

CAPE BYRON MARINE PARK OPERATIONAL PLAN

September 2010



Marine Parks Authority

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EXECUTIVE SUMMARY

Cape Byron Marine Park was declared on 1 November 2002 and a zoning plan came into effect on 22 April 2006. The marine park extends approximately 37 kilometres from the northern training wall of the Brunswick River south to Lennox Head on the Far North Coast, from the mean high water mark and upper tidal limits of coastal estuaries out to the three nautical mile limit of state waters. The 22,000 hectare park includes the tidal waters of the Brunswick River and its tributaries, Belongil Creek and Tallow Creek.

The Cape Byron Marine Park Operational Plan details the strategies and management actions being undertaken by the Marine Parks Authority to meet key objectives focused on conservation of marine biodiversity including ecological processes, providing opportunities for ecologically sustainable use, and public appreciation, enjoyment and understanding of the marine park. The Plan has been developed in consultation with the Cape Byron Marine Park Advisory Committee as required by the *Marine Parks Act 1997*.

The marine park includes estuarine and marine habitats including sandy beaches, rocky shores, offshore rocky reefs and open ocean, and supports a multitude of uses, including 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 marine park lies within the Country of the Arakwal people of Bryon Bay.

This 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. Management actions have been organised under the following strategies to deliver on the key marine park objectives:

1. Identification and adaptive management of threats to marine biodiversity and habitats
2. Protection of threatened species and endangered ecological communities
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, cultural and economic research and monitoring program
7. Promotion of sustainable tourism and recreational uses
8. Ensuring management is consistent with the cultural aspirations of Aboriginal people.

Implementation of management actions outlined in this operational plan will occur via annual marine park work plans and monitoring and reporting against progress will occur through the Cape Byron Marine Park Advisory Committee.

This operational plan is consistent with and supports the implementation of the marine park zoning plan. The zoning plan is a regulation that sets out the range of activities that can be undertaken within different areas of the marine park. A statutory review of the marine park zoning plan is scheduled to commence in May 2011 and this operational plan will next be reviewed following completion of the zoning plan review.

1 INTRODUCTION

Marine biodiversity, which is the variety of marine life, including species, habitats and ecosystems, supports Australian industries worth more than \$30 billion annually, but is in a state of continuing decline. Climate change, pollution, resource use, such as land-based impacts, fishing and introduced marine pests and diseases, are recognised as the key threats contributing to declines in marine and estuarine habitats, changes in ecosystems and loss of species (Natural Resource Policies and Programs Committee Biodiversity Decline Working Group, 2005).

NSW marine and estuarine waters cover a breadth of latitudes from subtropical, warm temperate to cool temperate and include many different habitats such as saltmarsh, mangroves, seagrass, soft-sediment, beaches, rocky reefs, kelp forests, sponge gardens, and coral-dominated reefs that in turn support a diversity of marine species, from fish, to birds, marine mammals and reptiles.

The establishment and management of a system of marine protected areas that represents examples of this biodiversity is widely regarded as one of the most effective mechanisms for protecting it, enabling better understanding of human impacts on it, and helping to support ecologically sustainable uses, including fishing and tourism (IUCN-WCPA, 2008).

The United Nations Convention on Biological Diversity aims to establish and maintain a comprehensive, effectively managed and ecologically representative system of national and regional 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* (Australian New Zealand Environment and Conservation Council Task Force on Marine Protected Areas, 1999), and since then, the NSW Government has been making 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, including 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 to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia's marine biological diversity 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, and the Integrated Marine and Coastal Regionalisation of Australia (IMCRA), a spatial framework for classifying Australia's marine environment into bioregions that are at a scale useful for regional planning (Marine Parks Authority, 2001). 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 long-term aim of the NSW Government's representative system of marine protected areas is to establish and protect a comprehensive, adequate and representative sample of marine biodiversity that includes 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 (see Figure 1). Large-scale marine parks are established in all but the NSW waters of 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.

The Cape Byron Marine Park was declared on 1 November 2002, and a zoning plan came into effect on 22 April 2006. The marine park plays a key role in representing samples of ecosystems, habitats and marine life found in the state's northern, Tweed-Moreton Bioregion, and contributes to the national and global system of marine protected areas (Avery, 2001).

This Cape Byron Marine Park Operational Plan (the Plan) is an important legislative document which outlines the management context applying to the marine park, including the legislative framework, the role of zoning plans and role of different organisations in contributing to the overall marine park management. The Plan describes the range of natural, cultural and use values of Cape Byron Marine Park, and the threats to those values, and identifies a suite of strategies and actions aimed at addressing these threats. The Plan also outlines monitoring and reporting and establishes a timetable for future review.

