

# BATEMANS MARINE PARK OPERATIONAL PLAN

November 2010



Marine Parks Authority

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## EXECUTIVE SUMMARY

Batemans Marine Park was declared on 7 April 2006 and its zoning plan came into effect on 30 June 2007. The marine park is located on the south coast of New South Wales from the most northerly point of Murramarang Beach near Bawley Point to the southern side of Wallaga Lake entrance at Murunna Point. The marine park covers an area of approximately 85,000 hectares and extends from the three nautical mile offshore limit of NSW waters to mean high water mark within all rivers, estuaries, bays, lagoons and inlets, and saline and brackish coastal lakes (excluding Nargal Lake).

The Batemans Marine Park Operational Plan details management actions being undertaken by the Marine Parks Authority. These actions focus on meeting key objectives related to conservation of marine biodiversity, as well as provision of opportunities for ecologically sustainable use, public appreciation, enjoyment and understanding of the marine park. The operational plan has also been developed in consultation with the Batemans Marine Park Advisory Committee as required by the *Marine Parks Act 1997*.

The Batemans Marine Park includes key habitats such as rocky shores, offshore rocky reefs, kelp beds, seagrasses, mangroves, sponge gardens, sandy beaches, estuaries and open waters. The marine park also supports a multitude of recreational, commercial and cultural uses, such as beach walking, whale and dolphin watching, swimming, surfing, fishing, scuba diving, boating and recreational and commercial fishing. The Batemans Marine Park lies within the country of the Yuin people, who maintain a strong connection to the ocean.

The Batemans Marine Park Operational Plan explains the role and priorities of the Marine Parks Authority and other organisations in the management of the marine park, including threats to its natural, cultural and economic values. Marine park objectives and management actions have been organised under the following strategies:

1. Identification and adaptive management of threats to marine biodiversity and habitats
2. Protection of high conservation areas and threatened species
3. Assessing developments in and affecting the marine park to minimise impacts
4. Maximising voluntary compliance with the marine park zoning plan
5. Ecologically sustainable management of commercial activities
6. Delivering an ecological, social and economic research and monitoring program
7. Promotion of sustainable tourism and recreational uses, as well as facilitation of a greater appreciation of marine biodiversity
8. Ensuring management is consistent with the cultural aspirations of Aboriginal people.

The Batemans Marine Park Operational Plan is consistent with and supports the Batemans Marine Park Zoning Plan, which is a regulation that sets out the range of activities that can be undertaken within different areas of the marine park.

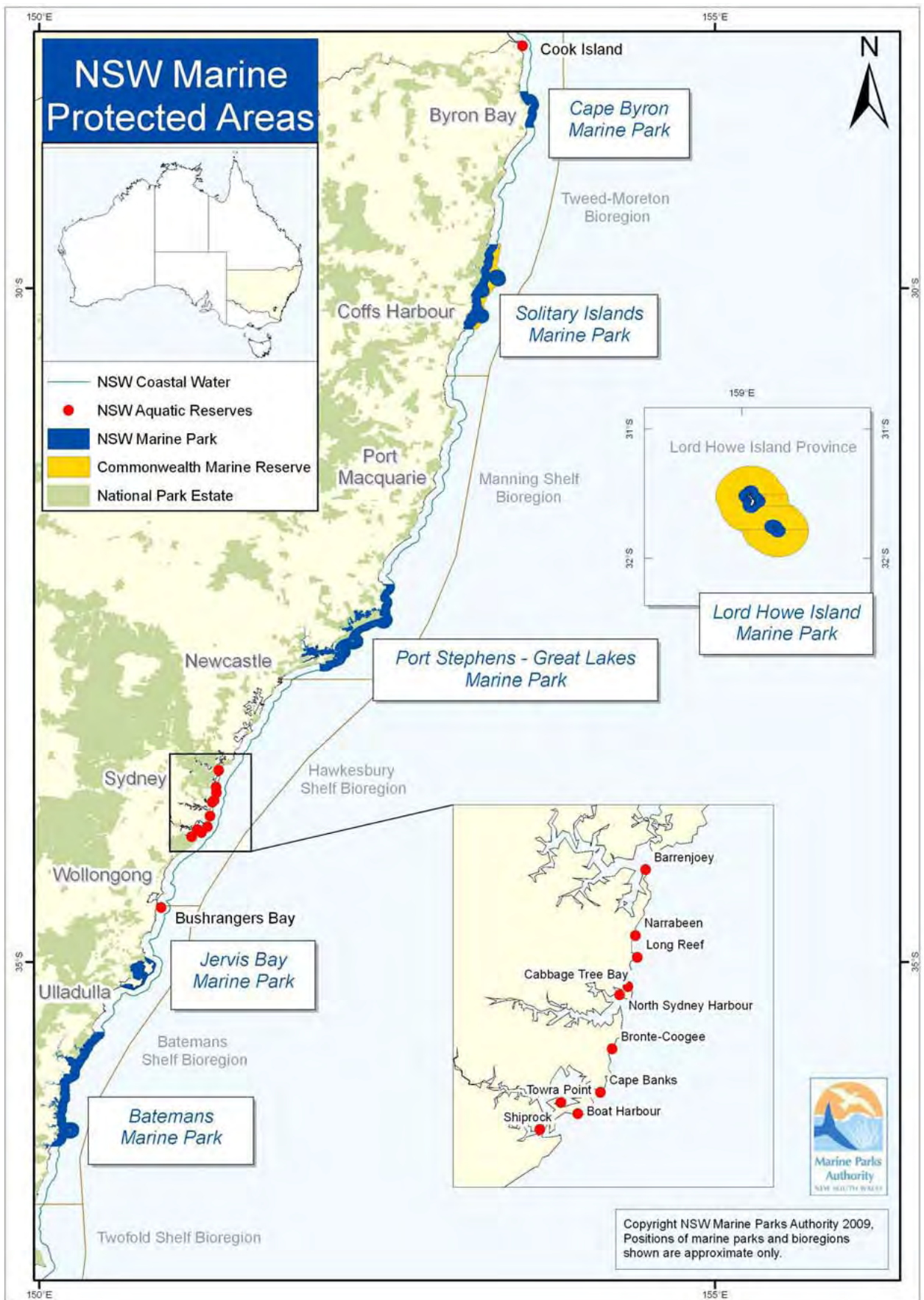


Figure 1: Map of NSW Marine Protected Areas

# 1 INTRODUCTION

Marine biodiversity, the variety of marine life including species, habitats and ecosystems, contributes to Australian industries worth more than \$25 billion annually, with more \$18 billion attributable to marine tourism and recreational activities (Australian Institute of Marine Science 2009). Despite its importance, marine biodiversity is impacted by human activities, such as coastal development, pollution, marine pests, diseases and resource use. These key threats to marine biodiversity can cause declines in the health of marine and estuarine habitats, changes to ecological processes, alterations to ecosystem functioning and loss of species (Natural Resource Policies and Programs Committee Biodiversity Decline Working Group 2005).

The marine and estuarine waters of New South Wales support rich biodiversity. The state's waters cover a breadth of latitudes from subtropical, warm temperate to cool temperate and include many different habitats (e.g. mangroves, seagrass, soft-sediment, beaches, rocky reefs, kelp forests, sponge gardens). These and other key habitats support the thousands of marine plants and animals that underpin populations of fish, birds, marine mammals and reptiles.

The establishment and management of a representative system of marine protected areas is regarded as one of the most effective mechanisms for conserving biodiversity and helping support ecologically sustainable uses, including tourism and fishing (IUCN-WCPA 2008).

The United Nations Convention on Biological Diversity aims to establish and maintain an ecologically representative system of marine protected areas by 2012. Australian states and territories committed in 1998 to contributing to this global system through the development of a *National Representative System of Marine Protected Areas* (ANZECC Task Force on Marine Protected Areas 1999). Subsequent to this, the NSW Government has made a significant contribution to Australia's *National Representative System of Marine Protected Areas* through the declaration and management of marine protected areas within NSW waters, which now includes 6 large-scale marine parks, 12 aquatic reserves and over 60 coastal national parks and nature reserves (Marine Protected Areas Working Group 2007).

The primary goal for the NSW marine protected areas program is to establish and manage a comprehensive, adequate and representative system of marine protected areas that contributes to the long-term viability of marine and estuarine systems, to maintain ecological processes and ecosystem functions and to protect the marine biological diversity of New South Wales at all levels. The NSW Government's approach to developing a system of marine protected areas is based on nationally agreed guidelines and selection criteria, as well as the Integrated Marine and Coastal Regionalisation of Australia (IMCRA) (Marine Parks Authority 2001).

The long-term aim of the NSW Government's representative system of marine protected areas is to establish and protect marine biodiversity in the full range of ecosystems within the state's marine bioregions. Currently, marine protected areas are located in all five marine bioregions and the one marine province at Lord Howe (Figure 1). In New South Wales, large-scale marine parks have been established in all bioregions, except for the Twofold Shelf Bioregion (south of Bermagui), which includes national park coastal frontage, and the Hawkesbury Shelf Bioregion, which includes 10 significant aquatic reserves and 17 national parks. All marine parks declared under the NSW *Marine Parks Act 1997* provide for multiple use of the marine environment including recreational and commercial fishing.

The Batemans Marine Park (BMP) was declared on 7 April 2006 and the zoning plan came into effect on 30 June 2007. This large marine park plays a key role in representing the ecosystems, habitats and marine life found in the Batemans Shelf Bioregion and contributes to the national and global system of marine protected areas.

The Batemans Marine Park Operational Plan is a legislative document that outlines the management context applying to the marine park, including the legislative framework, the role of zoning plans and the responsibility of different organisations in contributing to the overall marine park management. The operational plan describes natural, cultural and use values of Batemans Marine Park, as well as the threats to those values. It also identifies a suite of strategies and actions aimed at addressing them.

## 2 MANAGEMENT CONTEXT

Marine parks are declared and managed under the *Marine Parks Act 1997*. The objects of the Act are to:

- *conserve marine biological diversity and marine habitats by declaring and providing for the management of a comprehensive system of marine parks*
- *maintain ecological processes; and*
- *where consistent with the preceding objects to provide:*
  - *for ecologically sustainable use of fish (including commercial and recreational fishing) and marine vegetation in marine parks, and*
  - *opportunities for public appreciation, understanding and enjoyment of marine parks.*

The Marine Parks Act establishes a Marine Parks Authority (MPA) that is responsible for the administration of the Act, a statewide Marine Parks Advisory Council, that provides advice to the Ministers responsible for marine parks on matters relevant to all marine parks, and local advisory committees that advise the Ministers on local marine park matters (Appendix 1). The Act also provides for the general regulation of activities in marine parks, including the preparation of zoning plans, establishment of closures, assessment of development activities within and affecting marine parks and the preparation of operational plans.

### 2.1 Purpose of the operational plan

An operational plan is required for each marine park under section 23 of the Marine Parks Act. The Act defines the purpose of the operational plan as 'to identify and define a scheme of the strategies, actions or activities that are proposed to be undertaken by the Authority (including arrangements with other agencies) to operate a marine park, consistent with the zoning plan for the marine park and the objects of the Act'. Consequently, an operational plan is the central platform upon which the scheme of marine park regulations, policy, communication and education, research and monitoring, and compliance activities are strategically planned, prioritised and delivered to meet the marine park's objectives.

