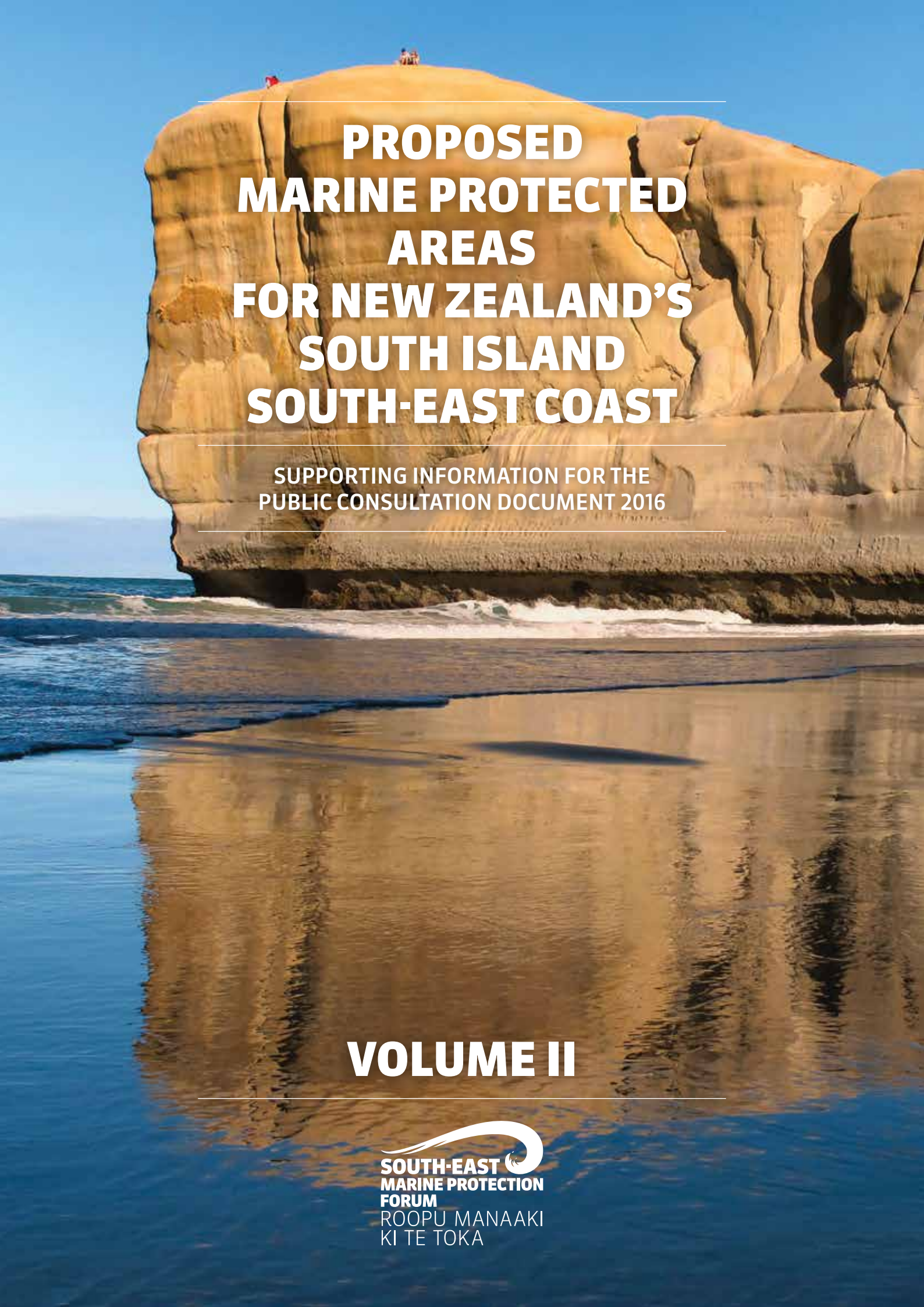

PROPOSED MARINE PROTECTED AREAS FOR NEW ZEALAND'S SOUTH ISLAND SOUTH-EAST COAST

SUPPORTING INFORMATION FOR THE PUBLIC CONSULTATION DOCUMENT 2016

VOLUME II

SOUTH-EAST MARINE PROTECTION FORUM
ROOPU MANAAKI KI TE TOKA

Cover: Tunnel Beach, Otago Peninsula.
Photo: John Barkla

PROPOSED MARINE PROTECTED AREAS FOR NEW ZEALAND'S SOUTH ISLAND SOUTH-EAST COAST

SUPPORTING INFORMATION FOR THE PUBLIC CONSULTATION DOCUMENT 2016

The South-East Marine Protection Forum's Consultation Document has been published in one volume with supporting background information published in a second volume.

Volume I
Volume I is the Consultation Document. It provides an overview of the process, the background to the Marine Protected Areas (MPA) Policy, and the proposed sites for your consideration.

It also provides a Submission Form located in the inside back cover pocket.

Submissions must be received by 5.00pm on Tuesday 20 December 2016.

Volume II
Volume II provides background information on the South-East Marine Protection Forum and on the Forum region's social and natural environment. It also includes all appendices, many of which are referenced in Volume I.

Both Volume I and Volume II are also available online at www.south-eastmarine.org.nz

Te Reo Māori
In the Public Consultation Document it is important to note the use of 'ng' for iwi in general and the 'k' for southern Māori in particular. In the south of the South Island the local Māori dialect use a 'k' interchangeably with 'ng'. The preference is to use a 'k', so southern Māori are known as Kāi Tahu, rather than 'Ngāi Tahu'.

VOLUME II

SOUTH-EAST MARINE PROTECTION FORUM
ROOPU MANAAKI KI TE TOKA

Boulder Beach, Otago Peninsula.
Photo: John Barkla

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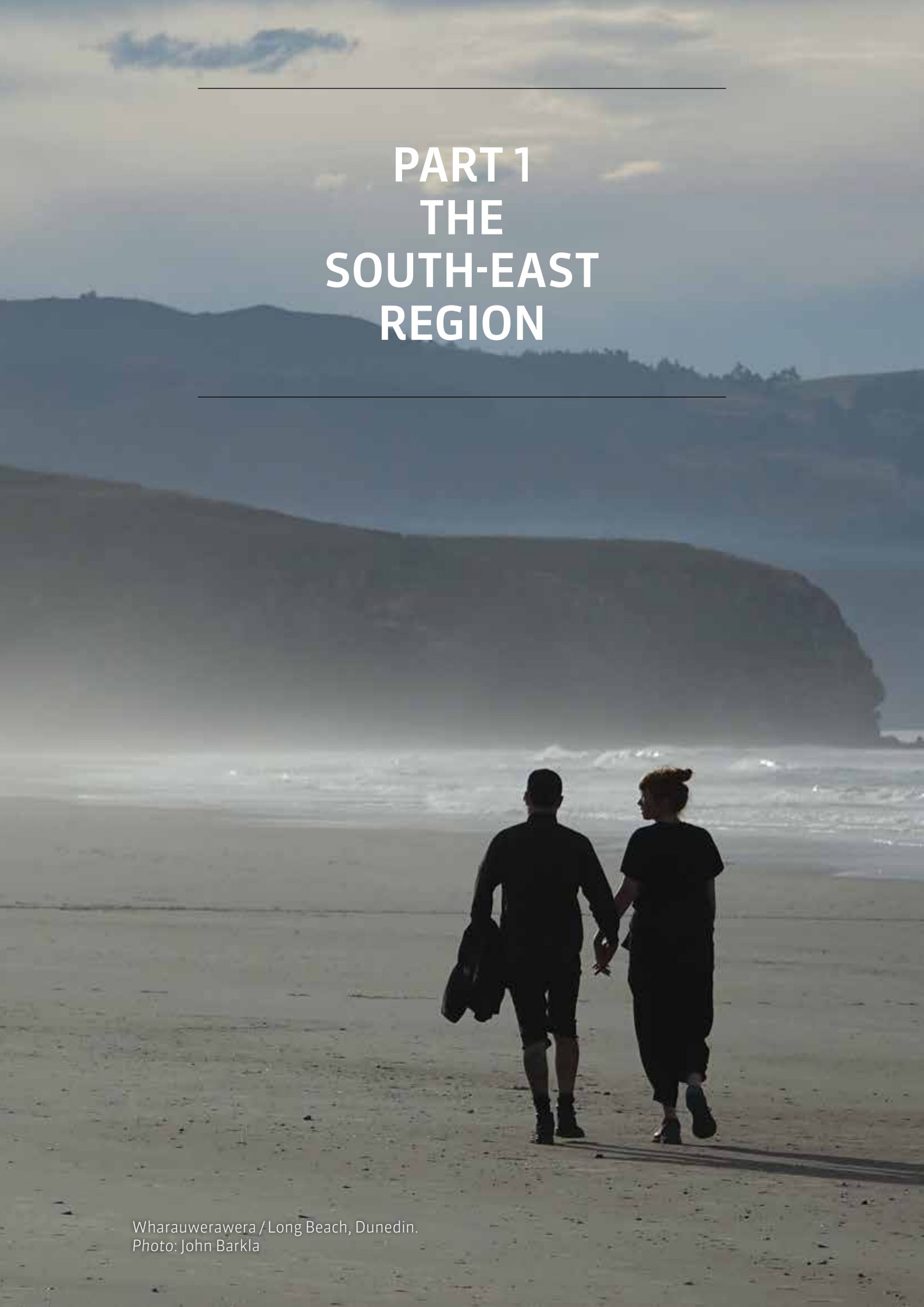

Wharauwerawera / Long Beach, Dunedin.
Photo: John Barkla

THE SOCIAL ENVIRONMENT

PEOPLE AND COMMUNITIES

1. The south-east coast is of cultural significance to Kāi Tahu, an ancestral landscape immortalised in creation traditions, rich in historical terms and a bountiful provider of sea food. The south-east region of Te Waipounamu was settled over 800 years ago, firstly by the Waitaha, who were followed by the Kāti Māmoe and finally Kāi Tahu. The three iwi merged over time and are known today as Kāi Tahu. The term 'Whānui' is often added to indicate the broad encompassing nature of the name Kāi Tahu that includes the three iwi.

2. Kāi Tahu whānui established settlements in the coastal and inland regions, and a network of mahika kai (customary food gathering sites). Fishing and gathering of shellfish such as pipi, tuatua and toheroa from the sandy shallows, mussels, pāua, limpets, kina (sea urchins) and seaweed were and remain important customary activities to this day.

3. The Ngāi Tahu Claims Settlement Act 1998 (NTCSA) settled historic treaty grievances and recognises the cultural and spiritual relationship Kāi Tahu hold with the natural environment. The NTCSA includes cultural redress mechanisms that assist in giving practical effect to the Kaitiaki functions of whānau and hapū.

4. The cultural redress includes a range of instruments that recognise Kāi Tahu mana over values that includes coastal and marine sites and resources. The Act also recognises Te Runanga o Ngāi Tahu as the iwi authority for the tribe while the constituent members of the iwi authority with takiwa in the south-east coast area are the following:
   - Te Rūnanga o Arowhenua
   - Te Rūnanga o Moeraki
   - Kāti Huirapa Rūnaka ki Puketeraki
   - Te Rūnaka o Ōtākou
   - Āwarua Rūnanga.

5. The Treaty of Waitangi (Māori Fisheries) Settlement Act 1992 transferred fishing entitlements and assets including commercial quota to all Māori, including Kāi Tahu. Protecting the ongoing integrity of this settlement asset is an everlasting treaty duty.

6. European settlers first arrived on the south-east of the South Island in the late 1700s hunting whales and seals. They were followed by more formal settlement from the 1840s when Dunedin was founded.

7. Today Dunedin has a population of about 120,000. Dunedin is also home to Port Otago a major South Island trading port. Timaru is another major port city with a population of about 43,000 and is a popular coastal resort in summer. Oamaru with a population of about 13,000 is the next sizeable township on the coast.

8. Coastal communities are dotted along the coast line from Timaru to Waipapa Point, while many have a small number of permanent local residents, their populations swell during holiday periods when crib owners and visitors come to enjoy the coastline. These include Kakanui, Moeraki, Shag Point, Waikouaiti, Karitāne, Warrington, Waitati, Purākaunui, Long Beach, Aramoana, Harington Point, Ōtākou, Portobello, Brighton, Taieri Mouth, Bull Creek, Toko Mouth, Kaitangata, Kaka Point, Surat Bay, Pounawea, Jacks Bay, Papatowai, Tautuku, Waikawa, Curio Bay, Waipohatu (Haldane), Kahukura and Waipapa Point.

9. Many people in the Forum region hold strong values associated with our coastline and sea. Historically, free access to the coast has been seen as a national birth right. People expect the beach to be clean and the water uncontaminated.