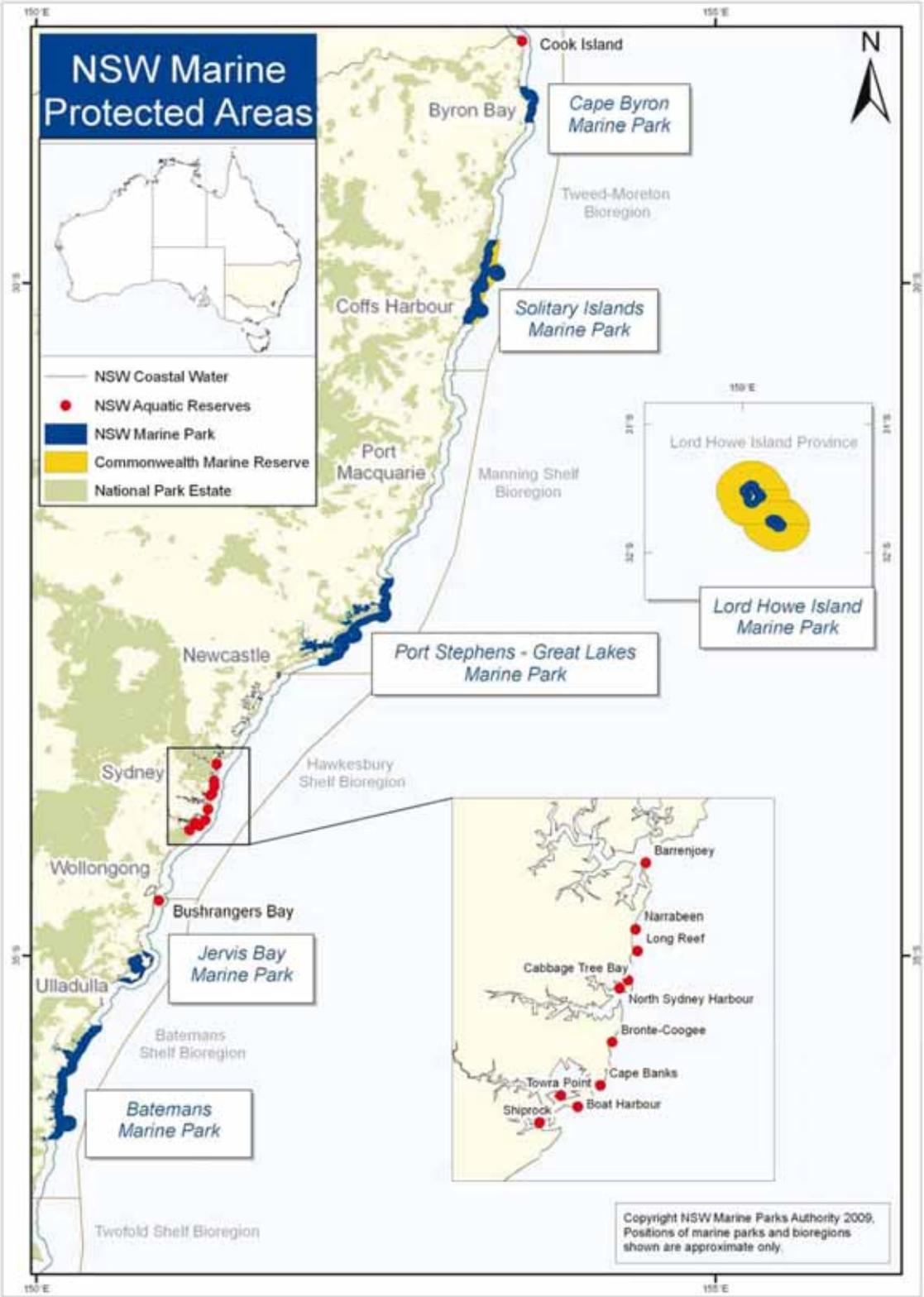


Figure 1: Map of NSW marine protected areas

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 (the Authority) 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 (see Appendix1). The Act also provides for the general regulation of activities in marine parks, including: preparation of zoning plans; establishment of closures; assessment of development activities, both within and affecting marine parks; and 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, the 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 objectives. It also provides a key mechanism to assess the performance of marine park management in meeting these objectives.

The Authority 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 respective marine park's 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. In this regard, the Cape Byron Marine Park Advisory Committee has been consulted throughout the development of this operational plan.

Once an operational plan is adopted, any functions of the Authority in relation to a marine park are required to be exercised in accordance with the Plan. Implementation of the 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 Authority is to review the plan for a marine park as soon as practicable after the zoning plan for the marine park 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. The Marine Parks Authority will consider undertaking a review of this operational plan following the review of the zoning plan in 2011–12.

2.2 Cape Byron Marine Park Zoning Plan

NSW marine parks provide for multiple use of the marine environment, including a mixture of 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 to plants, animals and habitats. Similar to the identification and selection of marine parks, zoning is based on the application of nationally agreed guidelines and ecological, social and economic criteria.

The Cape Byron Marine Park Zoning Plan commenced on 22 April 2006 and forms part of the Marine Parks (Zoning Plans) Regulation 1999. Extensive community consultation informed the preparation of the final zoning plan, including an initial zoning options paper, and three month public exhibition of the draft zoning plan between August and December 2004, involving over 30 stakeholder and public meetings, information days and consideration of over 6000 submissions. The final zoning plan is composed of the following zoning scheme (see Figure 2):

- *Sanctuary zones* (6105 ha, 27.5%) provide the highest level of protection for the habitat, animals and plants, and 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* (4160 ha, 18.7%) 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 some activities including trawling and the taking of some fish species.
- *General use zones* (11,860 ha, 53.5%) provide for ecologically sustainable management of habitat, animals and plants, through a wide range of ecologically sustainable uses, including aquaculture. All forms of setlining, droplining, longlining and purse seining fishing are prohibited in the marine park.
- *Special purpose zones* (49.4 ha, 0.2%) accommodate areas that require specialised management. Five special purpose zones have been established in the marine park and provide for the management of oyster leases in Marshalls Creek, a boat harbour in the Brunswick River, traditional use and rehabilitation of Belongil Creek and Tallow Creek, and fishing from the board-walk at Lennox Head for people with a disability.

The zoning plan ensures that all estuaries, beaches and intertidal rocky shores that are not included within sanctuary zones, are included in habitat protection zones or, for management reasons, in special purpose zones. An initial five-year statutory review of the zoning plan is scheduled to commence in May 2011. Pending the outcome of the review or other regulatory changes it will remain in effect.

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 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. An approved marine parks permits policy has been developed which clarifies administrative arrangements, processes and consent parameters for the issuing of permits and is available on the Marine Parks Authority website for applicants' information. Consistent with the regulations and this 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 users of the park.

In respect to development proposals, the *Marine Parks Act 1997* (sections 19 and 20) requires that authorities must take into consideration the objects of the Act, permissible uses, and the advice from the Authority, when consenting and determining development proposals within and in the locality of the marine park. These powers give the Marine Parks Authority the ability to influence developments that occur within the boundaries of a marine park, but also in its vicinity, where such developments may affect the marine park. Mining development and exploration in marine parks is specifically prohibited by the Act.