The MPA is required under the Act to prepare a draft operational plan having regard to the zoning plan for the park and the objects of the Act. The draft operational plan is to be referred to the relevant marine park advisory committee for consideration and advice for a minimum of 28 days. The Authority is required to consider and take account of any comments received from this committee before finalising and adopting an operational plan.

Once an operational plan is adopted, any functions of the MPA in relation to a marine park are required to be exercised with consideration of the operational plan. Implementation of the operational plan will occur through annual work planning and a review cycle designed to allocate available staff and financial resources to priority actions detailed in the plan. The MPA is to review the plan for a marine park as soon as practicable after a marine park zoning plan is amended or replaced, but is not required to do so if it considers the amendment is minor in nature. In this way the period of time in which an operational plan applies is closely connected to the marine park zoning plan.

### 2.2 Batemans Marine Park Zoning Plan

NSW marine parks provide for multiple use of the marine environment including recreational and commercial activities, such as fishing, tourism, diving, boating, swimming, surfing, kayaking and beach walking. Zoning plans are regulations that establish the types of activities that can be undertaken in different areas of a marine park having regard to the degree of potential impact they may have on species of plants and animals, as well as habitats. Similar to the identification and selection of marine parks, zoning is based on the application of nationally agreed guidelines, as well as ecological, social and economic criteria.

The Batemans Marine Park Zoning Plan commenced on 30 June 2007 and forms part of the Marine Parks (Zoning Plans) Regulation 1999. Extensive community consultation was done prior to the establishment of the zoning plan, including over 90 formal meetings with individuals and stakeholder groups. These meetings included presentations, focus group workshops and community information sessions. Consultation also included a three month public exhibition of the draft zoning plan between 15 July and 15 October 2006. Consideration of over 5700 submissions on this draft plan informed the preparation of the final zoning plan. The final zoning plan is composed of the following zoning scheme (see Figures 2 to 7):

- *Sanctuary zones* (approx. 16,100 ha, 19%) provide the highest level of protection for habitats, animals and plants, as well as areas of cultural significance. Only activities that do not harm plants or animals, or damage or interfere with habitat, are permitted in these areas.
- *Habitat protection zones* (approx. 36,750 ha, 43%) provide for the protection of habitat and areas of cultural significance. These zones allow for a range of recreational and commercial fishing activities, but prohibit purse seining, estuarine hauling, mesh netting, set lining, drift lining, trawling, dredging and long-lining, as well as the collection of some species. They also include some seasonal closures. This zoning also influences developments within the marine park (e.g. wharfs, boat ramps) to ensure they concur with the objects of the zone and minimise impacts to key habitats.
- *General use zones* (approx. 31,850 ha, 37%) provide for ecologically sustainable management of habitat, and animals and plants, through a wide range of ecologically sustainable uses. These zones allow for many forms of fishing but prohibit trawling, dredging and long-lining.
- *Special purpose zones* (340 ha, 0.4%) accommodate areas that require specialised management. In Batemans Marine Park, special purpose zones have been established to provide for coastal infrastructure development, cultural use, aquaculture and abalone harvesting.

Figures 2 to 7 show these zones within the Batemans Marine Park in more detail.

### **2.3 Activities and development**

Consent may be granted by permit to carry out certain activities that are otherwise prohibited in a marine park or a specific zone, including commercial activities. The circumstances in which consent may be granted are set out in the Marine Parks (Zoning Plans) Regulation 1999 and the process for applying for consent is included in the Marine Parks Regulation 2009. A marine parks permit policy has been developed to clarify administrative arrangements, processes and consent parameters for the issuing of permits, and is available on the marine park web site. Consistent with the policy, specific conditions can be applied to permitted activities to ensure they are ecologically sustainable and do not unduly impact on the enjoyment of other park users.

In respect to development proposals, the Marine Parks Act (sections 19 and 20) requires that authorities must take into consideration the objects of the Act, permissible uses and the advice from the MPA when consenting and determining development proposals within and in the locality of a marine park. These provisions not only give the MPA powers to influence developments that occur within the boundaries of a marine park, but also to provide comment on developments in the locality of a marine park. Mining development and exploration are specifically prohibited in NSW marine parks.

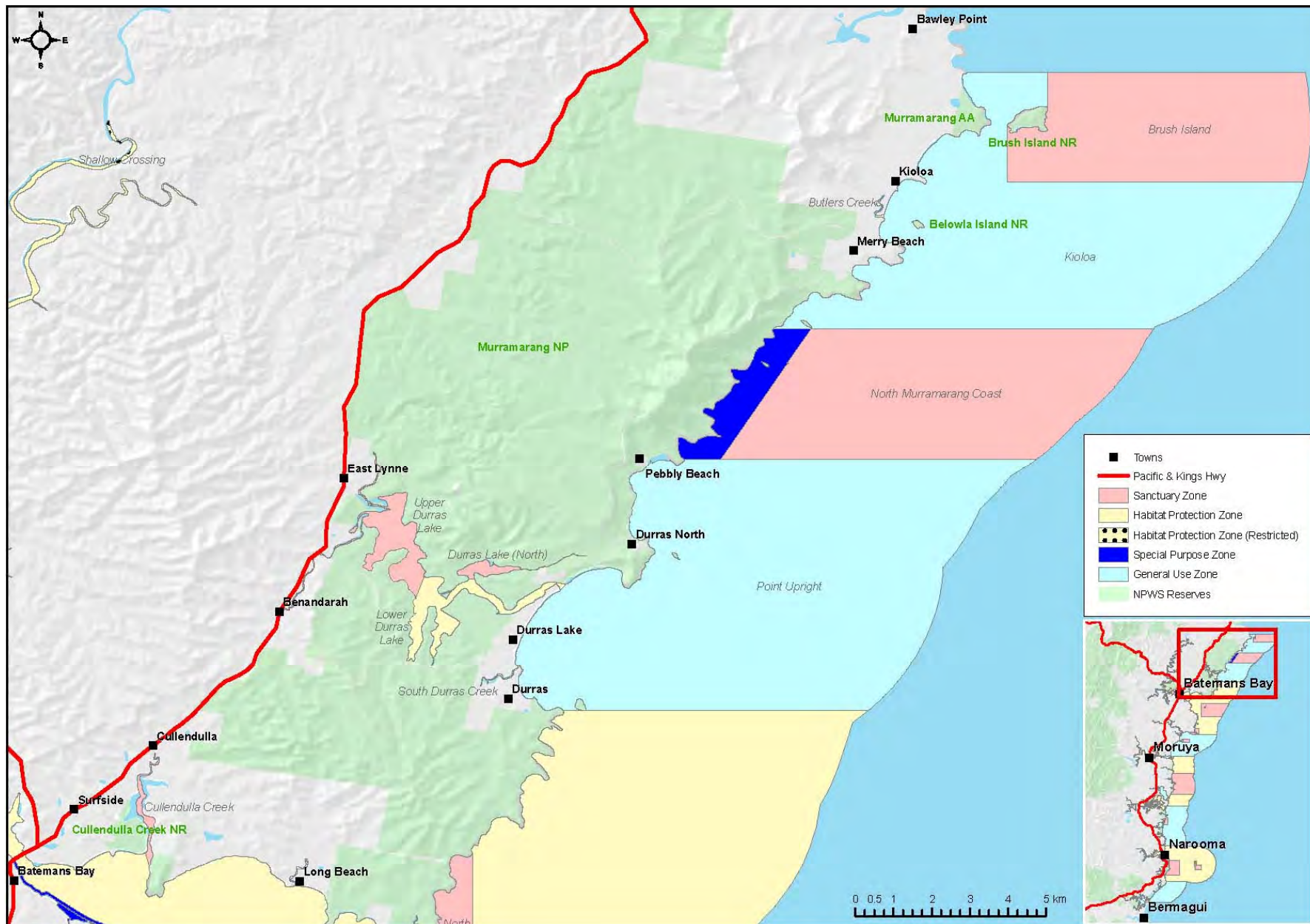
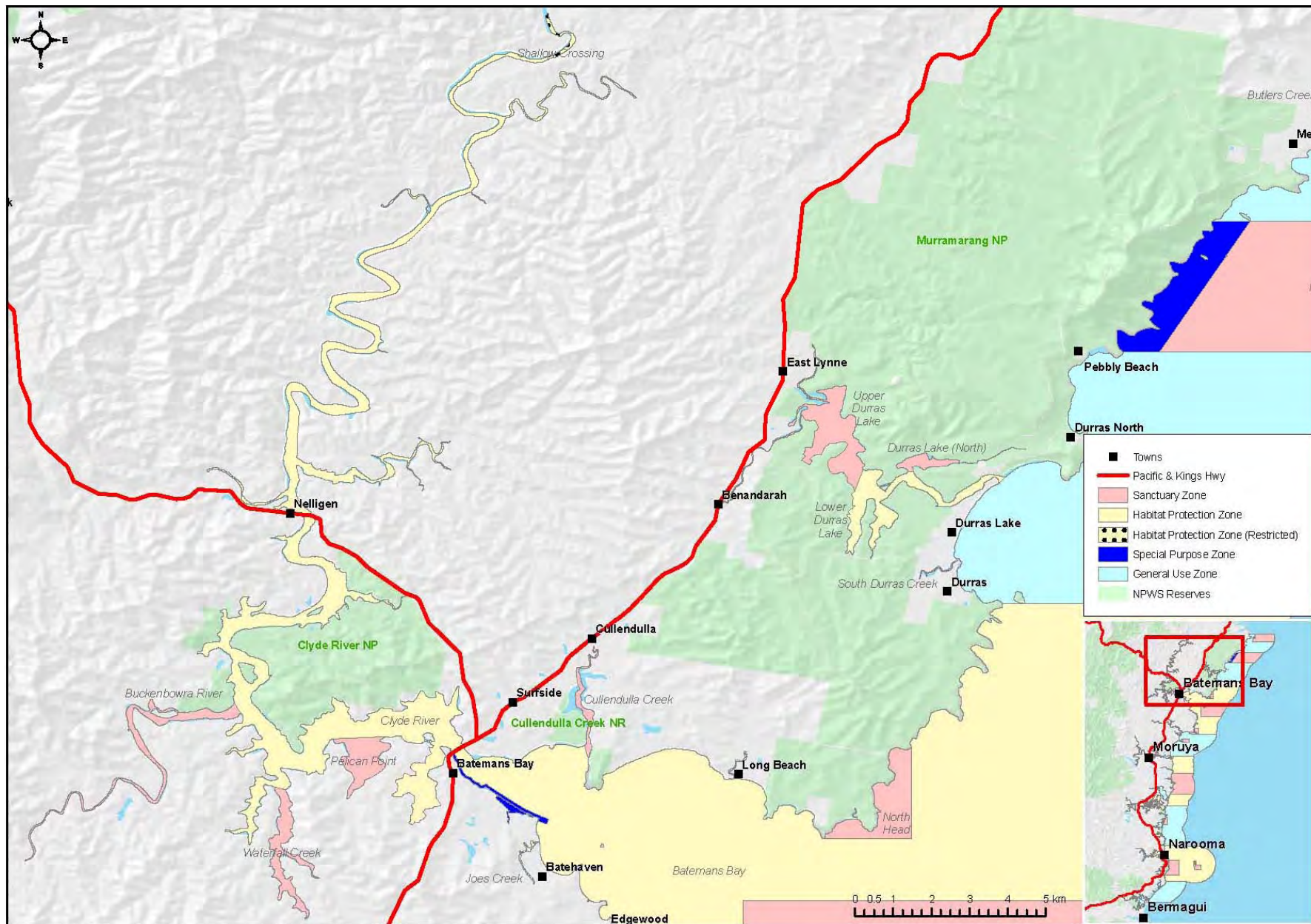