USES

10. There is a diverse range of activities that people undertake and prize along our coastline and in these marine areas these include:
    - going to the beach
    - swimming and surfing
    - beach walking and fossicking including dog walking, geocaching, rock climbing
    - boating, canoeing and kayaking
    - diving / snorkeling
    - coastal wetland recreation
    - bird / wildlife watching
    - horse riding
    - driving / biking
    - community events
    - tourism
    - customary fishing
    - recreational fishing
    - commercial fishing

Community

11. The south-east coast offers its community a multitude of recreational opportunities. Most notable amongst these are those that exist because of the nature of the marine environment; its biogeography and the biodiversity that it supports. These include:

    - World-class surfing breaks with St Clair Beach the most widely known, but surfspots abound throughout the entire region including at Aramoana, Karitāne, Whareakeake and Papatowai.

    - There is good temperate diving at many locations with large stands of bladder kelp and bull kelp a prominent feature of southern diving. While diving can involve the taking of marine life such as rock lobster, pāua (free diving only) and finfish, diving also involves more aesthetic elements such as underwater photography and viewing the underwater environment for pleasure. The Aramoana Mole at the entrance to Otago Harbour has long been considered a voluntary reserve by local divers, and Huriawa (Karitāne Peninsula), another popular dive site within the East Otago Taiāpure is protected by a Rāhui (temporary closure on pāua gathering).

    - The public can view wildlife at a wide range of sites, from land and sea.

    - Estuarine recreational opportunities include gamebird shooting, bird watching, whitebaiting, flounder fishing and shellfish gathering.

Tourism

12. Tourism, particularly tourism with a wildlife component, is an important and steadily growing component of our southern economy and creates jobs and wealth throughout the region.

13. The varied landscapes of the coast are significant attractions. Viewing of marine wildlife is a popular activity at some shore locations, and includes both recreational viewing and guided tours. Wildlife viewing mostly occurs at specific localities where the animals congregate to breed, rest or feed. Local government and communities invest considerable resources in marketing and managing tourism in the region.

14. The species that are the focus of such activities (and the primary sites at which the viewing activities occur) include:
    - New Zealand sea lion / whakahoa (Otago Peninsula, The Catlins)
    - Yellow-eyed penguin / hoiho (North Otago, Otago Peninsula, The Catlins)
    - Little blue penguin / kororā (Oamaru, Otago Peninsula)
    - New Zealand fur seal / kekeno (Otago Peninsula, Nugget Point, Long Point, Taiaroa Head)
    - Northern royal albatross / toroa (Taiaroa Head)
    - Otago shag / kōau (Taiaroa Head)
    - Hector's dolphin / upokohue (Porpoise Bay, Waikawa)
    - Other seabirds; and
    - Estuarine waders and shore birds (all estuaries)

Customary Fishers

15. Kāi Tahu are manawhenua and hold mana moana (authority over the seas) for the Forum region. Fisheries are a vital resource for Kāi Tahu, both as a source of food, culturally and recreationally. Many fish, shellfish and seaweed species are tāoka (highly prized) to Kāi Tahu, and there are many places of importance to Kāi Tahu as traditional fishing grounds. Kāi Tahu also hold a significant interest in commercial fishing.

16. The use and management by Kāi Tahu of non-commercial, customary fisheries is provided for in several ways under fisheries legislation. For example:
    - Kāi Tahu propose special management areas – mātaitai reserves[1] and taiāpure.[2]
    - Tangata Tiaki (fisheries managers)[3] have a role in the management of fisheries and other cultural material. They can issue customary fishing authorisations and take part in fisheries management processes.

17. Mātaitai are gazetted reserve areas where Kāi Tahu, as manawhenua, are able to manage all non-commercial fishing[4] by making bylaws. In the Forum region, the seven existing mātaitai reserves are:
    - Tuhawaiki (south of Timaru)
    - Waihao (in South Canterbury)
    - Moeraki (in North Otago)
    - Waikouaiti (Estuary and River north of Dunedin)
    - Ōtākou (lower Otago Harbour)
    - Puna wai-Toriki (coastline north of Tokata (Nugget Point)) and
    - Waikawa Harbour / Tumu Toka (on the Catlins Coast)

18. Establishment of a taiāpure over an area is another way for Kāi Tahu to become involved in the management of both commercial and non-commercial fishing in their area.[5] There is one taiāpure within the Forum region; the East Otago Taiāpure at Karitāne.

19. The Forum heard that looking after the marine environment and its resources for future generations is central to Kāi Tahu's beliefs and management of their customary fisheries, as referred to in statutory deeds. The Forum also heard that there are many other places of importance and significance to Kāi Tahu, such as traditional fishing areas, that are not yet formally recognised.

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1 *Mātaitai Reserves can only be applied for over traditional fishing grounds, and must be areas of special significance to the manawhenua.*

2 *A taiāpure is a local management tool established in an area that has customarily been of special significance to an iwi or hapū as a source of food or for spiritual or cultural reasons (s 174).*

3 *Tangata tiaki are appointed by the Minister for Primary Industries, on nomination of mana whenua Tangata tiaki have a rohe moana (area) for which they are able to issue customary authorisations.*

4 *Commercial fishing is generally prohibited within mātaitai reserves.*

5 *All fishing, including commercial fishing, can continue in a taiāpure.*

Papatowai, The Catlins.
Photo: Stephanie Blair

Recreational Fishers

20. Recreational fishers fish for sustenance, sport and / or recreation. The recreational fishing sector ranges from people who fish regularly to people who may only fish once or twice a year; from people who throw a line over the wharf or gather shellfish on the shore to people who venture further out to sea in their own boat or a charter vessel.

21. Recreational fishers may fish from boats or the shore (the beach, rocks or from wharves) and may also fish while diving. Access to their favourite spots is important to recreational fishers. So, popular areas are often close to main centres or are easily reached by road or a short boat trip. The Forum heard that many areas close to shore and some offshore areas in the Forum region are important to recreational fishers.

22. Popular species among recreational fishers in the Forum region include pāua, rock lobster, cockles, blue cod, flatfish[6], gurnard, red cod, hapūku / bass, blue moki, butterfish and trumpeter.

23. Recreational fishers mainly use methods like rod and line, kontiki, hand gathering, potting, netting and spearing. These tend not to have significant physical impacts on the environment and so could continue in some types of marine protected areas.

24. Charter vessels operate throughout the Forum region. Locations within the region where charter vessels are based include Moeraki, Port Chalmers, Karitāne and Taieri Mouth. Charter vessels may also travel into the region from places such as Bluff and Riverton.

25. In addition to social, cultural and sustenance value, recreational fishing contributes to the economy through such things as boat and equipment sales, tourism and associated activities.

26. Because there are no general reporting requirements for recreational fishing, we don't have a lot of detailed information about how much people catch, the methods they use, or where they fish. The information we have is limited to some charter vessel reporting[7] and some relative estimates from surveys of recreational fishers. Due to relatively small sample sizes in areas of low population density, there can be quite a lot of uncertainty around some estimates.

27. MPI is responsible for managing marine recreational fishing.[8] The main controls on recreational fishing are: bag and size limits; restrictions on methods and gear; and restricted and closed areas. These controls are used to help to protect fishing resources to ensure enough fish for the future and to protect the environment.

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6 *Flounder, sole, turbot and brill are referred to collectively as flatfish.*

7 *Currently, reporting is required for bass, blue cod, bluenose, rock lobster, hapūku/groper, kingfish, southern Bluefish tuna and Pacific Bluefin tuna.*

8 *Freshwater fisheries for trout and salmon are managed by Fish & Game New Zealand.*

Commercial Fishers

28. The Forum region has a diverse commercial fishing sector. The sector is made up of large national companies, smaller local companies and independent fishers. Many of the fishers are locally based and may own quota shares or lease an annual catch entitlement (ACE) from a number of quota owners to supplement their catch plan for the year. Commercial fishers may own and fish their own quota[9] (or they may lease annual entitlements) to catch a certain amount of a particular fish stock or group of stocks from quota owning individuals or companies. Most of their catch has to be landed to a licensed fish receiver who may be a small independent company or one of the larger companies with offices in a number of regions. A penalty regime is in place whereby a deemed value will be charged to fishers who are unable to cover their catch with ACE at the end of the fishing year. The deemed value is a figure that is set at a percentage of the port price and in some instances above it.

29. The Forum region is part of a larger fisheries management area (FMA3) and fish caught within this area may be landed for processing locally or in some instances outside the region. There is an important export market for fresh and frozen fish with much of it marketed in Australia and internationally. The domestic market for fish include restaurants, supermarkets and specialty fish mongers and takeaway shops. Most inshore commercial fishers target a number of fish species. Important fish species in the Forum region include pāua, cockles, rock lobster, flatfish, blue cod, red cod, tarakihi, school shark, rig, elephant fish and red gurnard. Methods used include potting, hand gathering, trawling, dredging, set netting and Danish seining. Inshore commercial fishing vessels accordingly range from small inflatable boats to medium sized (trawlers). All vessels over six metres overall length are required by regulation to report their catch and landings to the Ministry for Primary Industries and maintain logbooks onboard. The majority of the assessment for abundance levels for fish stocks is as a consequence of the commercial fisheries reporting and from surveys paid for by the commercial sector under cost recovery.[10]

30. Restricting access to fisheries will have impacts on commercial fishing. If access were to be restricted to a major portion, the impact would be significant. Spatial closures will push fishing effort into other areas and impact on other fishers, and add additional cost to fisheries operations which includes fuel, steaming time and the potential need for accessing a different fish stock mix and therefore quota lease costs.

31. The other consideration that is also relevant is the continued cumulative effect of spatial closures. There are cumulative effects associated with the existing closures in the bioregion and the wider East Coast and Southland areas.

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9 *Not all species are managed within the Quota Management System (QMS). Catches of species managed outside the QMS are monitored, but are not subject to total allowable catch limits. If catch levels or other information suggests it is necessary, new species of stocks can be added to the QMS for closer management.*

10 *For more information on commercial fishers, the Quota Management System (QMS) and regulations, please refer to* www.seafood.org.nz

32. For commercial fish stocks such as rock lobster and pāua the impacts on existing users will be significant. As with commercial finfish fishing, there are already a number of restricted closures either voluntary or regulatory, such as Hector's dolphin set net closures and trawl headline restriction areas.

33. The type of fishing method is adopted to suit the behavioural characteristics of the fish stock being taken and to minimise operational costs. Keeping the cost of operations down is advantageous for those that buy their fish. There are a number of people that do not go recreational fishing and rely on their retail fish shop.

34. Commercial fishing continues to be an important part of many south-east coast communities and families. The Forum heard that maintaining that way of life is important to people for employment, the regional economy and simply to maintain fish in the diet. Not everyone is able to go recreational fishing and therefore rely on the commercial sector for their fish.

35. Commercial fishing is an important employer and contributor to the economy, both directly and indirectly. For example, annually, the Dunedin Seaport ranks as New Zealand's third or fourth largest exporter of fish based on dollar value.

Taieri Mouth, Dunedin.
Photo: Fergus Sutherland

Fisheries Management

36. A range of measures and controls are used to sustainably manage fish stocks:[11]

- Catch limits (the volume of fish that may be caught set at levels that will ensure the long-term sustainability of the fish stock);
- Size limits – these ensure species reach sexual maturity before they are harvested, or ensure that the most fertile, breeding-aged fish are not removed from the population;
- Restrictions on harvest based on sex (e.g. egg bearing females) or certain biological states;
- Area restrictions (for example, to protect important nursery or juvenile areas);
- Controls on the use of different fishing methods in specific areas
- Regulated trawl mesh size and the voluntary adoption of larger mesh codends and escape panels in trawl gear designed to reduce capture of unwanted and small fish species, as well as selectivity measures in other fishing methods;
- Regulated escape gaps for rock lobster pots;
- The ability to return live fish to the sea as per Schedule 6 of the Fisheries Act 1996 (there is a restricted list of fish stocks which include rock lobster, school shark, rig and many others);
- Regulations and industry agreements are also in place to reduce the impact of fishing on protected species such as fur seals and seabirds, although protected species captures do still occur;
- Regular fisheries assessments and analyses for stock status.

37. Restrictions that apply within the Forum region include:

- Restrictions and prohibitions aimed at helping protect Hector's dolphins from incidental capture. Trawling with a headline height in excess of 1 metre is banned out to 2 nm (3.7 km) and set netting is banned out to 4 nm (7.4 km);
- A voluntary trawl ban in place to protect the bryozoans beds off the coast near Otago Harbour;
- Danish seining is banned within 3 nm (5.6 km) of the South Island coast under a long standing regulation;
- All area based restrictions can be viewed in Appendix 6: *Existing Fisheries Restrictions*, or through SeaSketch by following the link http://bit.ly/SeaSketchRestrictions

11 *A fish stock is any fish, shellfish or seaweed that is treated as a unit for the purpose of fisheries management.*

38. Reporting regulations require commercial fishers to record their catch in logbooks and to send the information to a central secure database held by FishServe. The information includes the date and time, catch and positional data, as well as fishing gear information. The reporting of fine-scale longitude and latitude data is provided for the majority of fishing methods, but there are exceptions to Danish seining and potting which are reported on a larger statistical scale

39. Danish seining is not prevalent in the Forum region and the potting for blue cod, rock lobster and pāua stocks respectively are closely monitored. Habitat identification also assists knowledge on fish stock for localised areas.