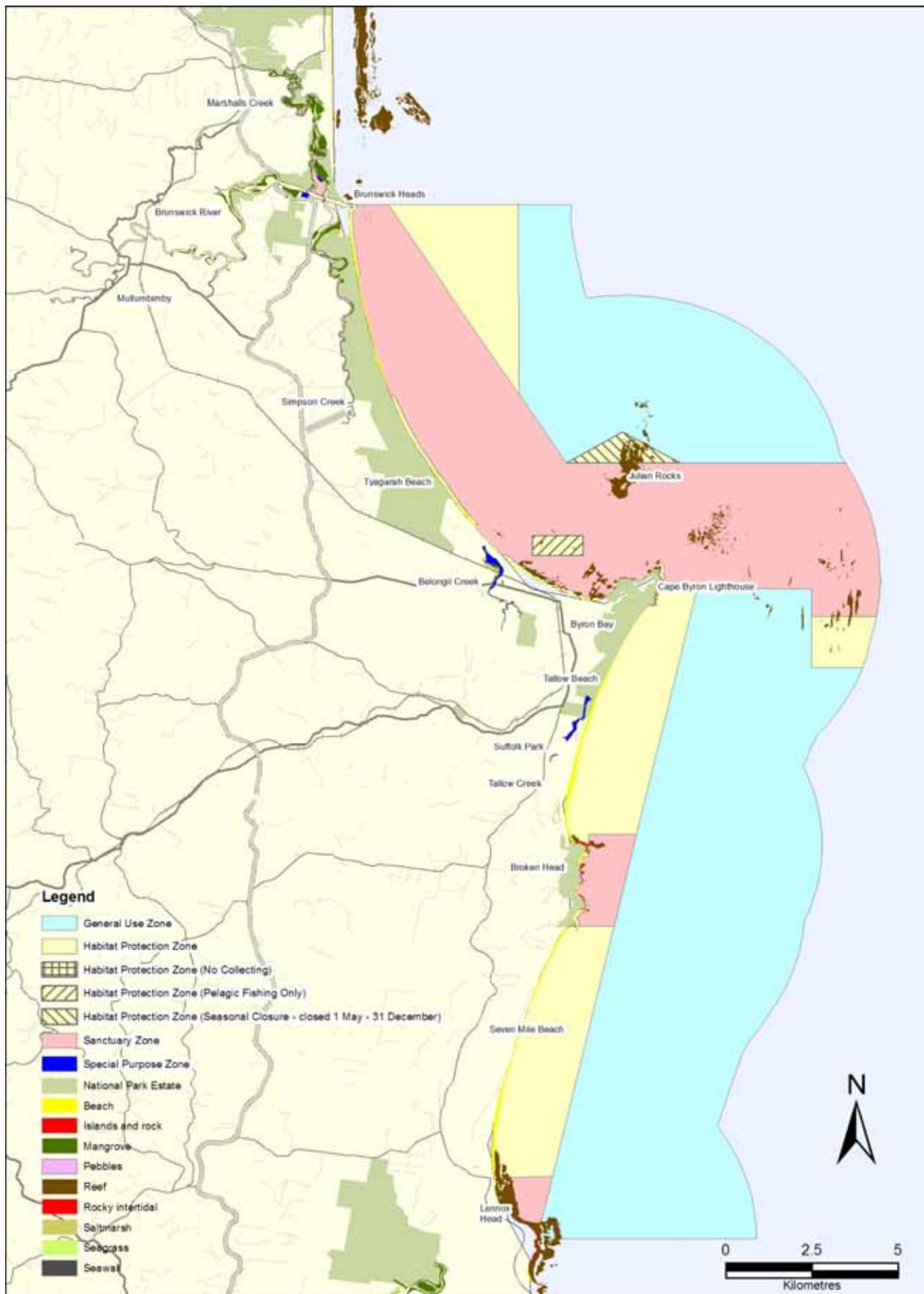


Figure 2: Cape Byron Marine Park showing the zoning plan and key habitat types

2.4 Strategies, policies and other relevant plans

The Authority develops strategies, policies and plans at the statewide level to manage priority issues that apply across the marine park system, and which require or benefit from a consistent approach to program delivery and decision making. 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 Marine Parks Authority website (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 2009–12

System-wide policies

- Marine parks permits policy and procedures
- 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 zoning plan and operational plan is in effect. Existing strategies, plans and policies may also be periodically reviewed, amended or replaced. The Cape Byron Marine Park Operational Plan is required to deliver actions consistent with marine park strategies and plans and to give effect to any marine park policies.

2.5 Linkage with relevant legislation and conservation programs

Management of Cape Byron Marine Park does not occur in isolation from other conservation and natural resource use management legislation and respective agency administered programs and initiatives. Marine species migrate across marine park boundaries, currents transport nutrients over large areas and many activities occurring in waters outside park boundaries or on adjacent land have direct and indirect implications for marine species and habitats within a marine park. The health of the marine environment is strongly linked to the health of the region's catchments, rivers, and estuarine and coastal ecosystems, which all drain to the ocean.

The Cape Byron Marine Park benefits from a wide range of programs, including those operating within the park (for example, fisheries management, pollution reduction, estuary and coastal management), and outside the marine park, which influence water quality and ecosystem health, and the range of natural, cultural and use values (for example, catchment management, national park management and land-use planning) associated with the marine park. The Marine Parks Authority has a role in influencing the programs and initiatives that it is not directly responsible for and for ensuring these have regard to marine park objectives wherever possible, and the Authority 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. (Key legislation that applies and agencies that operate in 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. National parks and reserves adjacent to Cape Byron Marine Park include the Marshalls Creek,

Brunswick Heads, Tyagarah, Julian Rocks and Broken Head nature reserves, the Cape Byron State Conservation Area, and Arakwal National Park.

The Northern Rivers Catchment Management Authority has prepared a catchment action plan which includes a marine program stream focused on improving knowledge about the marine environment, supporting adaptive management of marine protected areas and improving management practices to reduce threats to and impacts on the marine environment, to achieve the statewide target of maintaining the condition of marine water and ecosystems by 2016. The coastal program stream is focused on improving the management of estuaries and coastal lakes, including through the finalisation of estuary and coastal management plans. Local government has lead role in delivery of estuary and coastal management plans, with financial and technical assistance.

Recognising the important linkages with other natural resource management and biodiversity conservation agencies and programs, the Marine Parks Authority actively builds local partnerships by establishing memoranda of understanding or undertaking joint projects. In respect to Cape Byron Marine Park, the Authority has recently established a memorandum of understanding (MoU) with the Bundjalung people of Byron Bay (Arakwal), to improve communication and give support to Aboriginal community involvement in the management of the marine park.

3 VALUES

Cape Byron 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, and consequently, maintaining these values is critical in many ways. 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, and these values are supported and protected by the marine park together with its partners. Economic values are associated with the benefits derived from commercial use and visitation to the area, in terms of both employment and revenue into the community and are supported by marine park planning through sustainable use policies.

3.1 Natural values

Ecosystems and habitats

Cape Byron is characterised by the strong nearshore influence of the East Australian Current and is located in what is known as the 'Eastern Overlap Zone', where warm waters from the north converge with cooler waters from the south (Wilson and Allen, 1987). The waters of the marine park are influenced by the East Australian Current approximately 90% of the time (Byrnes, 1998).

As pointed out in previously, the NSW Government has adopted the Integrated Marine and Coastal Regionalisation of Australia to classify NSW bioregions. These bioregions are based on physical and biological attributes at the regional scale, which are progressively scaled down into finer dimensions relating to physical and biological variation for planning purposes. This finer scale hierarchy includes the following levels:

- ecosystem – representing the dynamic combination of plants and animals and their communities and environment interacting as a functional unit
- habitat – a specific environment inhabited permanently or temporarily by organisms and based on factors such as substrate type and tidal exposure
- community – a number of species occupying a particular habitat or area, and
- species and populations – distribution and abundance of a given species.

Physical parameters such as ocean currents, climate, bathymetry and coastal geomorphology result in the formation of many types of ecosystems, which support a variety of habitats and populations of animals and plants. These ecosystems are interconnected, as species move between them and currents pass in and out of the marine park, transporting larvae, sediments and nutrients.

The use of habitats as surrogates for species diversity is generally considered to be an effective approach for representing and conserving marine biodiversity and maintaining ecological processes. In NSW marine parks, marine ecosystems are categorised into marine and estuarine systems, which are further divided into smaller units based on their geomorphology, vegetation and depth. Most distinct separation of animals and plants occurs between consolidated areas (rocky reef) and unconsolidated areas (mud and sand) (Bickers, 2005). As marine communities are often structured by depth due to light availability and other physical factors, these areas are further categorised into three depth zones: shallow (0–20 m), intermediate (20–60 m) and deep (60–200 m). In this regard, much of the waters within the Cape Byron Marine Park are shallower than 60 m (Avery, 2001).