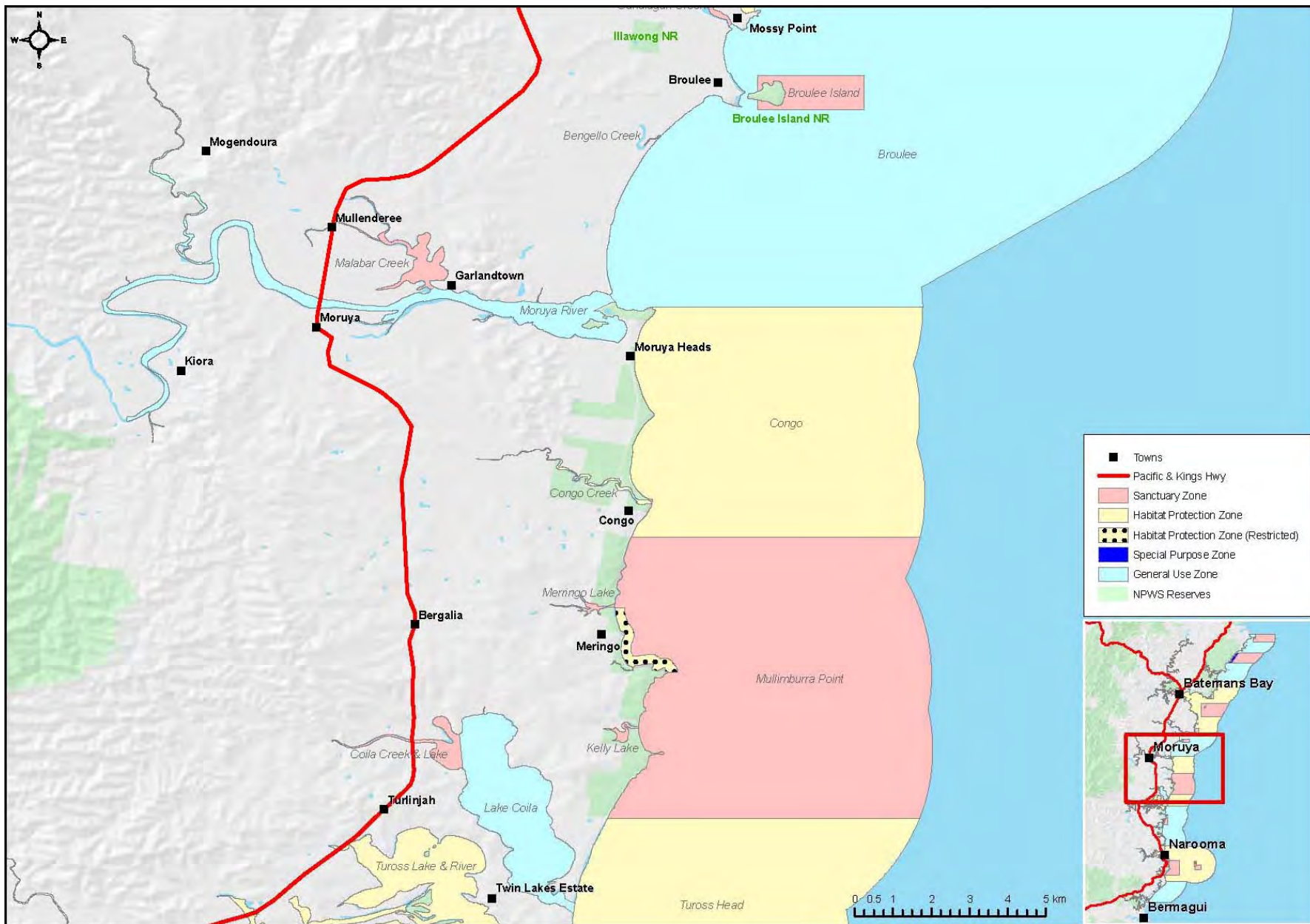
Figure 2: Map highlighting the zones in the Batemans Marine Park from North Head to Bawley Point



**Figure 3: Map highlighting the zones in the Batemans Marine Park from Batemans Bay to Pretty point**



Figure 4: Map highlighting the zones in the Batemans Marine Park from Moruya to Batemans Bay



**Figure 5: Map highlighting the zones in the Batemans Marine Park from Mossy Point to Tuross**

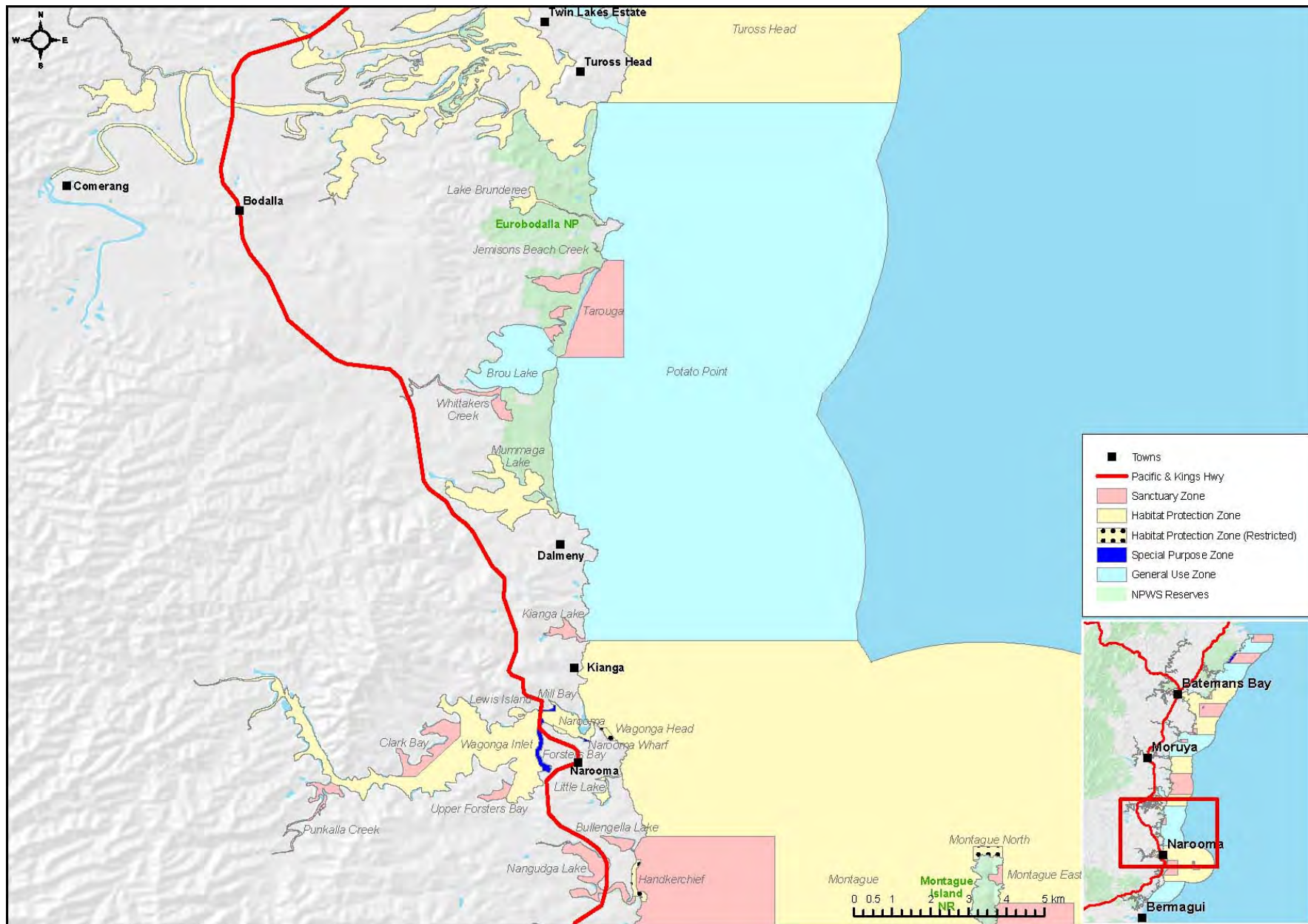


Figure 6: Map highlighting the zones in the Batemans Marine Park from Tuross to Nangudga Lake

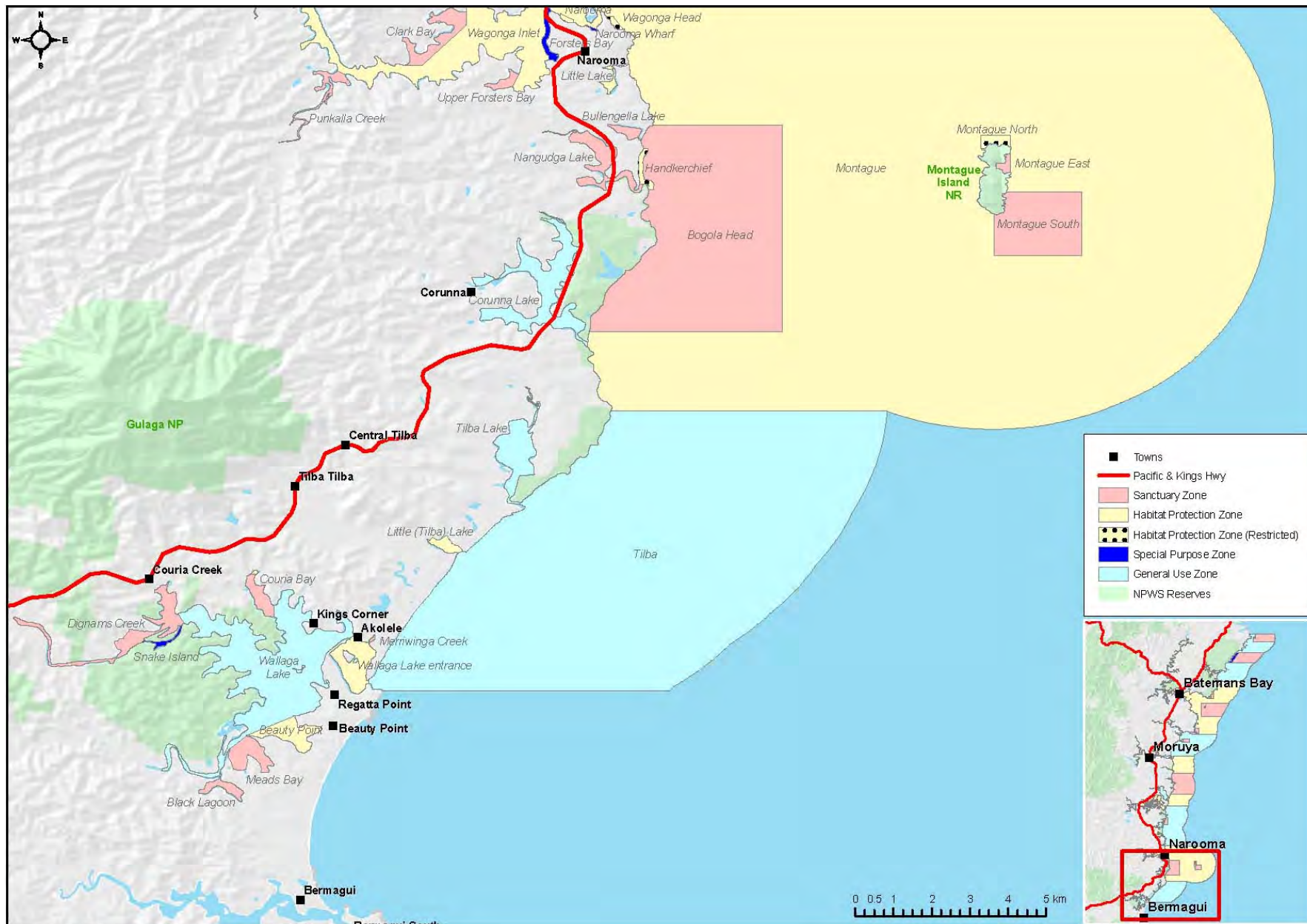


Figure 7: Map highlighting the zones in the Batemans Marine Park from Tuross to Nangudga Lake