THE NATURAL ENVIRONMENT

40. This section provides a general description of the physical, biological and habitat features of the South Island south-eastern marine environment.

41. More detailed information relating to the natural environment, existing uses and current management regimes were available to the Forum within SeaSketch, the Forum's online mapping tool. This information was critical in formulating the consultation areas and is available to the public via SeaSketch.

42. We recommend that you view this information before making your submission by going online at http://southeastmarine.seasketch.org.

OCEANOGRAPHY

43. Southern New Zealand has long been recognised as distinct in terms of its marine environment due to the mixing of subantarctic and subtropical waters along the coast. The unique physical characteristics of the Forum region contribute to significant regional variation in the habitats and ecosystems from the southern to the northern part of the region.

44. The Southland Current is a special and major influence on the marine ecology of the Forum region. Its water originates from a slow eastward movement in the central Tasman Sea which is turned southwards on meeting the South Westland coast, flows past Fiordland then wraps around the southern South Island and Stewart Island before heading north past the Catlins, Otago and South Canterbury coastlines, keeping inside the Subtropical Convergence, a boundary where subantarctic surface water meets the warmer water of the Southland Current.

45. The Southland Current heads north past the Otago Peninsula, where the Cape Saunders headland pushes it between the coast and the deep canyons, narrowing the current. This may create periods where nutrients from the deeper waters are pushed up and become available in the coastal waters.

46. The main wave exposure is from the south to northeast, with the dominant waves coming from the south. These waves create an exposed coastal environment over most of the region. In places, the structure of the seabed and physical features of the coast provide for more variety of habitats. For example, there are more sheltered areas north of the Otago Peninsula, as well as behind smaller headlands and within bays.

47. Besides waves, the coast is also exposed to tidal currents that can intensify the movement of sediments and affect marine life close to headlands and the mouths of rivers and estuaries. Winds can also reinforce waves and currents, build coastal sand dunes and dry the intertidal zone.

48. The Clutha River is the biggest river by volume in New Zealand and has a major influence on the chemistry and productivity of the neritic (shelf) waters, and on the coastal sedimentation and geomorphology from Nugget Point to Karitāne.

LANDFORMS

49. The region shows significant variation in landforms from south to north, both as a result of the influence of currents, tides and winds, and because of differences in the underlying geology.

50. Along the coast of the Forum region there are a range of shore types, from sandy beaches, to pebbles, cobbles and boulders, wave cut rock platforms, and estuarine and river mouth outlets. Offshore, the continental shelf generally extends beyond the 12 nm territorial sea, apart from a few locations where canyons enter the Forum region off the Otago Peninsula.

51. These differences from north to south are some of the defining features that divide the inshore coastal marine environment into geographical sub-regions (coastal units). These include:

    - Canterbury Bight: a coastline dominated by mixed sand and gravel beaches and braided rivers with hapūa[12] lagoons at their outlets to the sea;
    - North Otago: a sedimentary rock coast, with shallow subtidal reefs supporting forests of giant kelp (*Macrocystis pyrifera*) and also deeper reefs;
    - Otago Peninsula: a prominent volcanic landform that strongly influences coastal currents, bordered seaward by a narrow shelf, resulting in deep water and canyons being found quite close inshore;
    - Clutha: a coastline strongly influenced by fresh water and sediment from the Clutha River;
    - Catlins: a cliffed and embayed coastline with old erosion resistant sedimentary rocks influenced by strong tidal currents and the outflow from Foveaux Strait/Te Ara a Kewa. Special features include the distinctive sedimentary rocks which have been folded so the horizontal strata seen at Long Point are nearly vertical at the Nuggets.[13]

12 *Hapūa lagoons form at river mouths, are elongated, and separated from the sea by a barrier of mixed gravel and sand.*

13 *Fyfe 1992.*

Figure 1: Geographical Sub-units of the South-East Region.

BIODIVERSITY

52. Much of the biodiversity in the marine environment is hidden from sight. What information that exists in a reliable form tends to relate to large-scale structures (biogenic habitats), large-bodied wildlife (birds, marine mammals), or small areas where individual studies have occurred. The lack of detailed biodiversity information is why the MPA Policy uses 'habitat types' as a proxy for biodiversity.

53. Landforms and oceanography, together with the climate of the Forum region, strongly influence the marine environment, creating complex patterns of marine habitats and biodiversity. The complexity of habitats and biodiversity are further influenced by depth and varying levels of wave exposure.

Habitat Types in the Forum Region

54. Ideally, selecting sites for marine protected areas would be based on a complete understanding of where habitats and ecosystems are located, and the relationship of these different habitats with patterns of biodiversity. However, in the marine environment this is difficult to achieve, so we need to use proxies to create habitat types that approximate biodiversity patterns.

55. As discussed in Volume I, Part 1 regarding the MPA Policy habitat classification, there are 44 habitat types defined. It is important to note that classified habitats are very broad and non-descriptive. That is, just because the area is shown as "Deep Gravel" it does not mean it is featureless gravel, but simply that the underlying substrate consists mostly of gravel. Different areas within that gravel habitat type could look quite different in real life.

56. Where possible, the habitat classification is supplemented by extra available information on sites, habitats and features (e.g. the location of biogenic habitats) that might be useful to further inform the selection of sites for marine protected areas.

57. The habitat layer can be found online in SeaSketch, where you can see the detail of the habitat types.[14]

14 *Refer to Appendix 5:* Habitat Types in the Forum Region.

A brief description of some general habitat features is provided below.

Deep Subtidal Habitats (greater than 30 m depth)

58. The continental shelf is an area of gently shelving seabed that extends out from the coastline. In the south-east region the shelf varies in width from about 16 nm (28 km) to 18 nm (33 km) north and south of Otago Peninsula, to less than 6 nm (11 km) adjacent to it. The outer shelf and upper slope are incised by eight canyons, of which two (Papanui and Saunders) project into the 12 nm (22.2 km) boundary of the Forum region.

59. Offshore, the shelf is generally smooth and dominated by soft sediment habitats. Patchy land-derived gravels, sands and muds extend offshore to about 30 -70 m depth. Beyond this, seafloor sediments are predominantly relict sands and biogenic sand and gravel.

60. There is relatively little literature about the biology of the deep subtidal shelf area. The main research focus has been on an extensive area of bryozoan beds on the mid and outer shelf directly east of Otago Peninsula.[15]

61. From about 70 m depth to the shelf break, large, heavily calcified bryozoans are abundant, and dominate an area of about 110 km^2. Bryozoan beds such as this are a rare habitat type around the world and are uncommon in New Zealand waters. Where they occur at sufficient densities, bryozoans enhance local biodiversity by providing attachment surfaces for invertebrates such as anemones, and places for other animals to hide from predators.

62. Dense assemblages of sponges, tulips and tubeworms occur offshore between north of Oamaru to Waianakarua River. These provide habitat for a multitude of invertebrate species, and nurseries for fish including blue cod, rock lobster and tarakihi.

63. In the south-east region there are heads of several canyons; Karitāne, Papanui and Saunders. Canyon habitats are important deep slope environments, they have diverse fauna including brittle stars, sea stars, gastropods, bivalves, shrimps, hermit crabs, bryozoans, sponges and quill worms. They are hotspots for whales and sea bird activity. Shepherd's beaked whale, *Tasmacetus shepherdi*i, one of the world's least known cetaceans, was recently sighted for the first time in New Zealand waters in the vicinity of the Saunders and Taiaroa Canyons.

64. Energy production by microscopic marine primary producers (phytoplankton) over the mid and outer shelf feeds an abundance of tiny animals (zooplankton) and small fish that play an important role in the shelf food web. Swarms of squat lobster *Munida gregaria* are also a feature of the Otago shelf ecosystem. During their early life stages, squat lobster live in the water column, whereas the adults inhabit the mid-shelf bryozoan thickets on the seafloor.[16]

15 *Refer to* Habitat Forming Bryozoans in the South-Eastern South Island *at* www.south-eastmarine.org.nz/oursea/natural-history

16 *Zeldis & Jillet (1982) Aggregation of pelagic Munida gregaria by coastal fronts and internal waves. Journal of Plankton Research, 4(4):839-857.*

65. Many fishers will be familiar with the reefs in their favourite spots. But, we don't have good records about the actual size and location of offshore rocky reefs. Reefs have been recorded at mid-shelf depths off Makikihi; south-east of Katiki Point, Moeraki; south-east of Otago Peninsula; and off Quoin Point.

Intertidal & Shallow Subtidal Habitats

66. A general pattern of intertidal and subtidal habitats is apparent across the region and described below, but this varies considerably at local scales within the region.

67. Moderately exposed coastal rocky reefs north of Otago Peninsula are characterised by subtidal forests of the giant bladder kelp (*Macrocystis pyrifera)* in depths shallower than 30m.

68. South of the peninsula, the coastline is very exposed to large southerly swells where the shallow subtidal rocky reefs are dominated by dense stands of the bull kelp *Durvillaea spp*.

69. Below 3 m depth *Lessonia variegata*, *Marginariella spp*. and *Carpophyllum flexulosum* are the dominant brown kelp species. The understorey consists of a diverse assemblage of small red seaweeds, and a variety of sponges, bryozoans and solitary ascidians (a type of filter feeding invertebrate).

70. Beaches and subtidal sediments contain several shellfish species that in some places create extensive shellfish beds (e.g. cockles / tuaki, tuatua, horsemussels), as well as other living things such as marine worms (polychaetes) and crustacea (e.g. crabs). These beds can hold the sediment together, helping to prevent it being washed away, and creating habitats for other animals.

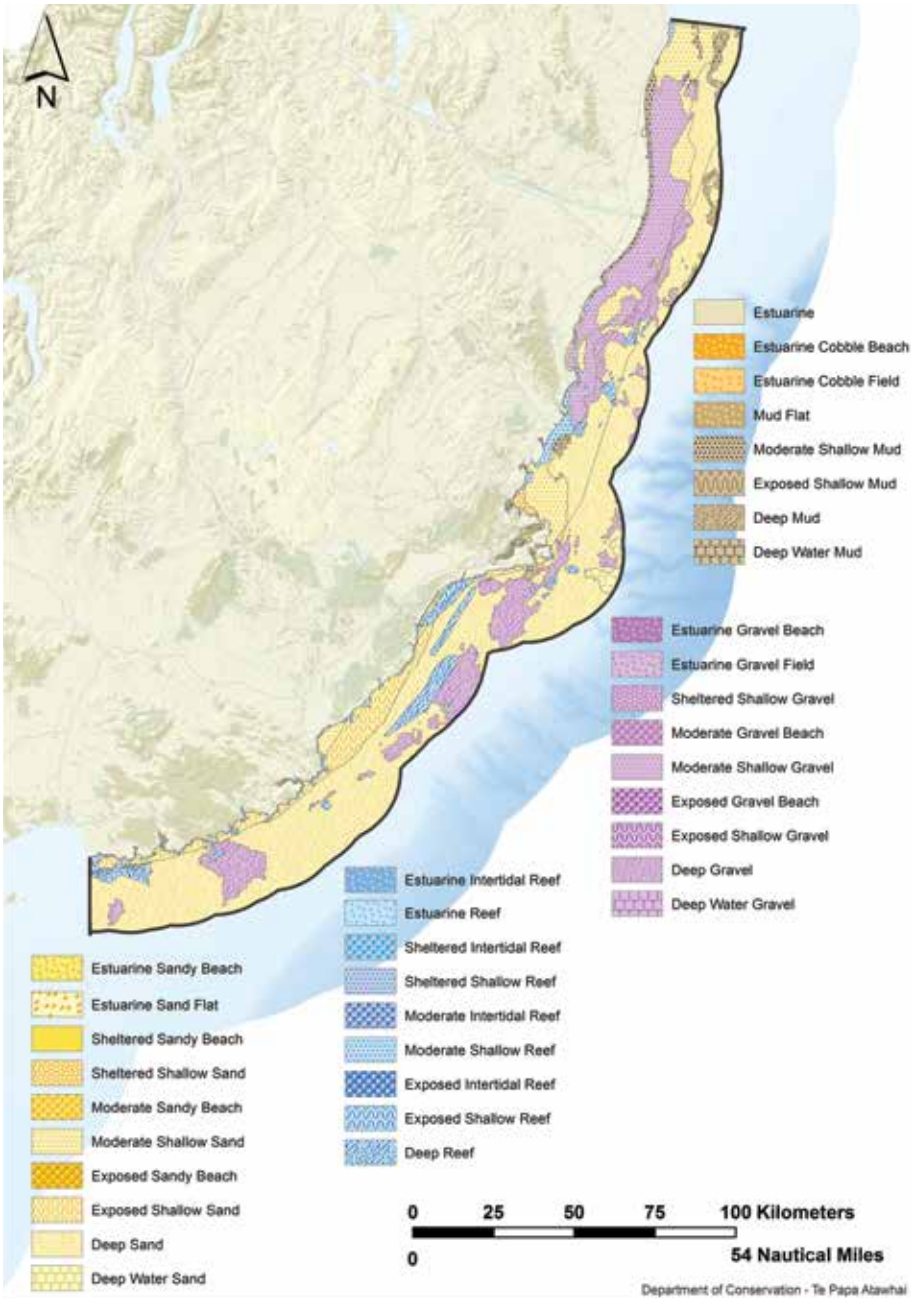


Figure 2: Map of MPA Policy Classified Habitats in the Forum Region. Refer to Appendix 5: *Habitat Type Maps of the Forum Region* or go to OurSeaYourSay.SeaSketch.org