There are 15 identified marine ecosystem types in the Tweed-Moreton Bioregion. Cape Byron Marine Park represents 10 of these ecosystems, of which 5 were considered under-represented within the NSW marine park system prior to declaration of the marine park (Avery, 2001). These ecosystems included:

- mature barrier estuaries, represented by the Brunswick River
- shallow reefs (0–20 m,) between Ballina and Tweed Heads, and
- shallow, intermediate and deep unconsolidated sediments (0–200 m) between Ballina and Tweed Heads.

To date all key habitat types in the marine park have been mapped using sophisticated swathe mapping techniques, and representative examples of these habitats are included in sanctuary zones.

Animals and plants

Climatic and oceanographic influences in the Cape Byron Marine Park provide a unique environment where tropical, subtropical and temperate marine species are able to co-exist, resulting in the park supporting a high and biologically diverse range of marine species. Over 500 fish species have been recorded in the marine park, of which approximately 76% were found to have tropical affinities, most likely from the strong presence of the East Australian Current, 18% were found to have temperate affinities and 6% had subtropical affinities (Parker, 1999).

The Cape Byron Marine Park includes both resident and migratory species which are listed as threatened under the *Threatened Species Conservation Act 1995* or the *Fisheries Management Act 1994*. Although marine park management focuses on the conservation of marine biodiversity generally, particular emphasis is placed on conserving threatened marine species and ecological communities that are more susceptible to human impacts, including grey nurse sharks, black cod, sea turtles, whales, shorebirds, and saltmarsh.

Julian Rocks is identified as a critical habitat for the grey nurse shark (*Carcharias taurus*) and fisheries management regulations came into effect in December 2002. Other species that are protected under fisheries legislation and are also found at Julian Rocks, include bleekers devil fish (*Paraplesiops bleekeri*), the estuary cod (*Epinephelus coioides*), the black cod (*E. daemeli*) and the Queensland groper (*E. lanceolatus*).

In addition, Julian Rocks supports significant populations of green, loggerhead and hawksbill turtles, with juvenile green turtles being the most abundant (Speirs, 2002). Occasional sightings of flatback and leatherback turtles are also recorded in the area. Most turtle nest records for north coast beaches in New South Wales are loggerhead turtles. A number of green turtle nestings have also been recorded. Leatherback turtles rarely nest in Australia but successful nestings have been recorded near Lennox Head and Ballina, whilst loggerhead turtle nesting has been recorded on Tallow Beach and at Lennox Head (NPWS database).

Belongil Spit is a nesting site for the little tern, osprey, pied oyster catcher and great knot (Parker, 2001) and a foraging area for pacific golden plover and beach stone curlew (NPWS records). Pied oyster catcher chicks and fledglings have been observed in the area on several occasions. Little terns and pied oyster catchers have been observed on Tyagarah Beach, Tallow Beach (adjacent to Tallow Creek entrance) and Seven Mile Beach (northern section). The protection of threatened species and endangered ecological communities is guided by specific recovery plan actions, which were taken into consideration when preparing the Cape Byron Marine Park Zoning Plan. Management actions to conserve threatened species and endangered ecological communities are listed in Table 2 of this Plan.

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

Aboriginal communities have lived alongside and used the resources of Cape Byron Marine Park for many thousands of years. The Bundjalung people of Byron Bay (Arakwal) have a strong association with land and sea in the northern parts of the marine park, as have the Jali people in the southern section (Marine Parks Authority, 2003a).

Cape Byron, or 'Walgun' as it is known by the Arakwal people, is a place for ceremonies, learning and spiritual inspiration and remains part of many Dreaming stories. Arakwal people recognise Taylors Lake, Tallow Creek and Belongil Creek, Julian Rocks 'Nguthungulli' and Broken Head as areas of very high importance to their community. Stories tell that the Bundjalung people used to walk to Nguthungulli to undertake ceremonies when the water levels were lower, 7000 years ago (Department of Environment, Climate Change and Water, 2010).

There are some 37 known Aboriginal cultural sites in the local area, including bora and ceremonial areas, middens, scar trees, open camp fires, mounds (ovens), rock engravings and stone arrangements. Shellfish were collected and at low tide fish were speared or trapped in fine meshed scoop nets called tow-rows (NPWS database).

In 2007 the Marine Parks Authority signed a memorandum of understanding (MoU) with the Arakwal people to ensure better communication and involvement of the Arakwal community in marine park management, resulting in the establishment of the Arakwal – Cape Byron Marine Park Consultative Committee. The MoU also provided a way forward for the development of a cultural resource-use agreement within the marine park. The marine park is also adjacent to the Arakwal National Park, a protected area declared following the Indigenous Land-Use Agreement between the traditional owners and the NSW Government.

Maritime heritage

Management of shipwrecks throughout Australia is effected primarily through the *Historic Shipwrecks Act 1976* (Cth). Several shipwrecks lie in the shallow waters of the Cape Byron Marine Park and many more were lost in the area with no structure remaining today. The most notable wrecks in the area are the *Wollongbar* and the *Tassie II* (Marine Parks Authority, 2003a). Two old jetties, one dating back to 1888, are located adjacent to Belongil Beach and are protected under the provisions of the NSW *Heritage Act 1977*.

3.3 Economic values

Tourism

Approximately two million people visit the Byron Shire annually, injecting approximately \$300 million into the local economy (Byron Shire Council, 2002). Marine tourism is a major focus for visitors who come to enjoy and experience stunning beaches and opportunities for a wide range of water based recreational activities, including world class surf breaks and a renowned diving

location. Results of a community and visitor recreational use questionnaire undertaken by the Marine Parks Authority in 2002 showed that swimming, beach going, whale and dolphin watching, surfing and recreational fishing were the most popular recreational activities undertaken within the marine park (Marine Parks Authority, 2003b).

Recreational use

Swimming, walking and running, and beach going were the most popular activities undertaken by over 80% of survey respondents. The most popular locations for swimming were Clarkes Beach, The Pass, Main Beach and Wategos. Swimming was also popular at beaches adjacent to Lennox Head, Suffolk Park and Byron Bay (Marine Parks Authority, 2003b).

'Byron Bay Stingrays Club' regularly swims in the sheltered waters of the bay, with up to 100 swimmers. The 'Winter Whales Swimming Club' organise an annual ocean swim in May, which attracts over 3000 swimmers to the bay.

Surfing is one of the most popular pastimes in Byron Bay and attracts many visitors to the region annually. Several nationally and internationally renowned surf breaks, such as The Pass, Broken Head and Lennox Head are located within the marine park.

Recreational fishing is a popular activity for many locals and visitors and was undertaken by around half of the survey respondents (Marine Parks Authority, 2003b). The highest level of recreational fishing on the north coast of New South Wales occurs in autumn and over 60% of fishing occurs on coastal beaches (Steffe et al., 1996). Approximately 50% of anglers surveyed, fish on a weekly basis for the primary reasons of relaxation, sport, and as a source of food (Mayo, 1999). The most popular locations for recreational fishing in the Cape Byron Marine Park are Brunswick River, Tallow Beach, Broken Head, Seven Mile Beach and Lennox Head (Marine Parks Authority, 2003b).