## 2.4 Strategies, policies and other relevant plans

The MPA develops strategies, policies and plans at the statewide level to manage priority issues that apply across the network of NSW marine parks and aquatic reserves. These strategies, policies and plans are typically developed in consultation with the Marine Parks Advisory Council and in some cases local marine park advisory committees. Current strategies, policies and plans are accessible on the MPA website ([www.mpa.nsw.gov.au](http://www.mpa.nsw.gov.au)) and include the following:

### *System-wide strategies and plans*

- Marine parks education and communications strategy 2009–12
- Strategic framework for evaluation and monitoring of marine parks 2004
- Marine parks strategic research plan 2005–10
- Marine parks statewide compliance plan 2009–2012

### *System-wide policies*

- Marine parks permits policy
- Marine parks artificial reef policy
- Marine Parks Authority mooring and anchoring policy
- Policy and guidelines for Aboriginal engagement and cultural resource use in NSW marine parks.

New strategies, policies and plans may be developed during the period in which a NSW marine park zoning plan or operational plan is in effect. Existing strategies, plans and policies may also be periodically reviewed, amended or replaced. The Batemans Marine Park Operational Plan is required to deliver actions consistent with NSW marine park strategies and plans, as well as give effect to any marine park policies.

## 2.5 Linkage with relevant legislation and conservation programs

Management of Batemans Marine Park does not occur in isolation from other conservation and natural resource management legislation or other government agency administered programs and initiatives. Some marine species migrate across marine park boundaries, currents transport nutrients and larvae over large areas and many activities occurring in waters outside park boundaries or on adjacent land can influence marine biodiversity within a marine park. The health of the near-shore marine environment is linked to the health of the region's catchments, rivers, estuarine and coastal ecosystems, which all drain to the ocean.

The Batemans Marine Park benefits from a wide range of NSW and local government programs, including those operating within and adjacent to the park (e.g. fisheries management, pollution reduction, estuary and coastal management). The MPA can influence such programs to ensure they have regard to marine park objectives. Wherever possible, the MPA works closely with other government agencies including DECCW and I&I NSW, Catchment Management Authorities, NSW Maritime, the Department of Planning, local government and with the Australian Department of the Environment, Water, Heritage and the Arts to help achieve shared goals to conserve marine biodiversity and to ensure sustainable use of resources. Key legislation that applies and agencies that operate in NSW marine parks and complement the Marine Parks Act in managing the marine environment are described in Appendix 2.

National parks and nature reserves provide a degree of naturalness and protected catchment areas adjacent to most marine parks. Plans of management developed for national parks and nature reserves enable complementary management across the land and sea interface and reduce potential for future land-based impacts to the marine park. National parks and reserves adjacent to the Batemans Marine Park include the Murramarang, Clyde River, Eurobodalla and Gulaga national parks, and the Brush Island, Belowla Island, Tollgate Island, Cullendulla Creek, Broulee Island and Montague Island nature reserves. These natural areas adjacent to the Batemans Marine Park were a key criterion in the selection of the marine park.

The Southern Rivers Catchment Management Authority (SRCMA) has prepared a Catchment Action Plan which includes a coast and marine program. This program extends the scope of the SRCMA's responsibility to include a whole-of-catchment perspective on impacts from the catchment on the coastal waters it flows into. This key program focuses on increasing knowledge about the marine environment and improving management practices to reduce impacts on it. The SRCMA also has a water program that aims to maintain estuarine ecosystem health to protect biodiversity and support sustainable use of these resources. The goals of these two key programs overlap substantially with objects of the Marine Parks Act. Similarly, local government has a lead role in delivery of estuary and coastal management plans with financial and technical assistance from the NSW Government.

### **3 VALUES**

Batemans Marine Park provides a range of natural, cultural and economic values to the community. These values or benefits have important short- and long-term positive outcomes for community well-being. The inherent natural (physical and biological) values of the park are the primary focus of marine park management, which aims to conserve marine biodiversity. Cultural values relate to the importance of areas to Aboriginal and non-Aboriginal communities, from both historical and current-use perspectives. Economic values are associated with the benefits derived from commercial use and visitation to the area, in terms of employment and revenue to the community.

#### **3.1 Natural values**

##### **Ecosystems and habitats**

The Batemans Marine Park includes a large proportion of biodiversity within the Batemans Shelf Bioregion. This marine park has a relatively temperate climate with average air temperatures ranging from about 6°C in winter to 24°C in summer. Average rainfall is 911 mm with slightly more rain in the spring and summer than other seasons. Westerly winds dominate during the winter months providing calm sea conditions, whereas persistent north-easterly sea breezes and strong southerly winds are a common feature in summer.

Batemans Marine Park lies south of where the East Australian Current moves offshore and is influenced by this warm current only around 10% of the time (Breen et al. 2005). Although the coastline is often bathed by the warmer waters of the East Australian Current in summer and autumn, the waters of the marine park are more influenced by the cooler waters of Bass Strait that move north inshore from the continental shelf. Ocean temperature within the marine park can change rapidly when cold, nutrient rich upwellings influence the coast. These upwelling events have a large influence on phytoplankton abundances (often causing algal blooms) and significantly decrease oceanic water clarity.

The Batemans Marine Park contains 24 estuaries large enough to be classified by Roy et al. (2001). This includes 1 tide dominated drowned river valley, 1 ocean embayment, 16 intermittent estuaries and 6 wave dominated estuaries. The Clyde River is the only example of a tide dominated, drowned river valley in the Batemans Shelf Bioregion. Coila and Durras lakes represent some of the largest intermittent estuaries in the bioregion.

##### **Animals and plants**

The rocky reefs of Batemans Marine Park support an astounding diversity of flora and fauna. Many shallower rocky reefs are dominated by lush kelp forests consisting of species such as the common kelp (*Ecklonia radiata*), cray-weed (*Phyllospora comosa*) and different species of *Cystophora* and *Sargassum*. Beneath these canopies are diverse understory communities of smaller seaweeds, colourful sponges and ascidians (e.g. Kennelly 1987, Irving et al. 2004). Kelp forests provide a habitat for hundreds of smaller species such as microscopic crustaceans, worms and colonial bryozoans that seek shelter on the kelp blades or in their tangled root-like holdfasts (e.g. Smith 1996).

Sea urchin barrens are also common on shallow rocky reefs within BMP. These are areas where sea urchins (mostly *Centrostephanus rodgersii*) and gastropods such as tent shells (*Australium tentiformis*) and turbo (*Turbo torquatus*) graze seaweeds, leaving only encrusting coralline algae to live on the rocks.

The rocky reefs of BMP are home to a diverse array of fish with over 109 species being found during recent scientific surveys of shallow reefs. Schooling fish species such as one-spot puller (*Chromis hypsilepis*), mado (*Atypichthys strigatus*) and eastern hulafish (*Trachinops taeniatus*) are typically the most abundant species. The most abundant resident reef fish include white ear (*Parma microlepis*), rock cale (*Crinodus lophodon*) and crimson-banded wrasse (*Notolabrus gymnogenis*). Tropical species of fish that are transported south in warm currents in the summer months are also common. On the deeper rocky reefs of BMP (~30 m) kelp forests become less common and are replaced by beds of colourful and unusually shaped sponges, ascidians and sea whips. Fish assemblages on these reefs are diverse with over 78 species from 43 families being recorded in scientific surveys of deep reefs in BMP during 2007 and 2008. Wrasse (labrids) and leatherjackets (monacanthids) were found to be the most speciose families found on these reefs.

Seagrass habitats (mostly *Zostera capricorni* and *Posidonia australis*) are well represented in BMP. Seagrass beds are critically important to estuarine and lake systems because they greatly enhance local primary production and biodiversity, stabilize sediment, and provide a nursery habitat for many economically-important crustaceans and fish (Butler & Jernakoff 1999). Despite their high conservation status, seagrass beds are declining worldwide, as well as in Australian waters (Walker et al. 2007).

Unconsolidated habitats (e.g. sediments consisting of either sand, mud or pebbles) are also a common habitat within BMP and are home to a diverse suite of microscopic organisms that live within the interstitial spaces in the sediment. Termed 'infauna' these marine animals consist of minute crabs and crustaceans, gastropods (snails) and polychaete worms that serve as food for many other marine life, such as fish and prawns. Microalgae are also common as both solitary cells on the sediment or as chains and films that cover the bottom. These unvegetated habitats are nourished by decomposing seagrass and seaweed that is detached during storms and rots on the bottom providing food to organisms known as detritivores.

The Batemans Marine Park includes both resident and migratory species which are considered to be threatened under the *Threatened Species Conservation Act 1995* or the *Fisheries Management Act 1994*. Whilst it is the intention of management to conserve all marine species occurring naturally within its boundaries, particular emphasis is placed on conserving marine species and ecological communities that are more susceptible to human impacts, including grey nurse (*Carcharias taurus*) and white (*Carcharodon carcharias*) sharks, eastern blue devil fish (*Paraplesiops bleekeri*), black cod (*Epinephelus daemeli*), weedy sea dragons (*Phyllopteryx taeniolatus*) and many other syngnathiformes, sea turtles, marine mammals, shorebirds, and saltmarsh, as well the marine mollusc, *Smeagol hilaris*, which is only found in a single location on the Murramarang coast.

Marine mammals including humpback (*Megaptera novaeangliae*), southern right (*Eubalaena australis*) and killer (*Orcinus orca*) whales are common within BMP. The marine park also has large populations of Australian and New Zealand fur seals (*Arctocephalus pusillus doriferus* and *Arctocephalus forsteri*, respectively). A number of seabirds and shorebirds including little terns, hooded plovers, sooty and pied oyster catchers and albatross have been recorded nesting or foraging in the park. Seabirds are protected and managed under the *National Parks and Wildlife Act 1974* (NSW) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The migratory little tern (*Sterna albifrons*) and the resident beach stone curlew (*Esacus neglectus*) are both listed as endangered under the Threatened Species Conservation Act.