Estuarine Habitats

71. There are more than 30 places where estuarine habitats are found in the Forum region. Estuarine habitats include areas of tidal sandflat and mudflat that support saltmarsh vegetation, seagrass beds, shellfish beds and aquatic birdlife. Seagrass is often present in intertidal areas and provides habitat for many plants and animals, as well as helping to stop the sediments being washed away.[17]

72. Estuaries also provide an important nursery habitat for many types of fish, particularly for some flatfish and galaxiids (including inaka / whitebait). They are also an important part of the migration paths for a range of species, such as wading birds (e.g. godwits, herons), seabirds and some native birds, and fish that live in both salt and freshwater.

Biogenic Habitats

73. Biogenic habitats are habitats formed by living organisms or their remains. Biogenic habitats include the deeper areas of bryozoan beds[18], shellfish beds, sponge gardens, and tube worms. On rocky coasts in water less than 30 m depth, they include bladder kelp forests.[19] In estuarine areas, biogenic habitats include shellfish beds, seagrass beds and saltmarshes.[20]

74. Based on observations by fishers and others, a variety of biogenic habitats are thought to occur throughout the coast of the Forum region from Foveaux Strait (bryozoans), North Otago (bryozoans, sponges and tube worms) and north beyond Timaru (tubeworms).

75. Biogenic habitats are well recognised as important areas for biodiversity and provide areas of refuge and nursery grounds for a variety of fish species. For example, juvenile tarakihi are associated with the tube worm habitats up the east coast of the South Island. Blue cod are associated with biogenic habitats in Foveaux Strait, as well as with the Otago bryozoan beds.

17 *Refer to* Significance of Seagrass Ecosystems in Coastal Environments *at* www.south-eastmarine.org.nz/oursea/natural-history

18 *Bryozoans are small (typically, about 0.5 mm long), filter feeding invertebrates (animals that don't have a back bone). Large numbers of bryozoans together make up bryozoan beds. For additional information on bryozoans, refer to* Habitat Forming Bryozoans in the South-Eastern South Island *at* www.south-eastmarine.org.nz/oursea/natural-history

19 *For additional information on kelp forests, refer to* An Overview of Kelp Forest Communities in the South-Eastern South Island *at* www.south-eastmarine.org.nz/oursea/natural-history

20 *Salt marshes are areas of grassland that get flooded by seawater.*

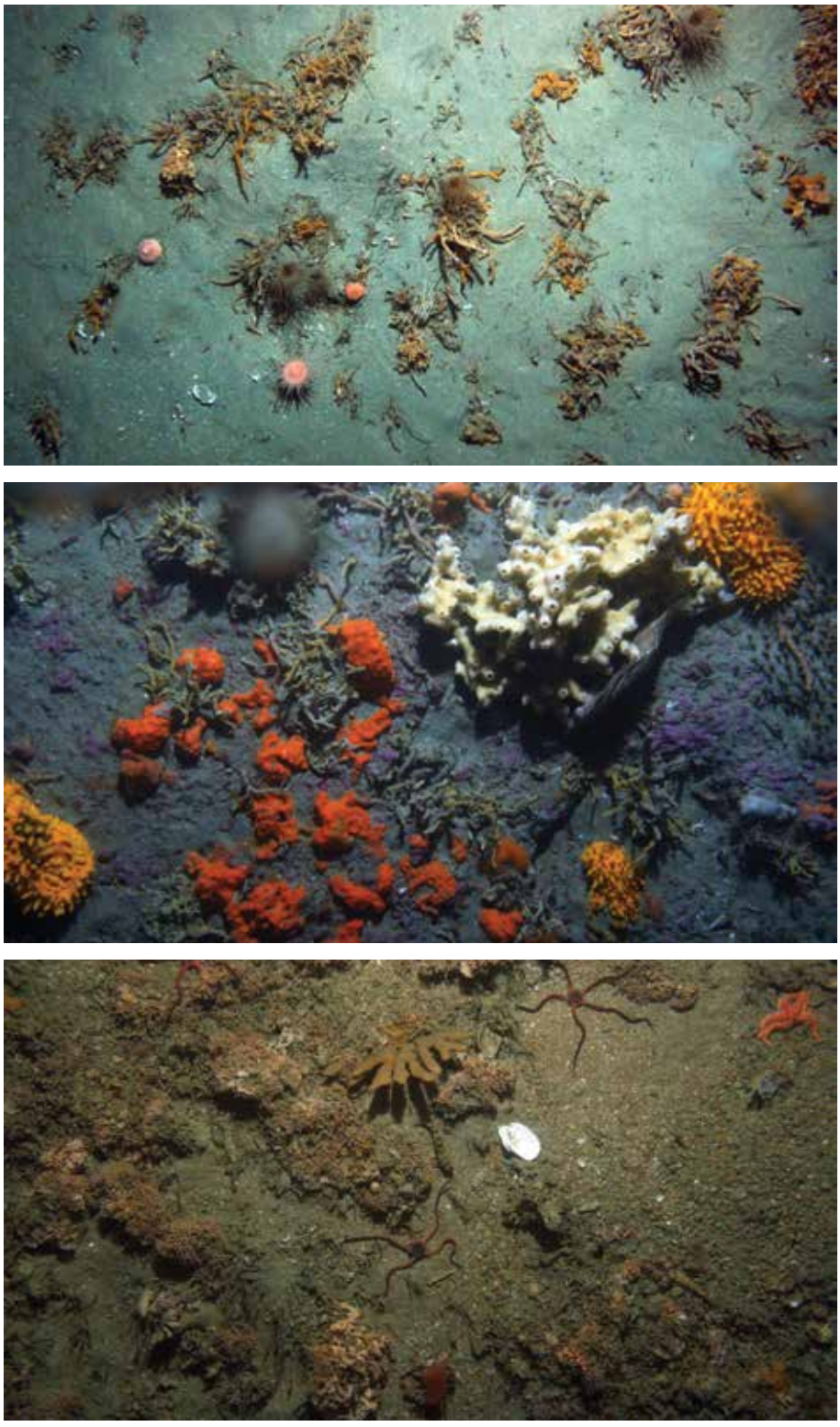


Figure 3: Biogenic habitats off the Otago coast.
A) Example of tube worm biogenic habitat on the Otago shelf;
B) a sponge dominated biogenic habitat on the Otago Shelf;
C) Bryozoan colonies and associated fauna from the Otago Peninsula bryozoan bed. Source: NIWA, collected under MPI project ZBD2008001.

Protected Wildlife

76. The waters from the coast and over the continental shelf are also an important foraging area for marine mammals and seabirds[21] including species protected under the Wildlife Act 1953 and Marine Mammals Protection Act 1978.

77. Threatened yellow-eyed penguins nest on the coast of the Catlins and Otago Peninsula, as well as on the north Otago coast. Yellow-eyed penguins spend considerable amounts of time foraging for benthic prey over the sea floor and adjacent shelf. Other endemic species include northern royal albatrosses, spotted shags and Otago shags. New Zealand fur seals and a small population of the endangered New Zealand sea lion also breed in the region.

78. Prior to commercial whaling the region was the most important calving area for Southern Right whales in New Zealand. As the population recovers, Right whales are now frequently sighted off the Otago coast particularly during the winter months.

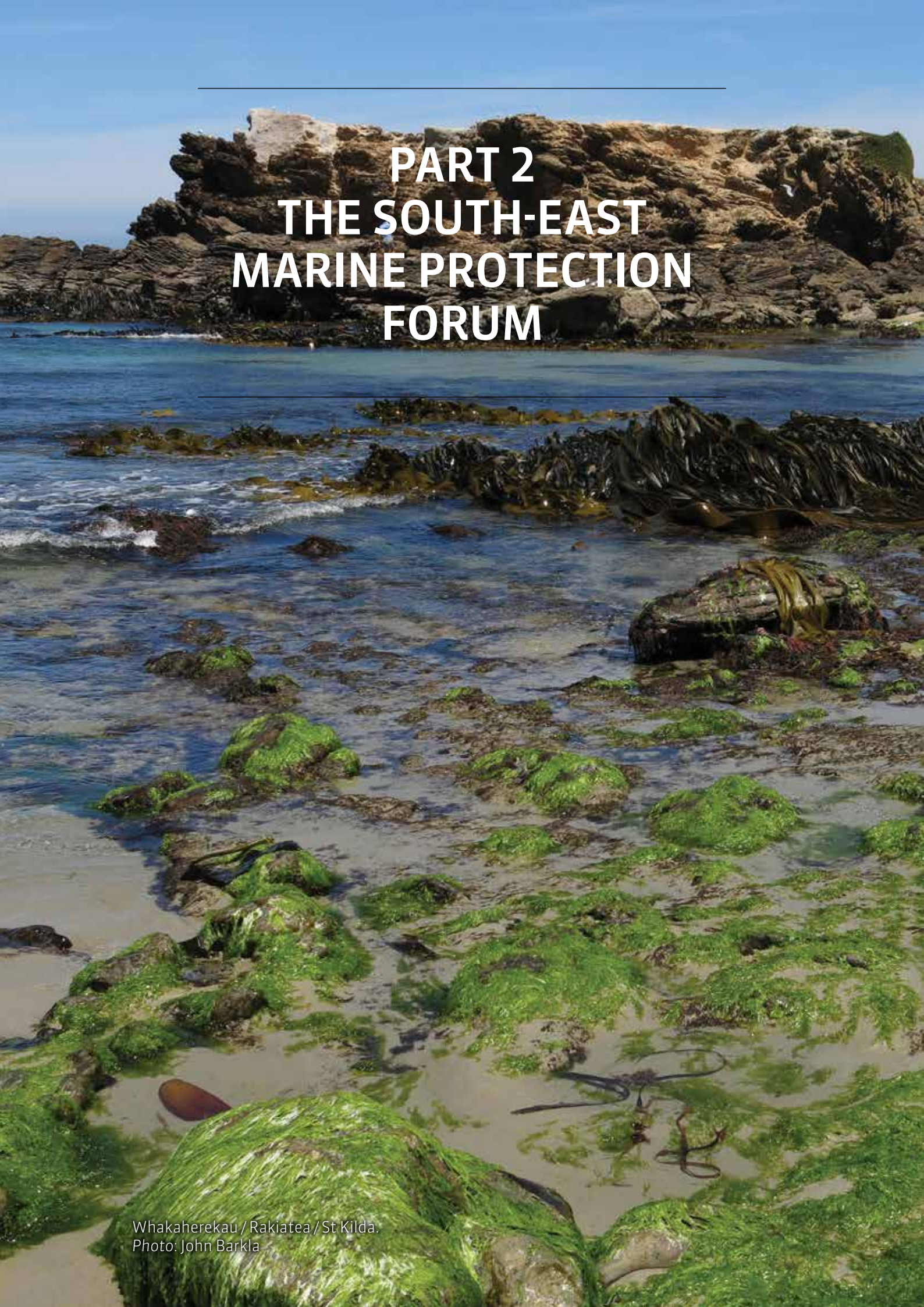
79. Within the Forum region the endangered Hector's dolphin inhabits coastal waters including around Otago Peninsula, north of Moeraki, and the southern Catlins near Waikawa Harbour / Porpoise Bay.

80. Great white sharks and basking sharks occur seasonally off the Otago coast but little is known of their movements or habitat requirements.