Whale and dolphin watching is a popular activity which commences in May when around 1000 humpback whales migrate north from feeding grounds in Antarctic waters to the warmer waters of Queensland to breed and calve. On their return south during October–November, most whales and nearly all mothers and calves spend time in the calm waters of the Byron Bay embayment, resting and nursing (Marine Parks Authority, 2003a). Cape Byron is recognised as one of the premier land-based whale watching sites on the NSW coast (Australian and New Zealand Environment and Conservation Council, 2000).

The marine park attracts national and international visitors to dive and snorkel in its waters. Snorkelling is most popular within the Byron Bay embayment, and was undertaken by 37% of survey respondents (Marine Parks Authority, 2003b). The Wreck, Middle Reef, Julian Rocks, Lennox Head and White's Beach have been identified as the most popular locations for this activity. Survey results indicate around 10% of respondents undertake scuba diving (approximately 90% of divers undertake this activity at Julian Rocks). The majority of scuba dive sites are within the vicinity of the Byron Bay embayment and the majority of divers undertake their diving experiences with one of the two charter operators in Byron Bay (Marine Parks Authority, 2003b).

Commercial use

Commercial fishing is permitted in general purpose and habitat protection zones. The marine park zoning plan also places additional conditions on commercial fishers such as restrictions on the anchoring of vessels in sanctuary zones, and on taking sharks and rays in habitat protection zones. There are about 35 commercial fishing crews that operate in the marine park on a regular basis across the following fisheries: prawn trawling (9), spanner crab netting (10), trap and line fishing (14), commercial bait gathering and beach hauling (2).

A \$4.3 million voluntary buy-out program resulted in 22 fishing businesses being bought out, to implement the Cape Byron Marine Park Zoning Plan and avoid the transfer of fishing pressure to other areas within and adjacent to the park. Ensuring commercial fishing pressure does not increase within and adjacent to the marine park is important for biodiversity conservation and sustainable fisheries management.

Oyster farming is the only form of aquaculture in the Cape Byron Marine Park. There are currently 17 oyster leases operated by four separate businesses in the Brunswick River. The majority of leases are located in the downstream regions of the main arm and Marshalls Creek. Two leases are operational in Simpsons Creek.

With the exception of commercial fishing and aquaculture, a marine parks permit is required to undertake any other commercial activity in the marine park. Twenty (20) commercial tour operators currently hold permits to undertake activities in the marine park (see Table 1).

Table 1: Commercial tour operators in Cape Byron Marine Park

Activities	Number of permits
Surf schools	7
Kayak tours	3
Scuba diving	2
Fishing charter	1
Whale watching and sight seeing	2
Vessel hire	1
Kiteboarding	1
Skydiving	1
Competitions (swimming, paddling)	2

4 THREATS

Threats to marine and estuarine biodiversity include all human activities (for example, fishing, pollution, invasive species, etc.) that impact significantly on the diversity and abundance of animals, plants and microorganisms, and their genetic makeup, as well as their habitats and the ecosystems they live in.

Effective management 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 decline. 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 substantial and long lasting impacts to marine biodiversity, but the likelihood or frequency of such an event is very low, even more so if the area is not close to international shipping lanes. 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 addressed simultaneously 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). NSW marine parks were established consistent with this policy, and were modelled using the Great Barrier Reef Marine Park approach, which allows for sustainable use within the boundaries of the marine park, provided the objective of biodiversity conservation is also achieved.

While it is paramount 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, still (i) results in changes to marine communities and ecological processes due to the selective removal of predators, prey and competitors; (ii) acts as a selection pressure that influences population genetics; (iii) creates physical disturbance to habitats; or (iv) unintentionally takes non-target species. Thus, sanctuary zones, where no extraction is permitted, are provided and selected in all marine parks to ensure that biodiversity conservation objectives are met in the first instance, which in turn provides places where marine communities exist in the absence of human extraction.

Most significant extractive use threats relate to illegal fishing within sanctuary zones by commercial or recreational fishers, particularly on reefs around Julian Rocks and in the Bay, at Broken Head, in the Moat/Bream Hole at Lennox Head, and illegal crabbing in Marshalls and Simpsons creeks. Illegal trawling in habitat protection zones is also a known threat that happens from time to time when prawn flushes and migrations occur.

With estimates of significant population growth in the region into the future it is anticipated that there will be an increasing demand and number of applications for resource use and developments in or adjacent to the marine park that without appropriate assessment and management to ensure sustainable use have the potential to impact on the marine park's values.

Non-extractive uses of marine and estuarine ecosystems, such as commercial tourism, shipping and recreational pursuits, have many economic and educational benefits for New South Wales. However, intensity and frequency of such activities have the potential to impact on marine species and habitats. For example, marine mammal charters can alter animal behaviour and have the potential to impact on long-term population dynamics if not managed appropriately. Although some non-extractive use activities, such as anchoring and speed limits on vessels, 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 non-extractive use threats in the Cape Byron Marine Park include scuba diving at Julian Rocks.

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.

4.2 Land-based pollution and habitat impacts

Human activities in coastal catchments can directly and indirectly impact on adjacent marine environments. 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 sources can have serious implications for marine industries, in particular fisheries, and aquaculture and tourism.

Pollution can be introduced into the marine environment by point source discharges, diffuse discharges or solid wastes. While point 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 different 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 pollution. Based on parameters such as turbidity, changes in levels of chlorophyll a, seagrass, mangroves, saltmarsh, and fish assemblages, the initial results from surveys of rivers and creeks in the marine park have indicated that they range in condition from very poor (Tallow Creek) to fair (Brunswick River, Belongil Creek) (Roper et al., 2010).

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). The reason for this is clear in that the impacts from terrestrial conservation areas are generally low, and the deliberate linking of marine sanctuaries and terrestrial national parks and nature reserves has greater integrity for conserving marine biodiversity for future generations. Opportunities to complement adjacent land-use management were considered when preparing the Cape Byron Marine Park Zoning Plan and, where practical, sanctuary zones were located directly adjacent to national parks or nature reserves.

Where rehabilitation issues are identified in the zoning process zoning plans can place special zoning over areas to facilitate long-term restoration. Belongil and Tallow creeks are good examples that were specifically zoned in the Cape Byron Marine Park for rehabilitation to remediate impacts on the water quality and habitat in these waterways. Land-based pollution and habitat threats to the rivers and creeks in Cape Byron Marine Park include the following:

- inappropriate development or land-use practices adjacent to the marine park
- runoff from urban or agricultural land that may be rich in sediment, nutrients, microbes, hydrocarbons or other pollutants
- discharges from sewage treatment plants into the Brunswick River and Belongil Creek.

4.3 Marine-based pollution

Marine pollution threats are associated with a variety of human activities, including shipping, boating, oil and gas exploration, fishing and aquaculture. Pollution from these 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, with significant impacts on productivity and survival rates, and human health impacts. Pollutants often persist in the environment, continuing to impact on animals and habitats for many years after their discharge. In respect to radioactive wastes it can impact for many centuries.