## 3.2 Cultural values

People place cultural values on the marine environment, including aesthetic, social, spiritual, recreational, commercial, and other values. These cultural values may be attached to the seascape as a whole or to individual components, for example to plant and animal species used by Aboriginal people.

### Aboriginal culture and heritage

The Batemans Marine Park lies within the country of the traditional Aboriginal owners the Yuin (Dharumba, Djirringanj, Brinja and Walbanga), which are made up of many language groups including the Dhawa and Dhurga. Aboriginal people have occupied the south coast region of New South Wales for at least 20,000 years. The estuaries, rivers, lakes and oceans provided traditional Aboriginal people with diverse food resources including fish, shellfish, sea mammals, seagrasses and seaweed. The natural resources of lands adjoining the marine environment also provided food, clothing, shelter, tools and areas for ceremonial purposes.

Certain local landscape features such as islands and mountains, as well as sites such as middens, camp grounds, ceremonial grounds and burial grounds hold special cultural associations for local Aboriginal people. Protecting and looking after these cultural heritage sites is fundamental for Aboriginal people. Traditional knowledge about local plants and animals, including fish and other marine life, is still held by Aboriginal families across the region.

### Maritime heritage

Management of shipwrecks throughout Australia is effected primarily through the Commonwealth's *Historic Shipwrecks Act 1976*. More than 10 shipwrecks have been located in the waters of the Batemans Marine Park and many more were lost in the area with no structure remaining today. The most notable wrecks in the area are the *John Penn* near Broulee and the *Lady Darling* in the far south of the Batemans Marine Park.

## 3.3 Economic values

Tourism, both recreational and commercial, is a major focus of the south coast of New South Wales. Most activities undertaken in the Batemans Marine Park are recreational in nature and include swimming, walking, running, wildlife observing, surfing, fishing, diving, snorkelling, sailing, kayaking and beach going.

Some forms of commercial fishing are permitted in specified zones of the Batemans Marine Park and are regulated by DII (Fisheries). The Marine Park Zoning Plan also places additional conditions on commercial fishing, such as no trawling within the park's boundaries and no mesh netting in the Clyde River. At the commencement of the zoning plan, local commercial fishing operations were adjusted through a \$10.8 million voluntary buy-back program. Adjustment of commercial fishing effort at the time of zoning was a critical component of the marine park's establishment and aimed to ensure that sufficient commercial fishing effort was removed to offset reduced access to the marine park as a consequence of zoning. As well as commercial fishing, there is a thriving oyster aquaculture industry within the Batemans Marine Park.

With the exception of commercial fishing, a permit is required to undertake any other commercial activity in the marine park. As well as mooring contractors and other consultancy businesses, permits have been issued to more than 60 businesses, including whale watching, charter fishing, kayak tours, scuba diving charters, surf schools, boat hire, sightseeing, cruises, mooring contractors, construction companies, fishing clubs, etc. Given the seasonal nature of business on the NSW south coast, many businesses conduct a range of activities, e.g. a combination of charter fishing, whale watching and scuba/snorkelling charters.

## 4 THREATS

Threats to marine and estuarine biodiversity include all human activities that impact significantly on the diversity and abundance of animals, plants and microorganisms and their genetic makeup, as well as the habitats and ecosystems they live in (e.g. fishing, pollution, invasive species). Effective conservation of marine biodiversity aims to minimise risks and prioritise human activities that impact on animals, plants, habitats and ecosystems, while allowing natural processes to occur. Marine communities, ecological processes and ecosystem functions are naturally dynamic varying from place to place and year to year. In particular, natural disturbances such as destructive storms or outbreaks of grazing sea urchins, can cause profound changes in the structure and function of marine and estuarine communities and have moulded marine environments over millennia. Although natural disturbances can cause significant environmental devastation, marine and estuarine communities can recover from these given time.

Responses to human threats to marine and estuarine biodiversity are often based on the risk of biodiversity change. Risk evaluation is commonly derived from the integration of the potential consequences of a particular activity occurring with the likelihood of its occurrence (Hayes 1997). For example, a large oil spill has the potential to cause a substantial and long lasting impact to marine biodiversity, but the likelihood or frequency of such an event occurring is very low. While such risk assessments are a very useful tool for resource allocation and prioritisation, they are prone to failure in capturing the full picture of marine biodiversity decline because they assess threats in isolation. Although individual activities can and do cause impacts, declines in marine biodiversity are generally a function of multiple human stressors interacting on multiple spatial and temporal scales. Consequently, effective conservation of marine biodiversity requires that multiple threats are simultaneously addressed in a coordinated and holistic way.

Key threats to marine and estuarine biodiversity can be divided into at least five broad categories including resource use, land-based impacts, marine biosecurity, marine pollution and climate change.

### 4.1 Resource use

Australia's National Strategy for Ecologically Sustainable Development 1992 defines ecologically sustainable development as 'using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased' (Commonwealth of Australia 1992). The establishment of NSW marine parks was consistent with this policy, and these parks were modelled on the approach adopted by the Great Barrier Reef Marine Park, which allows for sustainable resource use within the boundaries of the marine park, providing that the objective of biodiversity conservation is also achieved.

While it is important to ensure that all extractive uses in NSW marine parks are sustainable, there is potential conflict between management for sustainability and conservation of marine biodiversity (Hilborn 2005). Sustainable extraction from marine environments, such as managed fisheries, can still (i) result in changes to marine communities and ecological processes due to the selective removal of predators, prey and competitors; (ii) act as a selection pressure that influences population genetics; (iii) create physical disturbance to habitats; or (iv) unintentionally take non-target species. Thus, sanctuary zones, where no extraction is permitted, are included in all NSW marine parks to ensure that biodiversity conservation objectives are met in the first instance by providing places where marine communities exist in the absence of human extraction (in turn supporting the Marine Parks Act objective to maintain ecological processes).

The most significant threats from extractive uses in NSW marine parks relate to illegal fishing within parks in general, but especially sanctuary zones. Of particular concern to the Batemans Marine Park is illegal trawling. Trawling not only removes large numbers of target species, such as tiger flat head (*Neoplatycephalus richardsoni*) and silver trevally (*Pseudocaranx dentex*), but is also associated with substantial bycatch (i.e. species that have no commercial value) and discarding of injured undersize economically-important species (NSW Department of Primary Industries 2004). Trawling also causes substantial damage to marine habitats (NSW

Department of Primary Industries 2004). Sanctuary zones in the Batemans Marine Park are also subject to illegal mesh netting, illegal collection of large quantities of abalone and rock lobsters and illegal recreational fishing activities. Given the substantial variation in frequency of occurrence and risk to biodiversity of the illegal fishing activities that occur in the Batemans Marine Park, it is critical that risk-assessment be adopted to ensure compliance resources are utilised optimally.

Non-extractive uses of marine and estuarine ecosystems, such as commercial tourism, shipping and recreational activities have many economic and educational benefits for New South Wales. However, the intensity and frequency of such activities also has the potential to impact marine species and habitats. For example, excessive visitors to a rocky intertidal shore can impact plants and animals through trampling (Keough & Quinn 1998). Although some non-extractive activities, such as anchoring, are provided for in the marine park's zoning plan, most commercial activities, research, and organised events are managed through a permitting process.

The most significant threats from non-extractive resource use in the Batemans Marine Park include concentrated marine mammal observation, intensively used scuba diving sites, careless boating practices around seagrass beds and illegal waste disposal. Whale watching and seal observation are two popular commercial activities in the Batemans Marine Park. Each has the potential to alter the behaviour of the animals under observation if appropriate consideration is not given (e.g. Stamation et al. 2010). To address this, the *Australian national guidelines for whale and dolphin watching* (Department of Environment and Heritage 2005) are in force in Batemans Marine Park and NSW state waters in general. Similarly, appropriate consideration should be given to the importance of seagrass when boating. Anchor and propeller scars can cause substantial and unnecessary long-term impacts.

Both extractive and non-extractive uses of marine and estuarine resources may require significant infrastructure, such as jetties for access and supplies, to support their activities. The installation and on-going maintenance of these facilities often results in substantial shoreline alteration however.

With significant population growth predicted on the south coast of New South Wales in coming decades, it is anticipated that there will be an increasing demand on extractive and non-extractive use of the Batemans Marine Park. Consequently, adaptive management will be required to ensure the objects of the Marine Parks Act continue to be met.

## **4.2 Land-based pollution and habitat impacts**

Human activities in coastal catchments can directly and indirectly impact on adjacent marine environments (Natural Resource Management Ministerial Council 2006). Industrial, agricultural and urban diffuse and point source discharges can include a variety of pollutants, such as nutrient loading, pesticides, metals, sediments (including acid sulphate soils) and litter. Besides having adverse impacts on marine biodiversity, land-based pollution can have serious implications for marine industries, in particular fisheries, aquaculture and tourism.

Pollution can be introduced into the marine environment by point source discharges, diffuse discharges or solid wastes. While point source discharges and solid waste are easier to manage to ensure water quality guidelines are met, diffuse discharge is more problematic. The potential of land-based pollution to impact on marine biodiversity is dependent on a range of factors including types of pollutant, size of catchment, modification of catchment, and the type and amount of industrial, urban and agricultural development. Estuarine waters adjacent to large urban populations or within highly modified agricultural catchments are particularly susceptible to diffuse pollution (Scanes et al. 2007). These types of impacts can be exacerbated in intermittently closed and open lakes and lagoons when they are closed to the ocean, because there is little tidal exchange or flushing of pollutants.

A key strategy to minimise land-based threats to marine communities is to establish marine protected areas, in particular sanctuary zones, adjacent to terrestrial lands with high conservation status (ANZECC Task Force on Marine Protected Areas 1998). Marine stressors from terrestrial conservation areas are generally low. Therefore, the deliberate linking of marine

sanctuaries to terrestrial reserves will help conserve marine biodiversity. Opportunities to complement adjacent land-use management were considered when preparing the Batemans Marine Park Zoning Plan and, where practical, sanctuary zones were located directly adjacent to national parks or nature reserves. For example, the two sanctuary zones located on the Murramarang coast of the Batemans Marine Park are in an area that has some of the highest percentage of adjacent coastal lands within 1 km of a national park or nature reserve in the Batemans Shelf Bioregion (Breen et al. 2005).

### 4.3 Marine-based pollution

Marine pollution is associated with a variety of human activities, including shipping, boating, oil and gas exploration, fishing and aquaculture. Pollution from such sources encompasses, but is not limited to, oil and chemical spills and discharges, boat sewage and wastewater discharge, marine industrial and domestic waste jetsam, aquaculture discharge, and antifoulants.

Marine pollution impacts on marine biodiversity by degrading habitats and water quality or by directly smothering or killing marine species. Marine pollution can impact on the structure and function of marine communities and alter key ecosystem processes, such as primary production. Pollution agents can also accumulate in marine organisms resulting in physiological and morphological effects in higher predators. Pollutants often persist in the environment, continuing to impact marine organisms and habitats for many years after their discharge.