21 *Refer to* South-East Marine Protection Forum Information Sheet – Seabirds *at* www.south-eastmarine.org.nz/oursea/natural-history

Tavora, North Otago.
Photo: John Barkla

PART 2
THE SOUTH-EAST MARINE PROTECTION FORUM



Whakaherekau / Rakiatea / St Kilda.
Photo: John Barkla

THE SOUTH-EAST MARINE PROTECTION FORUM

81. In 2014, the government appointed the South-East Marine Protection Forum (the Forum) as the third, regionally based, marine protected areas planning forum. The Forum is tasked with making recommendations to the Government on a network of marine protected areas for the coastal marine area between Timaru and Waipapa Point in Southland, out to 12 nm (22.2 km) from the coast, and including the lower estuarine reaches of some 30 rivers.

82. Ministers prioritised the Forum region for marine protected areas planning because there are no marine protected areas here as yet. The Forum has been asked to recommend protection for each of the habitat types where possible in the south-east region.

83. The Forum's deliberations and recommendations are largely independent of government agencies that otherwise provided guidance on legislative and policy matters. Its fourteen members are drawn from the south-east South Island community and others with interests in the area. A diverse range of community interests and users of the marine environment are represented: manawhenua, commercial fishers, recreational fishers, local government and communities, and environmental, scientific and tourism.

FORUM MEMBERS

Maree Baker-Galloway
Chairperson
Partner at Anderson Lloyd specailising in Environmental Law, Queenstown

Edward Ellison
Deputy Chair, Representing the three Otago Runaka, Dunedin

Dr. Philippa Agnew
Environmental Sector Representative, Oamaru

Stephanie Blair
Representing Awarua Runaka, Invercargill

Simon Gilmour
Commercial Fishers Sector, Dunedin

Nelson Cross
Recreational Fishers Sector, Kaka Point

Ate Heineman
Commercial Fishers Sector, Dunedin

John Henry
Representing Arowhenua, Kāi Tahu, Timaru

Dr. Chris Hepburn
Marine Sciences Sector, Dunedin

Sue Maturin
Environmental Sector, Dunedin

Neville Peat
Community Sector, Dunedin

Dr. Tim Ritchie
Recreational Fishers Sector, Dunedin

Fergus Sutherland
Tourism Sector, The Catlins

Carol Scott
Commercial Fishers Sector, Nelson

Professor Khyla Russell
Representing the three Otago Runaka (Alternate)

Gail Thompson
Representing Awarua, Kāi Tahu, Bluff

The South-East Marine Protection Forum Members

Back row: Ate Heineman, Neville Peat, Edward Ellison, Fergus Sutherland, Chris Hepburn, John Henry, Carol Scott, Philippa Agnew, Simon Gilmour, Nelson Cross, Tim Ritchie.

Front row: Gail Thompson, Sue Maturin, Stephanie Blair, Maree Baker-Galloway.

Inset photo: Khyla Russell.

TRIBUTE TO PAULINE REID

E Whakamaharataka tēnēi mō Pauline Reid
Ka nui rawa tonu o tātou nei whakaaro aroha ki te hākui ko Pauline Reid, e mate ana i aia i te rā o 26 September, 2014. E te tuahine, kua mutu ōu mahi kaha e tiaki ana te ao tūroa, engari e moe mai rā koe i te ringa o te ātua, i te huingā ō rātou kua whetūrangitia, moe mai, oki oki mai rā.

We pay tribute to one of our original members, Pauline Reid, who passed away suddenly at her home on 26 September, 2014. Pauline was one of the Kāi Tahu alternate members on the Forum, with responsibility particularly for the South Canterbury region.

Pauline was a forthright and passionate exponent of customary interests in the early meetings of the Forum, we acknowledge her contribution and legacy of frankness that the Forum has continued to exhibit. We also acknowledge the whānau of Pauline in their loss, moe mai rā e te tuahine.

THE FORUM'S VISION

84. The Forum's vision is:
to ensure that marine habitats and ecosystems along the Southern South-East Coast of New Zealand are healthy and sustainably productive, and treasured for their biodiversity, integrity and special nature.[22]

85. The Forum's principal objective is:
to provide a report for the Ministers recommending levels of marine protection for the Forum's region, which is in line with the MPA Policy and MPA Guidelines.

LISTENING TO THE COMMUNITY

86. As part of its role, Ministers directed the Forum to engage with the community to find out about existing users and interests in the area. Alongside this, we have also reviewed other information available to us,including scientific information about the Forum region, with an aim to gather and use the best information available. The information the Forum has gathered from the community has been essential in helping the Forum develop the proposals in this document.

87. Community engagement has included:

- Public meetings throughout the Forum region, from Timaru to Waipapa: These provided opportunity for local communities to engage with the Forum process and share their thoughts.
- A questionnaire – *Our Sea Your Say – Kei a Koe Te Tikanga*: We used this to get more detailed information about how the communities use their marine environment and what matters to them. The results of the questionnaire are summarised in Appendix 3: *Summary of Community Engagement* as part of the wider summary of community engagement undertaken to date.
- SeaSketch: SeaSketch is an online tool that supports collaborative marine spatial planning and provides an easy way for the Forum and the community to share information and ideas.
- Sector engagement: Each member of the Forum represents a community of interest. Forum members have all engaged with their sector to ensure that the full range of sector views have been represented during Forum deliberations.
- Science workshops: The Forum heard from scientists who are experts in the Forum region and/or particular fields of interest. Topics covered included: oceanography, ecological connectivity, bryozoans, responses to protection, historical changes in the marine environment, reproduction and size/age relationships of species, blue cod, rock lobster, marine mammals, seabirds, soft sediment and esturine ecology, and rocky reefs.

22 *For full details of the Vision and Objectives, see the South-East Marine Protected Areas Revised Terms of Reference with effect from 26 February 2016, and the Forum's Vision, Objectives and Guiding Principles, available at* south-eastmarine.org.nz

- Other communication channels: There is a Forum website, Facebook page, email address and 0800 687 729 available for the community to find out about the process and share information with the Forum. The Forum has provided information to the community through media releases and interviews, advertising in newspapers and magazines, email newsletters, mail-outs, posters and fact sheets. Forum members also attended numerous public events. A full summary of community engagement is provided as Appendix 3: *Summary of Community Engagement*.

WORKING TOGETHER TO DEVELOP THE PROPOSALS

88. The Ministers have asked that the Forum try to reach consensus on its recommendations. This is challenging given the wide range of views that are held by the community and by Forum members.

89. We have had robust discussions on the locations, number, size and extent of each of the sites. Some members believe that some of the proposed areas are too large and the adverse effects on users are too great. Others believe some areas are too small and do not protect a sufficient representative sample of south-east South Island habitats, and that particular habitats are not represented.

90. The Forum wants to hear more from the public through submissions in order to refine the proposals for recommendation to the Ministers. For now, the proposed areas for consultation are considered a compromise by the Forum members.

91. The location, shape and size of the final network will be refined by the feedback received through the public consultation process, hence the importance of this public consultation document and the submission process.

SEASKETCH – THE FORUM'S MAPPING TOOL

What is SeaSketch?

92. SeaSketch is an online tool specifically designed for use in Marine Protected Area (MPA) planning, and more importantly, to support collaborative processes in establishing MPA networks. It is designed to be easy to use by non-specialists, anytime, anywhere. All you need is an internet connection. SeaSketch is not just for the Forum. Anybody can view the project and if signed up with an account, can draw their own MPA network.

93. To access the main SeaSketch project go to http://southeastmarine.seasketch.org

    Or, if you are looking to make a submission go to http://OurSeaYourSay.seasketch.org

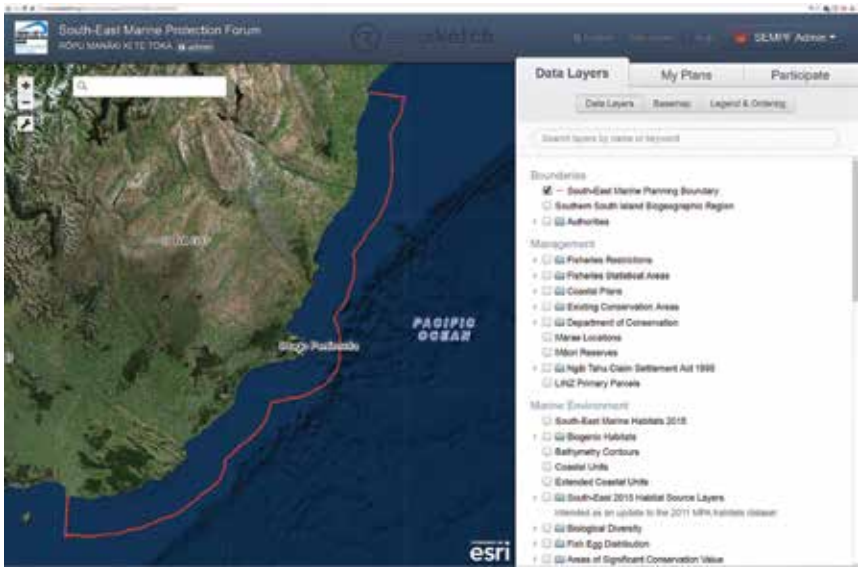


Figure 4: SeaSketch Interface.

Why is the Forum using SeaSketch?

- **Information;** Spatial information and background science relevant to the Forum region is available on-demand.
- **Drawing;** Forum members are able to create their own options for a Marine Protected Area, or create a network to bring to the discussion table.
- **Reporting;** SeaSketch provides instant reports that describe the habitats protected and effects on some existing users. It can also compare options in terms of habitat protection and effects on users.
- **Sharing;** Forum members can share their ideas and designs with others to help facilitate the discussions.

The 4 components of SeaSketch

- **Browsing through spatial information**
  An intuitive web interface enables users to view and explore more than 80 fit-for-purpose map layers of biological, physical and socio-economic information of the south-east region.
- **Sketching MPAs**
  Users can create their own areas on a map and assign different protection levels to it. They can assign it a Type 1 or Type 2 MPA status, and add in other restrictions that they think are appropriate. They can also create collections of different MPAs to form a network. They can get reports on the consequences of their MPA, or share it with others.
- **Instant feedback via reports**
  SeaSketch is tailored to produce live reports that show how a proposal fares against the objectives of the MPA Policy, and what other implications the proposal may have.
- **Online sharing and discussing of MPA proposals**
  SeaSketch can be used to engage with others face-to-face and online. Users can share their designs with others via a built-in chat function. Individually or collaboratively, users can explore alternative use scenarios and ultimately work towards designs that reflect agreement across different interest groups.

Puketuroto / Hopper's Inlet, Otago Peninsula.
Photo: John Barkla

GLOSSARY

Otago Peninsula.
Photo: Sue Maturin

ACRONYMS AND ABBREVIATIONS

ACE	Annual Catch Entitlement
DOC	Department of Conservation
EEZ	Exclusive Economic Zone
FMA	Fisheries Management Area
MPI	Ministry for Primary Industries
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MPA	Marine Protected Area
MPA Guidelines	Marine Protected Area: Classification, Protection Standard and Implementation Guidelines (Department of Conservation and Ministry of Fisheries, 2008)[23]
MPA Policy	Marine Protected Areas: Policy and Implementation Plan (Department of Conservation and Ministry of Fisheries, 2005)[24]
MPPF	Marine Protection Planning Forum
NIWA	National Institute of Water and Atmospheric Research
Nm	Nautical miles (1 nautical mile = 1.8 kilometres)
NTSCA	Ngāi Tahu Claims Settlement Act 1998
NZCPS	New Zealand Coastal Policy Statement
NZMS	New Zealand Map Series
QMS	Quota Management System
RCP	Regional Coastal Plan
RNZN	Royal New Zealand Navy
RMA	Resource Management Act 1991
RV	Research Vessel
SEMPF	South-East Marine Protection Forum
SILNA	South Island Landless Natives Act 1906
TAC	Total Allowable Catch

TE REO

In the south of the South Island the local Māori dialect use a 'k' interchangeably with 'ng'. The preference is to use a 'k', so southern Māori are known as Kāi Tahu, rather than Ngāi Tahu. In this document the 'ng' is used for the iwi in general and the 'k' for Southern Māori in particular.

Ahi kaa
Continuous occupation / title to land through occupation

Hapū
Kinship, clan tribe

Hapūa
Tidal lagoon

Inaka
Whitebait

Iwi
Nation, Tribe, People

23 *Refer to Volume II, Appendix 2:* Marine Protected Areas Classification, Protection Standard and Implementation.

24 *Refer to Volume II, Appendix 1:* Marine Protected Areas Policy and Implementation Plan.