Marine debris, in particular garbage wastes and lost fishing gear, is a recognised threat to the Cape Byron Marine Park. For example, plastic debris which is also a high component of beach litter on northern NSW beaches (Frost and Cullen, 1997), can be mistaken as food and ingested by sea turtles (Derraik, 2002). Lost fishing gear such as traps and nets can continue ghost fishing for several weeks, even months, and are notable threats to fish, marine animals and birds. Discharges from vessels (ballast water, oil) are on-going risks that, subject to location and quantity, could severely impact marine life in the park.

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.

Over 250 marine plants and animals have been introduced to Australian waters on vessels of all types from yachts to commercial ships. Pests can attach themselves to boat 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 jurisdictional and cross-sectoral 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 arrives, to minimise their spread and impacts.

Although to date in Cape Byron Marine Park there have not been any outbreaks of marine pests, the increasing numbers of cruising ships, yachts and recreational vessels present on-going threats to the park. Consequently, management actions are proposed in this Plan to reduce risks and to manage potential impacts of pests in the locality of the park.

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. 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.

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. 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. 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 impacts (for example, 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 role will be especially important at Cape Byron Marine Park where on-going erosion of Belongil Beach is threatening some properties. The impacts of climate change, including a predicted rise in sea level, will exacerbate erosion along coastlines in the marine park, and Byron Shire Council, with assistance from DECCW staff including marine parks staff, is preparing a coastal zone management plan which takes into account likely impacts on the coast due to climate change.

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 threatened species and endangered ecological communities.

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
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 2 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 Cape Byron Marine Park Advisory Committee.

Table 2: 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)	
1. Identification and adaptive management of threats to biodiversity and habitats in the marine park	Review and analyse the threats to marine biodiversity in Cape Byron Marine Park (CBMP).	<ul style="list-style-type: none"> Review of threats identifies priority issues for consideration. 	Adaptive management of the marine park occurs in the knowledge of contemporary threats.	High
	Identify biodiversity and use information gaps.	<ul style="list-style-type: none"> Gap analysis completed and programs are identified, prioritised and implemented to collect new information. 	New information is incorporated and considered in the review of the CBMP zoning plan.	High
	Report on the natural values to provide concise and up to date information for public use and management, and for review.	<ul style="list-style-type: none"> Report prepared prior to review of zoning plan. 	Public are better informed to comment about marine park values and management needs during the review process.	High
	Review the zoning plan.	<ul style="list-style-type: none"> Review report prepared for Ministers' consideration. 	CBMP zoning plan provides for the 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)	
1. Identification and adaptive management of threats to biodiversity and habitats in the marine park	Support and engage in the development and implementation of local management plans and programs initiated by the Byron and Ballina shire councils, and other government agencies.	<ul style="list-style-type: none"> Local environmental and planning management plans address CBMP priorities. Plans include: <ul style="list-style-type: none"> Byron and Ballina Shire LEPs, and the Standard Instrument, and Coastal and Stormwater Management Plans Brunswick River Estuary Management Plan Belongil and Tallow Creek Floodplain Risk Management Plans, and Richmond River Catchment Management Plan. 	Coordinated planning reduces threats to biodiversity in CBMP catchments and waters.	High
	Work with the relevant agencies to ensure resource capacity to respond effectively to pollution incidents.	<ul style="list-style-type: none"> Local incident plans include marine park priorities. Staff are adequately prepared and where necessary trained to assist in incidents including: implementation of the Hazmat CBR Plan and the NSW State Waters Marine Oil and Chemical Spill Contingency Plan; fish kills; algal blooms; and marine search and rescue. 	Incident response reduces potential impacts on marine environment.	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)	
1. Identification and adaptive management of threats to biodiversity and habitats in the marine park	Develop and maintain partnerships with local councils and land owners to ensure improved communication and management delivery.	<ul style="list-style-type: none"> Byron Shire Council MoU implemented and communication processes are established. Ballina Shire Council MoU prepared and implemented and communication processes are established. Development applications (DAs) include consideration of CBMP issues. 	<p>Improved communication and increased number of contacts with council.</p> <p>Reduced number of land-based issues and conflicts arising from developments and activities.</p> <p>100% of developments having the potential to affect CBMP are referred to the MPA for consideration.</p>	High
	Undertake a land-based threat assessment of factors contributing to marine environment degradation in the CBMP locality.	<ul style="list-style-type: none"> Land-based threat profile developed. Management responses are prioritised and implemented in accordance with Byron Shire Council MoU arrangements. 	Management responses reduce land-based impacts over time.	Medium
	Investigate compliance and enforce conditions of developments in and adjacent to CBMP.	<ul style="list-style-type: none"> CBMP compliance plan includes strategic enforcement action for developments and enforcement actions are implemented according to this plan. 	<p>Impacts from developments in the marine park are mitigated and sustainable.</p> <p>Successful enforcement action is taken against developments that fail to implement marine park permit conditions.</p>	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)	
1. Identification and adaptive management of threats to biodiversity and habitats in the marine park	Contribute to the preparation of policies and management plans developed by agencies to address impacts and management of marine pests of concern to CBMP.	<ul style="list-style-type: none"> Support given to agencies for the preparation and implementation of plans. AQUIS National Ballast Water and Biofouling plan is implemented. 	Pest species are identified and threats are minimised or mitigated.	High
	Reduce risks of invasion of marine pests in or adjacent to the marine park through raising public awareness.	<ul style="list-style-type: none"> Information brochure about marine pest identification developed relevant to CBMP. 	Early alert and identification of marine pest outbreaks.	Medium
	Ensure developments and activities that have the potential to introduce pest species (for example, stocking and aquaculture) in the CBMP and its catchment have been subject to appropriate assessment.	<ul style="list-style-type: none"> Permits are issued with specific conditions controlling pest species introduction. 	<p>Pest species are not introduced into the park through permitted activities.</p> <p>Successful enforcement action is taken against developments or activities that fail to comply with permit conditions relating to pest species control.</p>	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)	
1. Identification and adaptive management of threats to biodiversity and habitats in the marine park	Contribute to research on impacts of marine pests in the marine park.	<ul style="list-style-type: none"> Research policies and strategies developed at state and park levels to better direct research. 	Research programs provide information to better inform management decisions.	Low
2. Protection of threatened species and endangered ecological communities	Support DECCW, I&I NSW and DEWHA (Commonwealth Department of the Environment, Water, Heritage and the Arts) in the implementation of recovery actions for threatened species and endangered ecological communities, and threat abatement actions.	<ul style="list-style-type: none"> Appropriate training for MPA staff is undertaken for the identification and protection of marine threatened species. Recovery plans for the grey nurse shark, little tern, black cod and saltmarsh communities are included in the CBMP annual work plan and considered in the zoning plan review process. DECCW policies for marine mammal disentanglement and their conservation and management are implemented. 	<p>Threats from activities in the marine park are mitigated and managed.</p> <p>Populations of threatened species and the extent and health of endangered ecological communities in CBMP 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