Marine debris, in particular garbage wastes and lost fishing gear, threaten biodiversity in the Batemans Marine Park. For example, marine animals can be harmed through entanglement in and ingestion of plastic litter (Derraik 2002). Lost fishing gear, such as traps and nets, can continue ghost fishing for weeks, even months, and are notable threats to fish, marine animals and birds. Large-scale discharges from vessels (e.g. oil, wastewater, ballast water or fuel) has the potential to negatively influence marine life in the Batemans Marine Park, as well as impact the productive oyster aquaculture industry.

### 4.4 Marine biosecurity

Marine pest species represent a very significant threat to marine biodiversity. For example, marine pest species can: compete with native species for resources, consume native species, disrupt food chains, alter the structure of habitat, modify ecosystem productivity, and facilitate the spread of aquatic disease, pathogens and parasites. Marine pest species threaten the viability of commercial and recreational sectors including fisheries, aquaculture, tourism, shipping and ports.

The exact number of introduced species to Australian waters is unknown; however, over 129 exotic marine species and 209 species of unknown origin have been identified. Pests can attach themselves to boats hulls, fishing gear and other marine equipment, and can also be transported in bilges, pipes and ballast water. Pests can also be translocated within the aquaculture and aquarium industry. Once established, marine pests are extremely difficult to eradicate and costly to manage, requiring coordinated planning. In this regard, Australia has in place a national system for the prevention and management of marine pests to prevent new marine pests arriving, and to respond when a new pest establishes to minimise their spread and impacts.

Currently, there are three major pest species in the Batemans Marine Park that may threaten native biodiversity: aquarium *Caulerpa* (*Caulerpa taxifolia*), European green crabs (*Carcinus maenas*) and Pacific oysters (*Crassostrea gigas*).

Aquarium *Caulerpa* has been identified in two estuaries (Clyde River and Durras Lake) in the Batemans Marine Park. This invasive alga proliferated in the Mediterranean during the 1990s, but since 2001 has established in 13 estuaries in New South Wales. Aquarium *Caulerpa* impacts marine biodiversity by changing assemblages of infauna (e.g. Gribben et al. 2009), as well as fish assemblages (York et al. 2006). Furthermore, aquarium *Caulerpa* can have broad-scale impacts on benthic communities in New South Wales by modifying detrital subsidies (Taylor et al. *in review*).

European green crabs are a medium sized crustacean (carapace width up to 80 mm) introduced to Australian waters more than 100 years ago. These crabs have been identified from five major estuaries in the Batemans Marine Park (Tilba Tilba Lake, Corunna Lake, Nangudga Lake, Wagonga Inlet and Clyde River). European green crabs have impacted shell fisheries (Walton et al. 2002) and altered food web structure (Grosholz et al. 2000).

Pacific oysters are a large oyster (up to 200 mm) that was first introduced into south-eastern and western Australian waters for aquaculture. Pacific oysters have subsequently spread and invaded intertidal habitats of many waterways throughout New South Wales. Pacific oysters grow at up to twice the rate of the native oyster (e.g. Honkoop & Bayne 2002) and produce 50–100 million eggs annually compared with the 20 million eggs of the native oyster. Consequently, Pacific oysters can outcompete native oysters for space in some situations (Krassoi et al. 2008), which can have implications for habitat provision and ecosystem functions influenced by oysters. Invasions by Pacific oysters also have negative consequences for native oyster aquaculture.

#### **4.5 Climate change**

Climate change driven by human activities has and will continue to threaten marine biodiversity. On average, ocean temperatures and sea levels have increased over the last century. Concurrently, the pH of the oceans has decreased and the southward flow of the East Australian Current has intensified pushing warm and saltier water further south (Poloczanska et al. 2009). As our climate continues to change, it has been predicted with high confidence that directional changes in the temperature and pH of the oceans, as well as sea level rises, will continue over the next century (Poloczanska et al. 2009).

Climate change could have myriad impacts on marine and estuarine biodiversity in NSW waters. For example, a strengthening of the East Australian Current will cause further southern shifts in the distribution of fish, invertebrates, algae and microorganisms, which will continue to impact the structure and function of marine ecosystems (Poloczanska et al. 2009). Within estuaries, mangroves will likely encroach into areas currently occupied by saltmarshes, and seagrass may decline due to sea level rise, increased storminess and warmer temperatures (Lovelock et al. 2009). Ocean acidification combined with increasing water temperatures may decrease the growth and survival of tropical and temperate corals and other invertebrates found in NSW waters. Furthermore, warmer temperatures and an El Niño-like future climate may reduce food availability for breeding seabirds, leading to a reduction in breeding success.

NSW marine parks may reduce predicted impacts of climate change on marine biodiversity in a number of ways. Firstly, marine parks contribute to a network of marine protected areas down the east coast of Australia that facilitate connectivity and provide refuges for marine species undergoing southern range expansions. Second, marine parks may reduce negative interactions between climate change and other types of impacts (e.g. fishing and marina construction) by directly reducing other threats to marine communities. Finally, NSW marine park legislation will play a key role in ensuring that developments aimed at protecting privately- and publicly-owned coastal assets (e.g. seawalls, groins, etc.) are installed appropriately and with minimum impact to marine biodiversity. This will be especially important in Batemans Marine Park because predicted sea level rises will exacerbate erosion along coastlines of the marine park and increase the chance of flooding in low-lying areas in Batemans Bay and Wagonga Inlet, as well as other less urbanised places.

## 5 MANAGEMENT STRATEGIES AND ACTIONS

Management actions have been organised under broad strategies to deliver on marine park legislative objectives, as follows:

*Objective 1* – To conserve marine biodiversity, marine habitats and maintain ecological processes in the marine park, includes:

1. identification and adaptive management of threats to marine biodiversity and habitats
2. protection of high conservation areas and threatened species.

*Objective 2* – To provide for ecologically sustainable uses (including commercial and recreational fishing), includes:

3. assessing developments in and affecting the marine park to minimise impacts
4. maximising voluntary compliance with the marine park zoning plan
5. ecologically sustainable management of commercial activities.

*Objective 3* – To provide opportunities for public appreciation, understanding and enjoyment, includes:

6. delivering an ecological, social, cultural and economic research and monitoring program
7. promotion of sustainable tourism and recreational uses, as well as facilitating a greater appreciation of marine biodiversity
8. ensuring management is consistent with the cultural aspirations of Aboriginal people.

Management actions have been systematically identified to give support to these strategies and are outlined in Table 1 below. These actions include the range of responses involved in each step of management, including: 1) policy development at the state and local level; 2) strategic and local planning; 3) day-to-day management; and 4) research and monitoring. Following identification and consideration of respective outputs and outcomes in meeting strategy objectives, actions were prioritised with the assistance of the local Batemans Marine Park Advisory Committee.

**Table 1 – Management actions and performance indicators**

**MARINE PARK OBJECTIVE: To conserve marine biodiversity, marine habitats and maintain ecological processes in the marine park.**

Strategy	Action	Performance indicators		Priority
		Output (deliverables)	Outcome (extent to which management objectives are being achieved)	
<b>1. Identification and adaptive management of threats to biodiversity and habitats in the marine park</b>	Report on natural values and key threats to BMP to provide up-to-date information for public use, adaptive management and for zoning plan review.	<ul style="list-style-type: none"> <li>Report prepared prior to review of zoning plan.</li> </ul>	Public are better informed to comment about marine park values and management needs during the review process.	High
	Support and engage in the development and implementation of management plans and programs initiated by local councils and other government agencies.	<ul style="list-style-type: none"> <li>Local management plans (e.g. Local Environmental Plan, estuarine or coastal management plans) address BMP priorities.</li> <li>Appropriate initiatives to conserve marine biodiversity by reducing land-based threats are supported.</li> </ul>	Coordinated planning and resourcing amongst agencies provides a more holistic approach to reducing threats to biodiversity in BMP.	High
	Work with relevant agencies (e.g. DECCW Environment Protection and Regulation Group and NSW Maritime) to ensure effective government response to pollution incidents.	<ul style="list-style-type: none"> <li>Pollution incident management strategies are developed for BMP that identify responsibilities of various agencies and their contacts' details.</li> <li>Local incident plans consider objects of the Marine Parks Act.</li> <li>BMP staff are trained to assist in pollution incidents where necessary.</li> </ul>	Effective incident response reduces impacts on marine biodiversity in BMP.	High

**MARINE PARK OBJECTIVE: To conserve marine biodiversity, marine habitats and maintain ecological processes in the marine park.**

Strategy	Action	Performance indicators		Priority
		Output (deliverables)	Outcome (extent to which management objectives are being achieved)	
<b>1. Identification and adaptive management of threats to biodiversity and habitats in the marine park</b>	Contribute to preparation of policies and management plans that are developed by agencies to address impacts and management of marine pests of concern to BMP.	<ul style="list-style-type: none"> <li>• Develop a pest management strategy for BMP.</li> <li>• Support agencies (CMA and I&amp;I) in the preparation and implementation of local and statewide invasive species plans.</li> <li>• Local initiatives to control marine pests in BMP are supported.</li> <li>• Research grants obtained and papers published that direct management action on invasive species in BMP.</li> <li>• AQUIS National Ballast Water and Biofouling plan is implemented.</li> <li>• Make information on marine invasive species available in advisory activities and encourage reporting.</li> </ul>	Pest species in BMP are identified and threats are minimised or mitigated.	High
	Review the BMP zoning plan	<ul style="list-style-type: none"> <li>• Zoning plan review report prepared for Ministers' consideration.</li> </ul>	Updated BMP zoning plan provides for effective delivery of marine park objectives, representing and protecting key habitat types and providing for sustainable use.	High

**MARINE PARK OBJECTIVE: To conserve marine biodiversity, marine habitats and maintain ecological processes in the marine park.**

Strategy	Action	Performance indicators		Priority
		Output (deliverables)	Outcome (extent to which management objectives are being achieved)	
<b>2. Protection of high conservation areas and threatened species</b>	Enforce the BMP zoning plan effectively by prioritising resources to high conservation areas (e.g. key sanctuary zones), damaging activities and repeat offenders using a risk-based approach.	<ul style="list-style-type: none"> <li>Annual BMP compliance plans using risk-based approach are prepared and implemented.</li> <li>Enforcement activities are implemented optimally.</li> <li>Enforcement data maintained on the Nautilus compliance database.</li> </ul>	Marine biodiversity effectively conserved through marine park users complying with the zoning plan.	High
	Support DECCW, I&I NSW and the DEWHA in the implementation of recovery actions for threatened species and endangered ecological communities and contribute to threat abatement actions.	<ul style="list-style-type: none"> <li>Appropriate training for BMP staff is undertaken for the identification and protection of marine threatened species.</li> <li>DECCW policies for marine mammal disentanglement and their conservation and management are implemented.</li> </ul>	<p>Populations of threatened species in BMP are not impacted by use.</p> <p>Improved information is available to make informed decisions concerning the protection of threatened species and endangered ecological communities.</p>	High
	Encourage marine park users, including commercial operators and community groups, to record sightings of threatened and vulnerable species.	<ul style="list-style-type: none"> <li>Information sheets are developed and distributed to facilitate reporting of sightings of threatened species.</li> </ul>	Better informed decisions are made concerning the effectiveness of protection strategies for threatened species and endangered ecological communities in BMP.	Medium