Kāeo
Sea tulip

Kāi Tahu
Tribal group of much of the South Island of New Zealand, sometimes referred to as Ngāi Tahu, who also incorporate two earlier tribes; Waitaha and Kāti Māmoe

Kaitaki
Leader, leader of a haka

Koeke
Common Shrimp

Mātauraka Māori
Māori traditional knowledge

Kaitiakitaka
Guardianship – exercise of customary custodianship, in a manner that incorporates spiritual matters, by takatawhenua who hold manawhenua status for a particular area or resource as per Kāi Tahu ki Ōtākou Iwi Resource Management Plan 2005

Koeke
Common shrimp

Mana
Prestige, spiritual power

Mahika Kai
Food gathering place

Mana Moana
Authority over the seas and lakes

Manawhenua
Territorial Rights

Mātaitai Reserves
Mātaitai reserves as coastal management areas are one of the suite of management tools created under Part IX of the Fisheries Act 1996. These are designed to give effect to the obligations stated in the Treaty of Waitangi Fisheries Claims Settlement Act 1992 to develop policies to help recognise use and management practices of Māori in the exercise of non-commercial fishing rights. Tākata whenua may apply to establish a reserve on a traditional fishing ground for the purpose of recognising and providing for customary management practices and food gathering. Traditional and recreational fishing are still allowed in mātaitai reserves

Nohoaka
Dwelling places for the purposes of food gathering

Papatipu
Traditionally owned, Customary title, ancestral

Poatiri
Mt Charles – Otago Peninsula

Poha
Kelp bag in which foods are preserved

Rāhui
Temporary closure on pāua gathering

Rakatahi
Younger generation

Rimurapa
Kelp / Seaweed

Rohe moana
Area of sea which particular manawhenua have authority

Rokoā
Traditional medicines

Taiāpure
A local area management tool established in an area that has customarily been of special significance to an iwi or hapū as a source of food or for spiritual or cultural reasons (s 174 of the Fisheries Act). Taiāpure can be established over any area of estuarine or coastal waters to make better provisions for rakatirataka and for the rights secured under Article Two of the Treaty. Taiāpure provisions are contained within sections 174-185 of the Fisheries Act 1996. All fishing (including commercial fishing) can continue in a Taiāpure and this tool offers a way for manawhenua to become involved in the management of both commercial and non-commercial fishing in their area. [MPI website: http://www.fish.govt.nz/en-nz/Māori/Management/Taiāpure/default.html] or

Areas that are given special status to recognise rakatirataka (as Taiāpure); management arrangements can be established (under the Fisheries Act 1996) for Taiāpure that recognise the customary special significance of the area to iwi or hapū as a food source or for spiritual or cultural reasons. (Biodiversity Strategy)

Tāoka
Highly prized

Te Tai o Araiteuru
Southern coastal and sea area between the Waitaki and Mataura rivers

Topūni
Cloaking a special place 'cloak of protection' over a special place/s

Tuaki
Cockles

Wāhi tapu
Sacred place, sacred site - a place subject to long-term ritual restrictions on access or use, e.g. a burial ground, a battle site or a place where tapu objects were placed

Wāhi tōaka
Places of special value

Waitaha
The tribe that formerly occupied the South Island before they were displaced by Kāti Māmoe.

Whānui
Broad

Whānau
Family group; to be born, give birth

DEFINITIONS OF TERMS

Many of the definitions for the following terms are taken from or based on definitions used in the New Zealand Biodiversity Strategy,[25] Marine Protected Areas: Classification, Protection Standard and Implementation Guidelines (MPA Guidelines),[26] and the Fisheries Act 1996.

Annual Catch Entitlement
A property right, which gives the holder the right to take a certain weight of a fish stock during a fishing year.

Artificial Structures
Human-made structures that are placed in the marine environment for the purpose of human use (for example, marinas, wharfs, marine farms), habitat enhancement or recreation.

Ascidian
Belonging or pertaining to the class *Ascidiacea*.

Bedrock
Stable hard substratum, not separated into boulders or smaller sediment units. These rock exposures, typically consisting of sedimentary rock benches or platforms, may also include other rock exposures such as metamorphic or igneous outcrops. Possibly with various degrees of concealment from attached plant and animal colonisation.

Benthic
Dwelling on or associated with the seabed. Benthic organisms live on or in the seabed. Examples include burrowing clams, sea grasses, sea urchins and acorn barnacles.

Benthic boundary layer
The dynamic environment at the interface between the deep water and the ocean floor.

Biodiversity (biological diversity)
The variability among living organisms from all sources including among other things terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. It includes genetic (the variability in genetic make up among individuals of the same species), species and ecological diversity. In this report, the term refers specifically to indigenous biodiversity.

Biogenic reefs
Biogenic reefs (elevated structures on the seabed constructed of living and dead organisms) include fragile erect bryozoans and other sessile suspension feeders. Examples are bryozoan beds, rhodolith beds, tube worm mounds, sponge gardens and cold-water corals. These communities develop in a range of habitats from exposed open coasts to estuaries, marine inlets and deeper offshore habitats, and may be found in a variety of sediment types and salinity regimes.

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25 *Department of Conservation and Ministry for the Environment (2000). The New Zealand Biodiversity Strategy. Wellington, 146pp.* www.biodiversity.govt.nz

26 *Refer to Volume II, Appendix I, Ministry of Fisheries and Department of Conservation. 2008. Marine Protected Areas: Classification, Protection Standard and Implementation Guidelines. Ministry of Fisheries and Department of Conservation, Wellington, New Zealand. 54 pp.* www.biodiversity.govt.nz

Bioregion (biogeographic region)
An area that is defined according to patterns of ecological characteristics in the seascape.

Coastal environment
An environment in which the coast is a significant element or part. The extent of the coastal environment will vary from place to place depending on how much it affects, or is affected by, coastal processes and the management issues concerned. It includes at least three distinct, but inter-related, parts: the coastal marine area, the active coastal zone, and the land back-drop.

Coastal marine
For the purposes of developing a network of protected areas, the MPA Policy specifies two planning processes – one for the coastal environment and one for the deep water marine environment. For the purpose of implementing the network of protected areas, the coastal/deep water planning boundary is the limit of the Territorial Sea (12 nautical miles).

Comprehensiveness
The degree to which the full range of ecological communities and their biological diversity are incorporated within protected areas.

Continental shelf
A broad expanse of ocean bottom sloping gently and seaward from the shoreline to the shelf-slope break. The shelf area is commonly subdivided into the inner continental shelf, mid continental shelf, and outer continental shelf. The sea floor below the continental shelf break is the continental slope. Below the slope is the continental rise, which finally merges into the deep ocean floor, the abyssal plain. The pelagic (water column) environment of the continental shelf constitutes the neritic zone. The continental shelf and the slope are part of the continental margin.

Continental slope
A sloping bottom extending seaward from the edge of the continental shelf and downward toward the rise. Continental slopes are the relatively steep inclines between the continental shelf and the surrounding ocean basins and, in New Zealand, are typically inclined at an angle of three to six degrees (Lewis et al. 2006). The slope is often cut with submarine canyons.

Convention on Biological Diversity
An international agreement on biological diversity that came into force in December 1993. The objectives of the Convention are: the conservation of biological diversity; the sustainable use of its components; and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.

Demersal
Occurring near the seabed. Demersal organisms live near, but not on, the seabed, and usually feed on benthic organisms.

Diving
Includes scuba, free diving and snorkeling.

Ecosystem
An interacting system of living and non-living parts such as sunlight, air, water, minerals, and nutrients. Ecosystems encompass communities and their surrounding environments and function through three basic cycles of matter and energy; biogeochemical cycles, life cycles and histories, and food webs. The 'interconnectedness' within and among ecosystems is provided both by the physical environment and by biological interactions.

Epipelagic zone
The 0 to 200 metre depth zone, seaward of the shelf-slope break. The epipelagic zone extends from the surface downward as far as sunlight penetrates during the day. It is a very thin layer, up to about 200 metres deep. The endemic species of this zone either do not migrate, or perform only limited vertical migrations, although there are many animals that enter the epipelagic zone from deeper layers during the night or pass their early development stages in the photic zone. The epipelagic zone overlies the mesopelagic zone.

Estuarine
The estuarine environment includes estuaries, tidal reaches, mouths of coastal rivers and coastal lagoons. The dominant functions are the mixing of freshwater and seawater, and tidal fluctuation, both of which vary depending on degrees of direct access to the sea. Estuaries are semi-enclosed bodies of water which have a free connection with the open sea. They differ from other coastal inlets in that sea water is measurably diluted by inputs of freshwater and this, combined with tidal movement, means that salinity is permanently variable.

Estuary
A partially enclosed coastal body of water which is either permanently or periodically open to the sea and within which there is a measurable variation of salinity due to the mixture of seawater and freshwater derived from land drainage (Day 1981 in Hume & Herdendorf 1988).

Exclusive Economic Zone
The area of ocean from the outside edge of the territorial sea (which covers inland waters, harbours and the area out to 12 nautical miles from the coast) out to 200 nautical miles from the coast. The resources of New Zealand's exclusive economic zone are under New Zealand control.

Exposure
Exposure is related to the prevailing energy of water movement, tidal, wave or current. Wave exposure is determined by the aspect of the coast (related to direction of prevailing or strong winds), the fetch (distance to nearest land), openness (the degree of open water offshore) and profile (the depth profile of water adjacent to the coast). For the purposes of the protected area coastal classification three levels of relative exposure are used to identify deferent categories structuring intertidal and shallow subtidal communities.

- High – describes areas where wind/wave energy is high in areas of open coasts which face into prevailing winds and receive oceanic swell (fetch >500 kilometres e.g. ocean swell environment; current >3 knots).
- Medium – describes areas of medium wind/wave energy generally including open coasts facing away from prevailing winds and without a long fetch (fetch 50-500 kilometres e.g. open bays and straits).
- Low – describes areas where local wind/wave energy is low (fetch <50 kilometres e.g. sheltered areas; small bays and estuaries; current <3 knots).

Habitat
The place or type of area in which (life/an organism) naturally occurs.

Hard bottom
Rocky reef and boulders

Indigenous species
A plant or animal species which occurs naturally in New Zealand. A synonym is "native".

Intertidal
The area of land at the land-sea interface that is marine in character influenced periodically by the rise and fall of twice-daily tides, of bimonthly spring and neap tides, or by ebb and flow in tidal reaches of rivers.

Invertebrate
An animal without a backbone or spinal column. Insects, spiders, worms, slaters and many marine animals such as corals, sponges and jellyfish are examples of invertebrates. Invertebrates make up the vast majority of all animal species; only fish, amphibians, reptiles, birds and mammals are not invertebrates.

Marine environment
Includes all areas in which the ocean and coast are significant parts, and all natural and biological resources contained therein. It includes the area from mean spring high water mark to the full extent of our EEZ (to 200 nautical miles offshore). Environments covered in the "marine environment" include estuarine, near-shore coastal, continental shelf, seamounts, and sea trenches.

Marine Protection Tools[27]
A range of management methods that can be used to establish a marine protected area.

Other tools such as Hectors dolphins set net controls, whitebaiting closed areas, and protected land status (public conservation land), already exist on the West Coast and contribute to the protection and management of the marine environment. Other tools that are similar to those for marine protected areas (referred to as 'Type 3 tools' in the MPA Protection Standard) are relevant when measuring progress towards the Biodiversity Strategy target. However, only some tools qualify as MPAs for the purpose of the MPA Policy.

Management tools
Management tools are mechanisms that, directly or incidentally, establish a protected site and/or manage threats to the maintenance and or recovery of the site's biodiversity at the habitat or ecosystem level. Direct management tools can therefore include marine reserves, fisheries restrictions, and mechanisms to reduce adverse impacts of land-based activities or shipping. Incidental management tools could include cable protection zones or marine mammal sanctuaries.

27 *Refer to Volume II, Appendix I: MPA Policy and Implementation Plan (page 11), Integrating Marine Management Tools to Build an MPA Network.*

Marine Protected Area (MPA)
An area that has been given a level of protection through a range of management tools that protect habitats and ecosystems. The Implementation Guidelines (MFish and DOC 2008 p13) prescribe 3 marine protection types, 2 of which provide enough protection to be considered MPAs. These marine protection types; type 1 (Marine Reserve) and type 2 (Other MPA) are the only types of marine protection that meet the MPA protection standard. The protection standard sets the outcome irrespective of the management tool. The outcome is described in the MPA Policy as 'enabling the maintenance or recovery of the site's biological diversity at the habitat and ecosystem level to a healthy functioning state'.

Megafaunal
Large bodied animals

Mesopelagic
The 200 metre - 1000 metre depth zone, seaward of the shelf-slope break. Midwater or "twilight zone", where there is still faint light but not enough for photosynthesis. Bacteria, salps, shrimp, jellys, swimming (cirrate) octopods, vampire and other squids, and fish are typical; many are bioluminescent.

National park or reserve status
National parks and some types of reserves provide high levels of protection and could count towards the marine protected areas network if they are of sufficient size and extend below mean high water spring (MHWS). National parks and other conservation areas under the Reserves Act 1977 can include estuarine and intertidal areas.