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)	
2. Protection of threatened species and endangered ecological communities	Support DECCW, I&I NSW and DEWHA in establishing monitoring strategies to determine the status of populations of threatened species and the extent and health of endangered ecological communities.	<ul style="list-style-type: none"> • Reports prepared. 	Improved information is available about the effectiveness of protection strategies for threatened species and endangered ecological communities in the marine park.	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"> • Information sheets are developed and distributed to facilitate reporting of sightings of threatened species. 	Better informed decisions are made concerning the effectiveness of protection strategies for threatened species and endangered ecological communities in the marine park.	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)	
3. Assessing developments in and affecting the marine park to minimise impacts	Contribute to the preparation and review of legislation, policies or strategies relating to the assessment of applications for developments in CBMP.	<ul style="list-style-type: none"> Legislation, policies and strategies associated with development consent include marine park needs. 	Decision making for developments is improved ensuring impacts on values of CBMP are mitigated.	Medium
	Establish processes with relevant authorities to ensure that provisions of the Marine Parks Act are met when assessing applications for developments in and adjacent to CBMP.	<ul style="list-style-type: none"> Applications for developments in CBMP are assessed in accordance with the provisions of the Marine Parks Act. Marine park conditions are incorporated into development approvals. 	Impacts from construction, use and operations of developments in the marine park are managed or mitigated.	High
	Enforce and audit conditions of development approvals.	<ul style="list-style-type: none"> Compliance of development conditions is included in the marine park compliance plan. 	Successful enforcement or restorative action is taken in respect of developments in the marine park that do not comply with development conditions.	High
4. Maximising voluntary compliance with the marine park zoning plan	Contribute to the preparation and review of legislation, marine park policies and strategies relating to recreational and commercial use in CBMP.	<ul style="list-style-type: none"> Local advice incorporated into policies including recreational fishing competition policy, permit policy and compliance policies. 	Impacts of recreational activities are mitigated and sustainable.	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)	
4. Maximising voluntary compliance with the marine park zoning plan	Work with stakeholders to apply policies and guidelines to improve voluntary compliance in CBMP.	<ul style="list-style-type: none"> Guidelines adopted and implemented (on-going). 	Improved working relationships and better management of visitors in CBMP.	Medium
	To ensure strategic delivery of compliance operations in CBMP, prepare annual tactical compliance plans (as required under the MPA compliance plan) in consultation with I&I NSW.	<ul style="list-style-type: none"> Annual CBMP compliance plans prepared and implemented. Up to date enforcement data maintained on the Nautilus compliance database. 	<p>Marine park users comply with marine park legislation.</p> <p>Effective use of compliance resources.</p>	High
	Enforce provisions of relevant legislation with priority on areas identified in state and local marine park compliance plans.	<ul style="list-style-type: none"> Staff trained to enforce provisions of marine parks, fisheries and national parks legislation. Enforcement activities are implemented. 	Trends in voluntary compliance with marine parks legislation improve, and in particular, reduction in infringements observed by local community (within 40 km) of CBMP.	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)	
4. Maximising voluntary compliance with the marine park zoning plan	Assess applications for organised recreational activities in CBMP.	<ul style="list-style-type: none"> Permits issued with appropriate conditions. 	Organised recreational activities in CBMP are managed in accordance with statutory and policy requirements.	High
	Enforce and audit conditions of recreational and commercial activity permits.	<ul style="list-style-type: none"> Permit conditions are enforced. At least 25% of recreational permits are audited per year. At least 10% of commercial permits are audited per year. 	<p>Continual improvement in the development of permit conditions and compliance.</p> <p>Offences relating to permit breaches reduce over time.</p>	Medium
	Contribute to development and improvement of the MPA permit policies for managing commercial activities in CBMP.	<ul style="list-style-type: none"> Permit policy and procedures reviewed. 	Commercial activities comply with marine park legislation.	High
	Assess applications for commercial activities in the CBMP.	<ul style="list-style-type: none"> Permits issued with appropriate conditions. 		High
	Work with I&I NSW and industry groups to adopt best practice to minimise impacts on marine park values.	<ul style="list-style-type: none"> Best practice methods are adopted. 	Improved working relationships and better management of commercial activities in the marine park.	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)	
5. Ecologically sustainable management of commercial activities	Work with commercial tour operator groups to develop ways to promote and market sustainable practices and enjoyment of the marine park.	<ul style="list-style-type: none"> Commercial tour operators support and promote sustainable practices including accreditation schemes. Commercial tour operators that adopt sustainable practices are listed on MPA web site. 	Number of operators who are accredited sustainable operators increases over time.	Medium

MARINE PARK OBJECTIVE: To provide opportunities for public appreciation, understanding and enjoyment.
 (Note: this primary objective includes all management actions relating to education and research)