**MARINE PARK OBJECTIVE: To provide for ecologically sustainable uses (including commercial and recreational fishing).**

Strategy	Action	Performance indicators		Priority
		Output (deliverables)	Outcome (extent to which management objectives are being achieved)	
<b>3. Assessing developments in and affecting the marine park to minimise impacts</b>	Establish processes with relevant authorities to ensure that the provisions of the Marine Parks Act are met when assessing applications for developments in and adjacent to BMP.	<ul style="list-style-type: none"> <li>• Applications for developments in BMP are assessed in accordance with the provisions of the Marine Parks Act.</li> <li>• Marine park conditions are incorporated into development approvals.</li> </ul>	Impacts from construction and operation of developments in the marine park are managed or mitigated.	High
	Enforce and audit relevant conditions included within development approvals.	<ul style="list-style-type: none"> <li>• Compliance of development conditions is included in the marine park compliance plan.</li> </ul>	Successful enforcement or restorative action is taken in respect of developments in BMP that do not comply with development conditions.	High
	Contribute to the preparation and review of legislation, policies or strategies relating to the assessment of applications for developments in NSW marine parks.	<ul style="list-style-type: none"> <li>• Legislation, policies and strategies associated with development consent include BMP's needs.</li> </ul>	Decision making for developments is improved ensuring impacts on values of BMP are mitigated.	Medium
<b>4. Maximising voluntary compliance with the marine park zoning plan</b>	Prepare risk-based annual compliance plan for the BMP and include activities (e.g. advisory days, fishing competition briefings) aimed at maximising voluntary compliance.	<ul style="list-style-type: none"> <li>• BMP compliance plan is prepared and implemented annually.</li> <li>• Local education and awareness activities are included in the compliance plan for BMP.</li> </ul>	Marine park users comply with marine park legislation and compliance resources are used effectively.	High

**MARINE PARK OBJECTIVE: To provide for ecologically sustainable uses (including commercial and recreational fishing).**

Strategy	Action	Performance indicators		Priority
		Output (deliverables)	Outcome (extent to which management objectives are being achieved)	
<b>4. Maximising voluntary compliance with the marine park zoning plan</b>	Enforce provisions of relevant legislation with priority given to areas identified in state and local marine park compliance plans.	<ul style="list-style-type: none"> <li>• Staff trained to enforce provisions of marine parks, fisheries and national parks legislation.</li> <li>• Enforcement activities are implemented optimally.</li> </ul>	Trends in voluntary compliance with marine parks legislation improve, and in particular, there is a reduction in enforcement actions (enforcement action/patrol effort) observed by the local community (within 40 km of BMP).	High
	Adaptively manage signage, buoys and advisory material to improve understanding of the zoning plan.	<ul style="list-style-type: none"> <li>• Signage and buoys are recorded in an asset maintenance system and regular maintenance completed.</li> <li>• Comments from marine park users about advisory material collated and appropriate changes made to advisory materials.</li> </ul>	Trends in voluntary compliance with marine parks legislation improve.	High
	Assess applications for organised recreational activities in BMP.	<ul style="list-style-type: none"> <li>• Permits issued with appropriate conditions.</li> </ul>	Organised recreational activities in BMP are managed in accordance with statutory and policy requirements.	High
	Enforce and audit conditions of permits for recreational activities in BMP.	<ul style="list-style-type: none"> <li>• Permit conditions are enforced.</li> <li>• At least 10% of permits issued are audited per year.</li> </ul>	Continual improvement over time in the development of permit conditions and compliance, as well as a decrease in offences relating to permit breaches.	Medium

**MARINE PARK OBJECTIVE: To provide for ecologically sustainable uses (including commercial and recreational fishing).**

Strategy	Action	Performance indicators		Priority
		Output (deliverables)	Outcome (extent to which management objectives are being achieved)	
<b>5. Ecologically sustainable management of commercial activities</b>	Work with commercial tour operators to develop ways to promote and market sustainable practices and enjoyment of the marine park.	<ul style="list-style-type: none"> <li>Commercial tour operators support and promote sustainable practices.</li> <li>Commercial tour operators adopt sustainable practices that are listed on MPA web site.</li> </ul>	The number of operators who are actively promoting sustainable use increases over time.	Medium
	Assess applications for commercial activities in BMP.	<ul style="list-style-type: none"> <li>Permits issued with appropriate conditions.</li> </ul>	Commercial activities in BMP are managed in accordance with statutory and policy requirements.	High
	Enforce and audit conditions of permits for commercial activities in BMP.	<ul style="list-style-type: none"> <li>Permit conditions are enforced.</li> <li>At least 10% of permits issued are audited per year.</li> </ul>	Continual improvement over time in the development of permit conditions and compliance, as well as a decrease in offences relating to permit breaches.	Medium
	Contribute to improvement of the MPA permit policies for managing commercial and organised recreational activities in BMP.	<ul style="list-style-type: none"> <li>Permit policy and procedures reviewed.</li> </ul>	Recreational and commercial activities within BMP comply with marine park legislation.	High

**MARINE PARK OBJECTIVE: To provide opportunities for public appreciation, understanding and enjoyment.**

Strategy	Action	Performance indicators		Priority
		Output (deliverables)	Outcome (extent to which management objectives are being achieved)	
<b>6. Delivering an ecological, social, cultural and economic research and monitoring program</b>	Consistent with the MPA Strategic Research Plan, prepare an annual research work plan and undertake core research programs.	<ul style="list-style-type: none"> <li>Annual marine park research work plans are approved.</li> <li>Research publications and reports are produced in accordance with project milestones.</li> </ul>	Research provides feedback to improve management of BMP.	High
	Develop and maintain partnerships with internal and external research providers to undertake targeted research projects in the marine park.	<ul style="list-style-type: none"> <li>Maintain partnerships with universities and other research providers (e.g. DECCW, I&amp;I).</li> <li>Reports from research programs are prepared and published.</li> </ul>		High
	Apply for external grant funding to value-add research efforts in the Batemans Marine Park	<ul style="list-style-type: none"> <li>Significant research grants are obtained.</li> </ul>		High
	Contribute to the development and review of policies and strategies relating to research activities by the MPA.	<ul style="list-style-type: none"> <li>The development and review of policies and strategies relating to research activities by the MPA include BMP priorities.</li> </ul>		Medium
	Make research findings publicly available in an easy to understand format.	<ul style="list-style-type: none"> <li>Opportunities to publicise key research findings in BMP are explored.</li> </ul>	Public becomes better aware of high quality research being conducted in the Batemans Marine Park.	Medium

**MARINE PARK OBJECTIVE: To provide opportunities for public appreciation, understanding and enjoyment.**

Strategy	Action	Performance indicators		Priority
		Output (deliverables)	Outcome (extent to which management objectives are being achieved)	
<b>6. Delivering an ecological, social, cultural and economic research and monitoring program</b>	Research activities are managed in accordance with statutory, policy and strategic requirements.	<ul style="list-style-type: none"> <li>Applications for research permits are assessed with reference to statutory, policy and strategic requirements.</li> </ul>	Results from permitted research activities are incorporated into future management action and natural values reports.	High
<b>7. Promotion of sustainable tourism and use, as well as facilitating a greater appreciation of marine biodiversity</b>	Work with recreational groups, local council and chamber of commerce to support/ coordinate events, and promote local marketing opportunities through the development of promotional material and MPA sponsorship.	<ul style="list-style-type: none"> <li>Marketing products published and promotional events supported.</li> </ul>	Appreciation of BMP increases over time, as does the prominence of organised events held in the marine park.	Medium
	Opportunities are provided for volunteer and community groups to engage in marine park education, environmental restoration and research projects.	<ul style="list-style-type: none"> <li>Volunteer projects are developed and implemented with community support and funding.</li> </ul>	Community support and appreciation of BMP improves over time.	Medium
	Educate local school and community groups about the values of BMP.	<ul style="list-style-type: none"> <li>MPA primary school education kit developed and implemented.</li> <li>Local primary and high schools are visited by MPA staff.</li> <li>Support DECCW Discovery Ranger Program (marine park component).</li> </ul>	<p>Number of local primary schools using the MPA schools kit increases over time.</p> <p>Increased number and satisfaction of discovery participants with discovery programs offered.</p>	High

**MARINE PARK OBJECTIVE: To provide opportunities for public appreciation, understanding and enjoyment.**

Strategy	Action	Performance indicators		Priority
		Output (deliverables)	Outcome (extent to which management objectives are being achieved)	
<b>7. Promotion of sustainable tourism and recreational uses</b>	Contribute to the implementation of MPA Communications and Engagement Plan 2009–2012.	<ul style="list-style-type: none"> <li>Local actions under the MPA Communications and Engagement Plan 2009–2012 are implemented.</li> </ul>	Public engagement, appreciation and enjoyment of BMP is improved and the community is better informed about marine park values and benefits.	High
	Develop interpretive and regulatory information for marine park users.	<ul style="list-style-type: none"> <li>Signage, publications, advertisements, and information shelters are prepared, website upgraded to include local information.</li> </ul>		High
<b>8. Ensuring management is consistent with the cultural aspirations of Aboriginal people</b>	Ensure there is an appropriate forum for traditional owners to input into the management of BMP.	<ul style="list-style-type: none"> <li>BMP Aboriginal Advisory Group is supported and maintained.</li> </ul>	Greater engagement of Traditional Owners over marine park management.	High
	Identify and administer Cultural Resource Use Agreements (CRUA) for Aboriginal access in the marine park.	<ul style="list-style-type: none"> <li>CRUAs negotiated and signed by parties and marine park and fisheries permits issued.</li> <li>All parties comply with CRUAs.</li> </ul>	CRUAs provide for the sustainable cultural use of marine park resources.	High
	Contribute to the development of policies and strategies relating to research on Aboriginal cultural heritage issues.	<ul style="list-style-type: none"> <li>Research strategies developed for BMP to better direct cultural heritage research.</li> </ul>	Cultural research programs provide information to better inform management decisions.	High

## 6 RESEARCH, MONITORING AND PERFORMANCE REPORTING

Evaluating the delivery of outputs and performance in achieving outcomes is a critical step for adaptive management, as part of improving future planning and management practices. In this regard, management actions described in Section 5 will be evaluated and reported against on an annual basis as part of annual planning.

Approved annual work programs will describe the scheduled actions to be implemented by marine park staff over the financial year. Identified action outcomes, monitoring and resource assessment will be instigated to provide data (both quantitative and qualitative) that will be analysed to view changes over time. Indicators and measurements that will be used in this evaluation are listed in Appendix 3.

The Marine Parks Authority will consider undertaking a review of this operational plan following the review of the zoning plan in 2012.

## 7 REFERENCES

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# Appendix 1 – Marine Parks Authority and marine park committee functions

## Marine Parks Authority

The Marine Parks Authority (the Authority) is a three member statutory body established to administer the declaration and management of marine parks to meet the objectives of the *Marine Parks Act 1997*. The Authority reports to the Minister for Industries and Investment and the Minister for Climate Change and the Environment, who are jointly responsible for the administration of the Marine Parks Act.