National Institute for Water and Atmospheric Research (NIWA)
NIWA is the Crown Research Institute providing a scientific basis for the sustainable management of New Zealand's atmosphere, marine and freshwater ecosystems and associated resources.

Neritic zone
This spans from the low-tide line to the edge of the continental shelf and extends to a depth of about 200 metres.

Network Design Principles
Principles that guide the design of the protected areas network (including concepts of representative, rare/unique, viable, replication, resilience, connectivity).

Oceanic water column
Those waters of the 'open ocean,' in areas beyond the shelf break (about 200-250 metres depth) extending to the maximum ocean depths. These waters are removed from primary continental influences, and the sea bottom interacts little or not at all with the water column.

Pelagic
Associated with open water. Pelagic organisms live in the open sea, away from the seabed.

Protection standard
The protection standard provides the guidance for assessing whether a tool, or a combination of tools, provides for the maintenance and/or recovery of biological diversity at the habitat and ecosystem level in a healthy functioning state at a particular site. The standard is described in Planning Principle 2.

Protected area network
A network or system of protected areas. The principal criteria for New Zealand's protected area network are comprehensiveness and representativeness.

Ramsar Convention
An international convention to protect internationally important wetlands. It was agreed in 1971 and signed by New Zealand in 1976.

Relict
Survived from an earlier period or in a primitive form.

Representativeness
The extent to which areas selected for inclusion in the protected area network are capable of reflecting the known biological diversity and ecological patterns and processes of the ecological community or ecosystem concerned, or the extent to which populations represent or exemplify the range of genetic diversity of a taxonomic unit (Biodiversity Strategy).

Marine areas selected for inclusion in reserves should reasonably reflect the biotic diversity of the marine ecosystems from which they derive (MPA Guidelines).

Resilience
The ability of a species, or variety or breed of species, to respond and adapt to external environmental stresses.

Resource Management Act 1991 (RMA)
The RMA provides a framework for coastal management that includes the New Zealand Coastal Policy Statement (NZCPS), which sets out national priorities for the coast including biodiversity. RMA tools can contribute to the MPA network by, establishing and reinforcing protected areas in coastal plans, and contributing to the management of existing marine protected areas. However, they do not qualify as MPAs for the purposes of the MPA Policy.

Restoration
The active intervention and management of degraded biotic communities, physical features and seascapes in order to restore biological character, ecological and physical processes and their cultural and visual qualities.

Rhodolith
Rhodoliths are free living calcified red algae.

Salinity
The quantity of dissolved salts in water, especially of seawater or its diluted products. Salinity is recorded, by convention, as parts per thousand (‰); that is, grams of salts per litre of water. Fully saline - 30 - 40‰; variable salinity/ salinity fluctuates on a regular basis - 18 - 40‰; reduced salinity -18 - 30‰; low salinity - <18‰.

Saltmarsh
A wetland in estuarine habitats of mainly mineral substrate in the intertidal zone.

Seagrass
Seagrasses are vascular marine plants with the same basic structure as terrestrial (land) plants. They have tiny flowers and strap-like leaves. They form meadows in estuaries and shallow coastal waters with sandy or muddy bottoms. Most closely related to lilies, they are quite different from seaweeds, which are algae. The leaves support an array of attached seaweeds and tiny filter-feeding animals like bryozoans, sponges, and hydroids, as well as the eggs of ascidians (sea squirts) and molluscs. They also provide food and shelter for juvenile and small fish.

Soft bottom
Substrate defined by small particle size and unstable bottom conditions, generally with organisms that live buried beneath the surface (for example, cobble, gravel, sand and mud bottoms).

Species
A group of organisms capable of interbreeding freely with each other but not with members of other species.

Statistical area
The purpose of commercial fisheries reporting, New Zealand's exclusive economic zone is divided into statistical areas.

Submarine canyon
A valley on the seafloor of the continental slope. Submarine canyons are generally found as extensions to large rivers, and have been found to extend 1 kilometre below sea level, and extend for hundreds of kilometres. The walls are generally very steep. The walls are subject to erosion by turbidity currents, bioerosion or slumping.

Substrate
The type of bottom sediments, such as sand and gravel. Substrate type and sediment grain size have a strong influence on the types of plants and animals that can inhabit a given place. Substrates and sediment sizes range from tiny mud particles, to fine sand, to coarse sand, to pebbles, to cobbles, to boulders, to solid rock outcrop.

Subtidal
The zone of estuarine and coastal areas below the level of lowest tide; permanently inundated.

Threatened species
A species or community that is vulnerable, endangered or presumed extinct.

Type 1 MPAs
Marine reserves are established under the Marine Reserves Act 1971 to give the highest possible level of protection for the purpose of preserving marine life for scientific study. This qualifies them as a Type 1 MPA. A broad range of activities can be managed, controlled or excluded in marine reserves, including marine farming, fishing, other extraction, anchoring, point discharges, research, bioprospecting and commercial tourism.

Type 2 MPAs
The MPA Policy uses various management tools under the Fisheries Act 1996 to protect habitats. These tools include regulations that prohibit fishing methods which impact the seabed (bottom trawling, Danish seining, and dredging). The removal of these bottom impact fishing methods qualifies as a Type 2 MPA protection standard (MFish & DOC 2008, p13).

Understorey
The shrubs and plants growing beneath the canopy of a kelp forest or other dense plant cover.

Upwelling
A process where subsurface, nutrient-rich, and usually cooler water is carried upward into the ocean's surface layers. Upwelling is caused by a complex interaction of wind, currents and the topography of the sea floor.

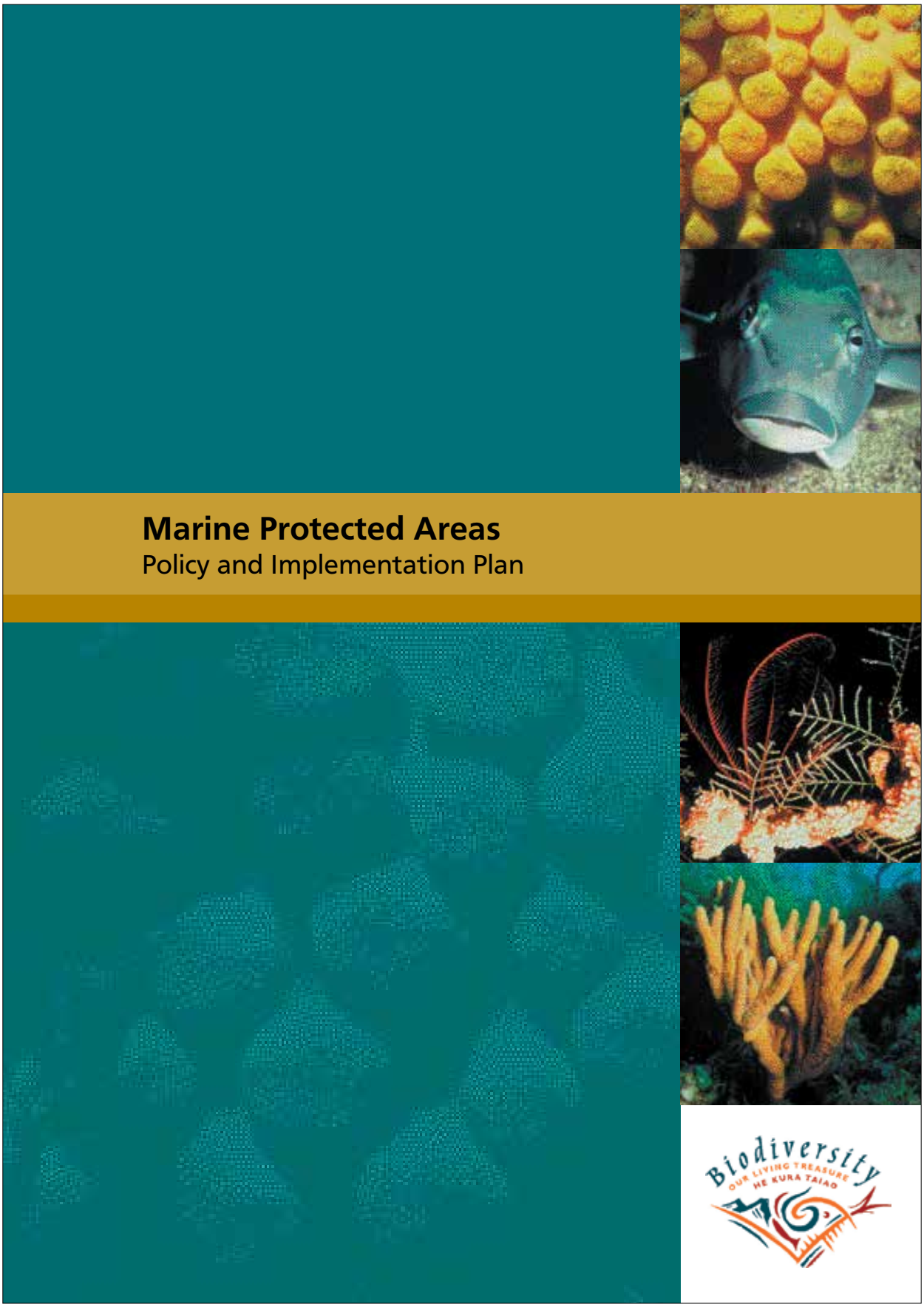
Vertebrate
Animal with backbone; amphibians, reptiles, birds, mammals and fish.

Huriawa Peninsula.
Photo: John Barkla

APPENDICES

Otago Peninsula.
Photo: Garth Cadzow

APPENDIX 1


Marine Protected Areas
Policy and Implementation Plan
Biodiversity
OUR LIVING TREASURE
HE KURA TAIAO

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Front cover photos (from top) Blue cod, close up of head, South Westland, February 1996 (photo: Paddy Ryan); Feather star on Black coral; Sponge; Finger sponge and seaweeds, near Arapwaiti Point, Kapiti Island Marine Reserve, December 2000 (photo: Malcolm Francis).

Foreword

New Zealand has a biologically rich and complex seascape. Our marine environment covers some 480 million hectares of ocean and our Exclusive Economic Zone is the fourth largest in the world. More than 15,000 marine species have been found in this sea. Because New Zealand is so isolated, a particularly high proportion of species is found only here.

The Government, as a signatory to the United Nations Convention on Biological Diversity, is committed to maintaining and preserving the natural heritage of both our lands and waters, and is doing so through the New Zealand Biodiversity Strategy. An aim of the Strategy is that marine habitats and ecosystems will be maintained in a healthy functioning state, and degraded areas will be allowed to recover.

A full range of New Zealand's marine habitats and ecosystems will be protected. The Marine Protected Areas Policy and Implementation Plan (MPA Policy) will be a key means of achieving this, and is a project led by the Ministry of Fisheries and the Department of Conservation.

In the past, the approach to marine protection has been fragmented. The MPA Policy does much better. It provides an integrated process, including regional consultation, for establishing a network of marine protected areas around New Zealand.

This new process is designed to be inclusive and transparent. We want regional councils, marine users, tangata whenua and those with an interest in marine biodiversity to all be involved. Implementation will be underpinned by a commitment to minimise the impact of new protected areas on existing users of the marine environment and Treaty settlement obligations.

Planning for marine protection will be science-based, using a consistent approach to habitat and ecosystem classification, and an inventory of marine protected areas to determine gaps in the network. This will drive priorities for protection. Consideration of threats would influence further priorities.

The resulting network will be comprehensive, by protecting both representative areas and areas that are outstanding and rare. A range of management tools will be used, including marine reserves, Fisheries Act tools, and tools under the Resource Management Act.

The aim is to have 10% of New Zealand's marine environment with some form of protection by 2010. These protected areas will provide an invaluable store of genetic diversity that will contribute to maintaining the health of the wider marine environment. They will also provide opportunities for recreation, marine tourism, scientific research and education, and will enhance New Zealand's environmental performance.

Hon Chris Carter,
MINISTER OF CONSERVATION

Hon Jim Anderton,
MINISTER OF FISHERIES

Table of Contents

Executive Summary

This document sets out the policy and implementation plan to protect New Zealand's marine biodiversity by establishing a comprehensive and representative network of Marine Protected Areas (MPAs).

The Government is committed to ensuring that New Zealand's marine biodiversity is protected, and the MPA Policy is a key component of this commitment. The MPA Policy objective is to:

Protect marine biodiversity by establishing a network of MPAs that is comprehensive and representative of New Zealand's marine habitats and ecosystems.