Strategy	Action	Performance indicators		Priority
		Output (deliverables)	Outcome (extent to which management objectives are being achieved)	
6. Delivering an ecological, social, cultural and economic research and monitoring program	Contribute to the development and review of policies and strategies relating to research activities by the MPA.	<ul style="list-style-type: none"> • Policies and strategies developed at state and park levels to better direct research. 	Research provides feedback into improved management of the marine park including zoning plan design, public awareness and education.	Medium
	Consistent with the MPA Strategic Research Plan, prepare an annual research work plan and undertake core research programs.	<ul style="list-style-type: none"> • Annual marine park research work plans are approved. • Research and reporting are delivered in accordance with project timetables. 		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"> • Maintain partnerships with Southern Cross University and National Marine Science Centre. • Reports from research programs are prepared and published. 		High
	Research activities are managed in accordance with statutory, policy and strategic requirements.	<ul style="list-style-type: none"> • Applications for research permits are assessed with reference to statutory, policy and strategic requirements, and conditions included on permits are complied with. 	Results from permitted research activities are incorporated into future management and zoning reviews.	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)	
6. Delivering an ecological, social, cultural and economic research and monitoring program	Develop collaborative arrangements with I&I NSW, tertiary institutions and other relevant agencies to conduct research and monitoring programs to assess sustainable levels of use in the marine park.	<ul style="list-style-type: none"> Annual research plan incorporates research and monitoring to assess sustainable use. Research and monitoring reports prepared and published. 	Ecological and socio economic research is used to improve use management (including commercial and recreational uses) and visitor enjoyment of the marine park.	High
7. Promotion of sustainable tourism and recreational uses	Contribute to the preparation of state and local marketing strategies.	<ul style="list-style-type: none"> Byron Shire Tourism Plan includes actions that effectively promote the marine park and sustainable recreational opportunities. 	Improved public support and promotion of sustainable recreational activities.	Medium
	Work with recreational groups, and the local council and chamber of commerce to support/ coordinate events, and promote local marketing opportunities and events through development of promotional material, and MPA sponsorship.	<ul style="list-style-type: none"> Marketing products published and promotional events supported. 	<p>Increase in appreciation of the marine park and recreational opportunities.</p> <p>Visitor surveys indicate increased visitor awareness and satisfaction.</p> <p>Number and prominence of organised events and promotions held in the marine park improve over time.</p>	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)	
7. Promotion of sustainable tourism and recreational uses	Contribute to the implementation of the MPA Communications and Community Engagement Strategy 2009–2012.	<ul style="list-style-type: none"> Local actions under the MPA Communications and Community Engagement Strategy 2009–2012 are implemented. 	Public engagement, appreciation and enjoyment of the marine park are improved, and the community is better informed about marine park values and benefits (measured through public surveys).	Medium
	Develop interpretive and regulatory information for marine park users.	<ul style="list-style-type: none"> Signage, publications, advertisements, and information shelters are prepared, and website is upgraded to include local information. 		High
	Educate local school and community groups about the values of CBMP.	<ul style="list-style-type: none"> Local education and awareness activities included in MPA compliance plan. MPA primary school education kit developed and implemented. 25% of local schools are visited by MPA staff per year. Support DECCW Discovery Ranger Program (marine park component). 	<p>Number of local primary schools using the MPA schools kit increases over time.</p> <p>Increased number of discovery participants, and increased number of participants satisfied with discovery programs.</p>	High
	Explore opportunities for volunteer group engagement and project development with community groups and government bodies.	<ul style="list-style-type: none"> Volunteer projects are developed and implemented with community support and funding. 	<p>Community support and appreciation improves.</p> <p>Number of volunteer projects and funding increases over time.</p>	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)	
7. Promotion of sustainable tourism and recreational uses	Plan, establish and maintain public moorings and anchoring areas in CBMP, consistent with the MPA mooring and anchoring policy, to minimise impacts to sensitive marine habitats due to recreational boating.	<ul style="list-style-type: none"> Anchoring and mooring plan is developed and implemented in CBMP, consistent with MPA Maritime Operational Agreement. 	Sustainable use of the marine park is facilitated and environments sensitive to anchor damage are protected.	High
8. Ensuring management is consistent with the cultural aspirations of Aboriginal people	Establish and administer the Arakwal – CBMP Consultative Committee and implement the Arakwal/MPA MoU.	<ul style="list-style-type: none"> Arakwal MoU implemented and annual reports prepared for the CBMP Aboriginal Consultative Committee. CBMP Consultative Committee is supported and maintained. 	Greater engagement of Arakwal people in marine park management (number of meetings). External funding and other opportunities accessed.	High
	Undertake Aboriginal cultural assessments to identify and manage important sites and resources for Bundjalung Aboriginal people.	<ul style="list-style-type: none"> Cultural assessments are completed. 	Information from cultural assessment is included when making management decisions and zoning plans, and when preparing agreements.	High
	Identify and administer Cultural Resource Use Agreements (CRUA) for Aboriginal access in the marine park.	<ul style="list-style-type: none"> CRUAs negotiated and signed by parties and marine park and fisheries permits issued, and parties comply with CRUAs. 	CRUAs provide for the sustainable cultural use of marine park resources.	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)	
8. Ensuring management is consistent with the cultural aspirations of Aboriginal people	Contribute to the development of policies and strategies relating to research on Aboriginal cultural heritage issues.	<ul style="list-style-type: none"> • Research strategies developed for CBMP to better direct cultural heritage research. • Research programs developed and implemented (e.g. Arakwal Indigenous Fishing Atlas). 	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. Action outputs will be assessed against their level of completion, specified targets and, importantly, meeting their intended objectives, and results will be discussed with the local Cape Byron Marine Park Advisory Committee. This process will be aimed at improving project scope and priorities, and design parameters, and management approaches will be modified accordingly.

In regard to the 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. Reporting against outcomes will occur at five yearly intervals to allow trends to be assessed.

The Marine Parks Authority will consider undertaking a review of this operational plan following the review of the zoning plan in 2011–12.

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Appendix 1 – Marine Parks Authority and marine parks 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.

Cape Byron 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 Cape Byron Marine Park Advisory Committee includes members representing:

- the Aboriginal community
- Ballina and Byron shire councils
- commercial fishing
- the community
- marine conservation
- marine science
- recreational fishing
- scuba diving
- the 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></p> <p>(Industry and Investment NSW)</p>	<ul style="list-style-type: none"> • The Act aims to conserve, develop and share the fishery resource for the benefit of present and future generations. • 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. • 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. • I&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. • I&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. • 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.
<p><i>Catchment Management Authorities Act 2003</i> (CMA Act)</p> <p>(Department of Environment, Climate Change and Water – Catchment Management Authorities)</p>	<ul style="list-style-type: none"> • 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. • CMAs have an important role to ensure the management of natural resources in catchments are in the interests of the State. They provide a framework for financial assistance and incentives to landholders, including marine parks, in connection with natural resource management. • The Department of Environment, Climate Change and Water supports the administration of CMAs and as a partner marine parks agency works closely with CMAs both at the state and local levels to support catchment and marine conservation initiatives. • 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.

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"> • 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. • 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. • 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.
<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"> • 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. • 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. • 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.
<p><i>Environmental Planning and Assessment Act 1979</i></p> <p>(Department of Planning)</p>	<ul style="list-style-type: none"> • Planning legislation provides for the environmental assessment and mitigation of environmental impacts of any works proposed in and adjacent to marine parks. • 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.
<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"> • 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. • In marine parks, NSW Maritime administers the licensing of moorings including moorings owned and operated by the MPA for public use. (The placement of moorings in marine parks is managed in consultation with the MPA.) • 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. • 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.

Legislation (administering organisation)	Application in NSW marine parks
<p><i>Marine Pollution Act 1987</i> (NSW Maritime)</p>	<ul style="list-style-type: none"> • 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. • 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.
<p><i>NSW Heritage Act 1977</i> (NSW Planning, Heritage Branch)</p>	<ul style="list-style-type: none"> • 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.
<p><i>Threatened Species Conservation Act 1995 (TSC Act)</i> (Department of Environment, Climate Change and Water)</p>	<ul style="list-style-type: none"> • The TSC Act provides for the assessment and listing of threatened species, populations and ecological communities of animals and plants. • 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.
<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"> • 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. • The Australian Government has a primary role 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.
<p><i>Environment Protection (Sea dumping) Act 1981</i> (Commonwealth) (Cth. Department of the Environment, Water, Heritage and the Arts)</p>	<ul style="list-style-type: none"> • 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. • 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. • 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. • 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.

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"> • Quantify changes in rocky reef fish abundance and composition • Percentage of marine park habitat mapped and classified at the fine-scale • Proportion of habitat types included in sanctuary zones (review of zoning plan) • Proportion of habitat types included in habitat protection zones (review of zoning plan)
To provide for ecologically sustainable uses (including commercial and recreational fishing)	<ul style="list-style-type: none"> • Trends in patterns of recreational and commercial use • Trends in voluntary compliance • Extent of land-based threats over time • Extent of marine-based threats over time • Trends in impacts related to global warming
To provide opportunities for public appreciation, understanding and enjoyment	<ul style="list-style-type: none"> • Adequacy of signage, information materials and research dissemination