The Authority is chaired by the Director-General of the Department of Premier and Cabinet (DPC) and includes as members the Directors-General of the Department of Environment, Climate Change, and Water (DECCW) and NSW Industry and Investment (I&I NSW). The specific functions of the Authority are:

- making recommendations on the zoning of marine parks
- preparing operational plans for marine parks
- managing and controlling activities that may affect marine biodiversity in marine parks
- providing for and regulating the ecologically sustainable use (including commercial and recreational fishing) of marine parks
- disseminating information about marine parks
- encouraging public appreciation, understanding and enjoyment of marine parks and, public recreation in marine parks
- encouraging appropriate scientific research into the ecology of marine systems.

Officers undertaking day-to-day functions of the Authority are employees of DECCW; however, I&I NSW officers assist in the joint enforcement of marine park regulations.

## Marine Parks Advisory Council

The Marine Parks Advisory Council is established to advise the responsible Ministers and the Authority on marine park matters from a 'statewide' perspective. Members on the council include representatives from commercial and recreational fishing, conservation, science, the Aboriginal community, scuba diving and tourism. The council generally provides direct advice to the Authority on matters affecting the whole marine park system, such as legislation, regulatory reform, and marine park policies and the development of scientific research and monitoring plans.

## Batemans Marine Park Advisory Committee

A local advisory committee is established for each marine park to provide specific advice on its management, including zoning and operational plans. The Batemans Marine Park Advisory Committee includes members representing:

- the Aboriginal community
- Shoalhaven, Eurobodalla and Bega Valley shire councils
- commercial fishing
- the community
- marine conservation
- marine science
- recreational fishing
- scuba diving
- tourism industry
- other (at the discretion of the Ministers).

## Appendix 2 – Key legislation applying to NSW marine parks

The *Marine Parks Act 1997* operates alongside the following legislation, which is administered by various NSW and Commonwealth agencies.

Legislation (administering organisation)	Application in NSW marine parks
<p><i>Fisheries Management Act 1994</i>  (Industry and Investment NSW)</p>	<ul style="list-style-type: none"> <li>• The Act aims to conserve, develop and share the fishery resource for the benefit of present and future generations.</li> <li>• Industry and Investment NSW is represented in the Marine Parks Authority, meaning that interactions between marine park and fisheries management programs are well understood and reflected in decision making.</li> <li>• Recreational and commercial fishing legislation applies equally in marine parks as in other NSW waters. For example, species bag and size limits apply in marine parks and licences are required for recreational, charter and commercial fishing in marine parks.</li> <li>• I&amp;I NSW is also the determining authority for dredging and reclamation in state waters including marine parks meaning that opening and closing of coastal lakes in marine parks requires consent under fisheries legislation.</li> <li>• I&amp;I NSW administers the listing and protection of threatened fish and marine vegetation species, population and communities, and processes for identifying critical habitat. Recovery plans and threat abatement plans are implemented in marine parks. For example, the grey nurse recovery plan is being implemented through marine zoning plans.</li> <li>• Section 36 of the Marine Parks Act applies certain provisions of the Fisheries Management Act to enforcement in marine parks. Consistency in enforcement policies and guidelines applies across state waters including in marine parks. Fisheries and marine park officers are authorised under the Fisheries Management Act and Marine Parks Act and joint patrols are common practice.</li> </ul>
<p><i>Catchment Management Authorities Act 2003 (CMA Act)</i>  (Department of Environment, Climate Change and Water – Catchment Management Authorities)</p>	<ul style="list-style-type: none"> <li>• The CMA Act establishes local Catchment Management Authorities for the purpose of ensuring operational, investment and decision making natural resource functions at the catchment level and ensuring that decisions about natural resources take into account appropriate catchment issues.</li> <li>• CMAs have an important role to ensure the management of natural resources in catchments is in the interests of the state. They also provide a framework for financial assistance and incentives to landholders, including marine parks, in connection with natural resource management.</li> <li>• The Department of Environment, Climate Change and Water supports the administration of CMAs and works closely with them both at the state and local levels to support catchment and marine conservation initiatives.</li> <li>• Specifically, CMAs are tasked with developing catchment action plans that give effect to approved plans through annual implementation programs, and provide loans, grants, subsidies or other financial assistance for the purposes of the catchment activities. The Marine Parks Authority has a strong interest in catchment management planning and has been active in their preparation and subsequent reviews.</li> </ul>

Legislation (administering organisation)	Application in NSW marine parks
<p><i>National Parks and Wildlife Act 1974</i></p> <p>(Department of Environment, Climate Change and Water – National Parks and Wildlife Service)</p>	<ul style="list-style-type: none"> <li>• National parks and wildlife legislation provides for the conservation and management of animals and plants and habitats within declared reserves, and for the protection of listed species outside reserves.</li> <li>• All marine reptiles, mammals and birds are protected and managed by DECCW. For example, in marine parks, approach distances for whale and dolphin tour charters are managed under this Act. Other management controls, including accreditation and code of practice compliance are also overseen by DECCW Parks and Wildlife Officers.</li> <li>• Nature reserves and national parks adjacent to marine parks are managed consistently where possible. For example, domesticated animals rules applying to adjacent national parks equally apply within the marine park.</li> </ul>
<p><i>Protection of the Environment Operations Act 1997</i></p> <p>(Department of Environment, Climate Change and Water – Environment Protection Authority)</p>	<ul style="list-style-type: none"> <li>• The Protection of Environment Operations Act provides a single licensing system to regulate air, water and noise pollution, as well as waste management throughout the whole state, including marine parks.</li> <li>• Marine park staff have powers under this legislation for ‘non-scheduled’ activities within marine parks. NSW Maritime also has full powers in respect to vessel related matters in marine parks, including noise pollution.</li> <li>• The joint roles of NSW Maritime and the Marine Parks Authority are set out in an operational agreement about responding to pollution incidents in and outside marine park boundaries.</li> </ul>
<p><i>Environmental Planning and Assessment Act 1979</i></p> <p>(Department of Planning)</p>	<ul style="list-style-type: none"> <li>• Planning legislation provides for the environmental assessment and mitigation of environmental impacts of any works proposed in and adjacent to marine parks.</li> <li>• Planning approvals in marine parks may be subject to local councils or state government determining authorities or both. Most often, development approvals within marine parks require determination by the NSW Land and Property Management Authority (Crown lands) in consultation with the Marine Parks Authority.</li> </ul>
<p><i>Maritime Safety Act 1998</i></p> <p><i>Maritime Services Act 1935</i> (No. 47)</p> <p><i>Navigation Act 1901</i> (No. 60)</p> <p>(NSW Maritime)</p>	<ul style="list-style-type: none"> <li>• The NSW Maritime agency administers maritime safety legislation that provides for the safe and orderly navigation of vessels operating in state waters including all marine parks. The Navigation Act also ensures that navigable waters are not unduly interfered with, in order to ensure safe and uninterrupted passage.</li> <li>• In marine parks, NSW Maritime administers the licensing of moorings including moorings owned and operated by the MPA for public use.</li> <li>• Organised aquatic activities that require aquatic licences under maritime legislation in marine parks are managed by NSW Maritime. NSW Maritime and MPA have arrangements in place to manage joint consent.</li> <li>• Vessel speed restrictions are also managed and enforced by NSW Maritime officers in marine parks. Where speed restrictions are required for the protection of biodiversity, such as important areas for turtles or dolphins, the Marine Parks Authority may regulate vessel speed, by agreement with NSW Maritime.</li> </ul>

Legislation (administering organisation)	Application in NSW marine parks
<p><i>Marine Pollution Act 1987</i> (NSW Maritime)</p>	<ul style="list-style-type: none"> <li>The Marine Pollution Act relates to matters affecting the protection of the sea and certain waters from pollution by oil and other noxious substances discharged from ships. All discharges of noxious substances and oil are prohibited under this Act. The Act also concerns other pollution types and is cross linked with pollution of environment operations legislation in this regard.</li> <li>As pollution from shipping is a major threat to marine parks, NSW Maritime plays a key role in ensuring that risks are minimised in marine park localities.</li> </ul>
<p><i>NSW Heritage Act 1977</i> (NSW Planning, Heritage Branch)</p>	<ul style="list-style-type: none"> <li>This Act protects archaeological relics from being disturbed. The Heritage Branch of the NSW Department of Planning has prime responsibility for this and other maritime heritage. The work of the Heritage Branch includes the identification of important places and objects; providing guidance on management; supporting community heritage projects through funding and advice; and maintaining the NSW Heritage Database.</li> </ul>
<p><i>Threatened Species Conservation Act 1995 (TSC Act)</i>  (Department of Environment, Climate Change and Water)</p>	<ul style="list-style-type: none"> <li>The TSC Act provides for the assessment and listing of threatened species, populations and communities of animals and plants.</li> <li>The process for identifying critical habitat for threatened species (other than fish), populations and ecological communities is managed by DECCW. Similar to fisheries arrangements and application, TSC recovery plans and threat abatement plans are implemented in full in marine parks. As an example, MPA has adopted appropriate actions detailed in the recovery plan for the little tern in marine park zoning plans.</li> </ul>
<p><i>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth.)</i>  (Cth. Department of the Environment, Water, Heritage and the Arts)</p>	<ul style="list-style-type: none"> <li>The Australian Government's environment protection and biodiversity legislation provides for the assessment and approval processes for actions that are likely to have a significant impact on matters of national environmental significance, such as: World Heritage properties, listed threatened species and communities, listed migratory species, and the Commonwealth marine environment.</li> <li>The Australian Government has a primary role is to protect areas of national environmental significance. Interactions with marine parks occur through the implementation of national marine mammal guidelines and threatened species conservation and through the East Marine Bioregional Planning process and management of existing Commonwealth marine reserves.</li> </ul>
<p><i>Environment Protection (Sea dumping) Act 1981 (Commonwealth)</i>  (Cth. Department of the Environment, Water, Heritage and the Arts)</p>	<ul style="list-style-type: none"> <li>The Australian Government also manages the loading and dumping of waste at sea, as well as, international obligations under the London Protocol to prevent marine pollution by controlling dumping of wastes and other matter.</li> <li>Ocean disposal of waste and the sinking of vessels, aircraft and platforms in all Australian waters, including most areas of NSW marine parks are determined by the Commonwealth.</li> <li>Consequently, Commonwealth permits are required for all sea dumping operations in marine park areas. Examples include artificial reefs and dredging operations. Permits have also been issued for dumping of vessels, platforms or other man-made structures and for burials at sea.</li> <li>Commonwealth legislation also protects underwater cultural heritage in Australia. Management is also guided by the Code of Ethics of the Australasian Institute for Maritime Archaeology.</li> </ul>

## Appendix 3 – Indicators used to evaluate outcome performance

Marine park objectives	Performance indicators and measurements
To conserve marine biodiversity, marine habitats and maintain ecological processes in the marine park.	<ul style="list-style-type: none"> <li>• Quantify changes in rocky reef fish abundance and composition</li> <li>• Percentage of marine park habitat mapped and classified at the fine-scale</li> </ul>
To provide for ecologically sustainable uses (including commercial and recreational fishing)	<ul style="list-style-type: none"> <li>• Trends in patterns of use</li> <li>• Trends in voluntary compliance</li> </ul>
To provide opportunities for public appreciation, understanding and enjoyment	<ul style="list-style-type: none"> <li>• Adequacy of signage, information materials and research dissemination</li> </ul>