aves	
Rock Pigeon	* <i>Columba livia</i>	Aves	
Royal Spoonbill	<i>Platalea regia</i>	Aves	
Rufous Fantail	<i>Rhipidura rufifrons rufifrons</i>	Aves	M
Rufous Whistler	<i>Pachycephala rufiventris rufiventris</i>	Aves	
Sacred Kingfisher	<i>Todirhamphus sanctus</i>	Aves	
Scaly-breasted Lorikeet	<i>Trichoglossus chlorolepidotus</i>	Aves	
Scarlet Honeyeater	<i>Myzomela sanguinolenta sanguinolenta</i>	Aves	
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	Aves	
Shining Bronze-Cuckoo	<i>Chrysococcyx lucidus</i>	Aves	
Short-tailed Shearwater	<i>Puffinus tenuirostris</i>	Aves	
Silver Gull	<i>Larus novaehollandiae</i>	Aves	
Silveryeye	* <i>Zosterops lateralis</i>	Aves	
Smooth Toadlet	<i>Uperoleia laevigata</i>	Amphibian	
Snake-necked Turtle	<i>Chelodina longicollis</i>	Reptilia	
Sooty Shearwater	<i>Puffinus griseus</i>	Aves	
Southern Emuwren	<i>Stipiturus malachurus malachurus</i>	Aves	
Spangled Drongo	<i>Dicrurus bracteatus bracteatus</i>	Aves	
Spotless Crake	<i>Porzana tabuensis</i>	Aves	
Spotted Harrier	<i>Circus assimilis</i>	Aves	
Spotted Pardalote	<i>Pardalotus punctatus punctatus</i>	Aves	
Spotted Turtle-Dove	<i>Streptopelia chinensis</i>	Aves	
Squirrel Glider	<i>Petaurus norfolcensis</i>	Mammalia	V
Straw-necked Ibis	<i>Threskiornis spinicollis</i>	Aves	
Striated Pardalote	<i>Pardalotus striatus</i>	Aves	
Striated Thornbill	<i>Acanthiza lineata</i>	Aves	
Striped Honeyeater	<i>Plectorhyncha lanceolata</i>	Aves	
Striped Marsh Frog	<i>Limnodynastes peronii</i>	Amphibian	
Stubble Quail	<i>Coturnix pectoralis</i>	Aves	
Sugar Glider	<i>Petaurus breviceps</i>	Mammalia	
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	Aves	

Superb Fairywren	<i>Malurus cyaneus cyanochlamys</i>	Aves	
Swamp Harrier	<i>Circus approximans</i>	Aves	
Swift Parrot	<i>Lathamus discolor</i>	Aves	E
Tawny Frogmouth	<i>Podargus strigoides</i>	Aves	
Tawny Grassbird	<i>Megalurus timoriensis alisteri</i>	Aves	
Topknot Pigeon	<i>Lopholaimus antarcticus</i>	Aves	
Tree Martin	<i>Hirundo nigricans neglecta</i>	Aves	
Varied Sittella	<i>Daphoenositta chrysoptera chrysoptera</i>	Aves	
Variegated Fairy-wren	<i>Malurus lamberti lamberti</i>	Aves	
Wallum Froglet	<i>Crinia tinnula</i>	Amphibian	V
Welcome Swallow	* <i>Hirundo neoxena</i>	Aves	
Whiskered Tern	<i>Chlidonias hybridus</i>	Aves	
Whistling Kite	<i>Haliastur sphenurus</i>	Aves	
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	Aves	
White-breasted Woodswallow	<i>Artamus leucorhynchus leucopygialis</i>	Aves	M
White-browed Scrubwren	<i>Sericornis frontalis</i>	Aves	
White-cheeked Honeyeater	<i>Phylidonyris nigra nigra</i>	Aves	
White-faced Heron	<i>Egretta novaehollandiae</i>	Aves	
White-fronted Chat	<i>Epthianura albifrons</i>	Aves	
White-naped Honeyeater	<i>Melithreptus lunatus lunatus</i>	Aves	
White-necked Heron	<i>Ardea pacifica</i>	Aves	
White's Skink	<i>Egernia whitii</i>	Reptilia	
White-striped Freetail Bat	<i>Tadarida australis</i>	Mammalia	
White-throated Gerygone	<i>Gerygone olivacea</i>	Aves	
White-throated Needletail	<i>Hirundapus caudacutus</i>	Aves	M
White-throated Treecreeper	<i>Cormobates leucophaeus leucophaeus</i>	Aves	
White-winged Triller	<i>Lalage tricolor</i>	Aves	
Willie-wagtail	<i>Rhipidura leucophrys leucophrys</i>	Aves	
Yellow Thornbill	<i>Acanthiza nana nana</i>	Aves	
Yellow-billed Spoonbill	<i>Platalea flavipes</i>	Aves	
Yellow-faced Honeyeater	<i>Lichenostomus chrysops chrysops</i>	Aves	

\* Key

Acts	Symbol	Description
TSA Act	E	Endangered
TSA Act	V	Vulnerable
EPBC Act	M	Migratory
	*	Exotic