Key components of the MPA Policy are:

i. A consistent approach to classification of the marine habitats and ecosystems

Classification of marine habitats and ecosystems will help to ensure the MPA network is representative. The policy is based on an approach to classification that incorporates best available scientific information and which is approved by Ministers. This consistent approach to classification will be applied to the marine environment as part of the MPA planning process.

ii. Mechanisms to co-ordinate a range of management tools

These include: a protection standard that will be used to assess whether individual management tools or a combination of management tools provide sufficient protection to a site for it to be designated as an MPA; and planning processes that enable a multi-agency approach to MPA planning for both nearshore and offshore MPAs.

iii. Inventory to identify areas where MPAs are required

An inventory will be taken of existing marine areas that have some level of protection, and the extent to which those areas cover representative habitats and ecosystems (based on the classification of habitats and ecosystems) will be assessed. The protection standard will be used to determine whether existing areas have sufficient protection to be designated as MPAs. The inventory of MPAs will be continually updated as new areas are protected.

iv. A nationally consistent basis for planning and establishing new MPAs

The MPA Policy outlines processes for MPA planning that are based on a common approach to habitat and ecosystem classification and which are directed by the priorities identified in the inventory process. Planning for offshore MPAs will be implemented at a national level, while planning for nearshore MPAs will be implemented at a regional level. Both the nearshore and offshore processes will be designed to allow for constructive engagement with tangata whenua, user groups, and the public to ensure that MPA planning is inclusive, without compromising biodiversity protection objectives. Both processes will be underpinned by a commitment to minimise the adverse impacts of new MPAs on existing users of the marine environment and Treaty settlement obligations.

Commonly Used Terms

Biological diversity (biodiversity): The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Convention on Biological Diversity). Components include:

> ***Genetic diversity:*** The variability in the genetic make up among individuals within a single species. In more technical terms, it is the genetic differences among populations of a single species and those among individuals within a population.
>
> ***Species diversity:*** The variety of species – whether wild or domesticated – within a particular geographical area. A species is a group of organisms, which have evolved distinct inheritable features and occupy a unique geographic area. Species are usually unable to interbreed naturally with other species due to such factors as genetic divergence, different behaviour and biological needs, and separate geographic location.
>
> ***Ecological (ecosystem) diversity:*** The variety of ecosystem types (for example, forests, deserts, grasslands, streams, lakes, wetlands and oceans) and their biological communities that interact with one another and their non-living environments.

Ecosystem: An interacting system of living and non-living parts such as sunlight, air, water, minerals and nutrients. Ecosystems can be small and short-lived, such as water-filled tree holes or rotting logs on a forest floor, or large and long-lived, such as forests or lakes.

Habitat: The place or type of area in which an organism naturally occurs.

Management tools: Management tools are mechanisms that, directly or incidentally, establish a protected site and/or manage threats to the maintenance and or recovery of the site's biodiversity at the habitat or ecosystem level. Direct management tools can therefore include marine reserves, fisheries restrictions, and mechanisms to reduce adverse impacts of land-based activities or shipping. Incidental management tools could include cable protection zones or marine mammal sanctuaries.

Protection standard: The protection standard provides the guidance for assessing whether a tool, or a combination of tools, provides for the maintenance and/or recovery of biological diversity at the habitat and ecosystem level in a healthy functioning state at a particular site. The standard is described in Planning Principle 2. Stage One of the implementation process provides for independent scientific advice to better define the components of a protection standard and verify that the standard proposed for use in the implementation of the MPA Policy will achieve the Government's biodiversity objectives in all circumstances.

Biogeographic region: An area that is defined according to patterns of ecological and physical characteristics in the seascape. Biogeographic regions will form the basis of MPA nearshore planning.

Introduction

New Zealand Commitment to Marine Biodiversity

1 Marine biodiversity is among the great taonga (treasures) of Aotearoa/New Zealand. The geological isolation, range and complexity of habitats, and number of major ocean currents that influence New Zealand have created diverse marine communities. The Government, recognising both the environmental importance of marine biodiversity and the value that it provides to all New Zealanders, has made an explicit commitment to ensure its protection.

2 The New Zealand Biodiversity Strategy (NZBS) reflects the commitment by the Government, through its ratification of the international Convention on Biological Diversity, to help stem the loss of biodiversity worldwide.

3 The NZBS establishes the strategic framework for action, to conserve and sustainably use and manage New Zealand's biodiversity. The strategy provides statements of desired outcomes and objectives for different aspects of biodiversity management. The strategy also lists a number of actions that, when combined with existing management measures, will achieve the objectives and outcomes.

4 The following are the desired outcomes for Coastal and Marine Biodiversity in 2020:

a) *New Zealand's natural marine habitats and ecosystems are maintained in a healthy functioning state. Degraded marine habitats are recovering. A full range of marine habitats and ecosystems representative of New Zealand's marine biodiversity is protected.*

b) *No human-induced extinctions of marine species within New Zealand's marine environment have occurred. Rare or threatened marine species are adequately protected from harvesting and other human threats, enabling them to recover.*

c) *Marine biodiversity is appreciated, and any harvesting or marine development is done in an informed, controlled and ecologically sustainable manner.*

d) *No new undesirable introduced species are established, and threats to indigenous biodiversity from established exotic organisms are being reduced and controlled.*

5 There are seven objectives under the Coastal and Marine Biodiversity theme, and of direct significance to the Marine Protected Areas (MPA) Policy is Objective 3.6, which is to:

Protect a full range of natural marine habitats and ecosystems to effectively conserve marine biodiversity, using a range of appropriate mechanisms, including legal protection.

Contribution of other Marine Management Initiatives to Marine Biodiversity Protection

6 The Marine Protected Areas (MPA) Policy is intended to guide the development of a comprehensive and representative network of MPAs using a number of marine management tools. The network will significantly contribute to meeting Objective 3.6 and the NZBS outcome that natural marine habitats and ecosystems are maintained in a healthy functioning state. However, it is just one of a wide range of management initiatives designed to protect marine biodiversity. The other initiatives include effects-based management of the coastal and marine area under the Resource Management Act 1991 (RMA), management for sustainable utilisation of fisheries under the Fisheries Act 1996 (Fisheries Act), protection of marine mammals and threatened species under conservation legislation, and management of marine incursions under the Biosecurity Act 1993 (Biosecurity Act).

7 Three other major initiatives relating to marine management and their relationship to the MPA Policy are outlined below.

8 A New Zealand Oceans Policy will provide the overarching framework for all decisions made about the marine environment to ensure they are both coherent and consistent with stated priorities. The need for a comprehensive marine biodiversity management regime was identified in the NZBS (Objective 3.2, Action (a)). The Oceans Policy may influence the approach taken to matters such as the protection of marine biodiversity, including the MPA Policy. Such influences will be considered once the Oceans Policy is completed.

9 The Ministry of Fisheries is also implementing the Strategy for Managing the Environmental Effects of Fishing (SMEEF)[1]. The SMEEF is being implemented to deliver on the general obligation to avoid, remedy or mitigate the adverse effect of fishing on the aquatic environment. Under the SMEEF, the Ministry will identify habitats or species at risk from fishing, and establish environmental performance standards, which will inform the delivery of management interventions. Where fishing affects the maintenance of marine biodiversity, the MPA network will assist in addressing Fisheries Act obligations. Conversely, any sites protected in the course of implementing the SMEEF will be considered for contribution to the MPA network on the basis that they are representative of a particular habitat or ecosystem and they meet the protection standard.

10 The New Zealand Coastal Policy Statement (NZCPS) – a mandatory national policy statement under the RMA – is currently under review. The primary role of the NZCPS is to provide national guidance to local government on day-to-day coastal planning matters. Local authorities are required to give effect to the NZCPS when preparing policy statements and plans and assessing resource consent applications. In relation to marine protection, the NZCPS could provide more specific policy guidance on managing effects such as sedimentation, discharging, and dumping on sites that form part of the MPA network, and on the types of values at the national, regional and local level that would merit some form of marine protection.

1 For more information see www.fish.govt.nz

MPA Policy

11 The MPA Policy has been designed to contribute to NZBS Objective 3.6 and is a direct response to the following two "priority actions" under that objective:

Action 3.6(a): Develop and implement a strategy for establishing a network of areas that protect marine biodiversity, including marine reserves, world heritage sites, and other coastal and marine management tools such as mātaitai and taiāpure areas, marine area closures, seasonal closures and area closures to certain fishing methods.

Action 3.6(b): Achieve a target of protecting 10 percent of New Zealand's marine environment by 2010 in view of establishing a network of representative protected marine areas.

12 Action 3.6(b) will be important as an indicator of progress towards achieving marine biodiversity protection. However, the ultimate extent of protection will be determined by what coverage is required to establish a comprehensive and representative network of marine protected areas.

MPA Policy Objective

13 To address the objectives and actions of the NZBS, the objective of the MPA Policy is to:

Protect marine biodiversity by establishing a network of MPAs that is comprehensive and representative of New Zealand's marine habitats and ecosystems.

MPA Definition

14 For the purpose of the MPA Policy, an MPA is defined as:

An area of the marine environment especially dedicated to, or achieving, through adequate protection, the maintenance and/or recovery of biological diversity at the habitat and ecosystem level in a healthy functioning state.

15 For a site to "adequately protect" marine biodiversity, the MPA Policy requires that management measures applied to that site meet the protection standard that is outlined in Planning Principle 2.

MPA Policy Scope

16 The MPA network will protect representative examples of the full range of marine habitats and ecosystems, and also outstanding, rare, distinctive or internationally or nationally important marine habitats and ecosystems.

17 The MPA Policy seeks to co-ordinate the implementation of existing marine management tools in order to develop a comprehensive and representative network of MPAs, including a process to assess existing area-based management tools for inclusion in the MPA network. At the outset, existing marine areas will be assessed to determine whether they meet the protection standard and can therefore be included in the MPA network.

18 The MPA Policy covers New Zealand's entire marine environment including internal waters[2], the territorial sea (coastline to 12 nautical miles) and the exclusive economic zone (12 to 200 nautical miles).

2 The internal waters of New Zealand include any areas of the sea that are on the landward side of the baseline of the territorial sea of New Zealand – as defined in the Territorial Sea and Exclusive Economic Zone Act 1977.

19 MPAs will be established to protect biodiversity and are therefore not an attempt to provide for comprehensive marine management – sites will be protected specifically for the purpose of protecting marine habitats and ecosystems rather than for achieving other marine management objectives.

20 Biodiversity protection will be at the habitat and ecosystem level, not individual species (e.g. marine mammals). However, where measures protecting particular species have the effect of achieving biodiversity protection at the habitat and ecosystem level, they could be included as part of the MPA network.

21 The MPA network can include vertically stratified (i.e. sections of water column) MPAs, where the protection standard has been met. For example, an MPA could protect benthic habitat from bottom impacting fishing methods while allowing use to continue higher in the water column.

22 The MPA Policy does not directly address protection of marine historic or cultural heritage, or protection for non-extractive use (e.g. diving) or values, tourism or recreational opportunities. Such issues will be considered following the development of the Oceans Policy.

23 The MPA Policy covers the processes through which the Government will establish future marine reserves. Marine reserves proposals can still be advanced independently by community groups, but, where possible, will be brought into the Government's planning process. The Marine Reserves Bill, currently with a Select Committee, is intended to provide that the agreement of the Director-General of Conservation be required for the development of independent marine reserves applications.

24 The MPA Policy contributes to the Fisheries Act requirement to maintain marine biodiversity but does not fully meet the requirement to avoid, remedy, or mitigate the adverse effects of fishing on the marine environment. The MPA Policy does not seek to manage the sustainable utilisation of fisheries or other natural resources.

MPA Policy Responsibilities

25 The Ministry of Fisheries (the Ministry) and the Department of Conservation (the Department) are jointly responsible for developing and implementing this MPA Policy. A number of other Government agencies will be involved in the policy implementation, such as Maritime New Zealand (MNZ), Biosecurity New Zealand and the Ministry for Economic Development (MED). Local government, tangata whenua and stakeholder groups will also be involved in the policy implementation.

Integrating Marine Management Tools to Build an MPA Network

26 Integral to achieving the MPA Policy objective is the need to use a combination of marine management tools. There is considerable scope for using a combination of management tools to achieve biodiversity outcomes, including addressing the effects of land-based activities on the marine environment. The extent to which each agency can implement particular management tools to achieve the MPA Policy objective is constrained by the legislation that it has the mandate to deliver. However, the implementing principles in this policy are designed to provide the guidance across agencies to enable a good level of integration of legislative tools, so that the objective can be achieved in an effective and efficient way.

27 Many management tools have the effect (either intended or incidental) of protecting marine habitats and ecosystems. In developing the MPA network, all management tools will be considered and assessed with respect to the protection standard and the classification approach.

28 Before proceeding to establish new MPAs within a region, an inventory will be taken of existing marine areas with some level of protection within that region and the extent to which they cover representative habitats and ecosystems (based on the classification approach)[3]. The protection standard will be used to assess whether existing protected areas offer sufficient protection to be designated as MPAs. The inventory of MPAs will be continually updated as new areas are protected, including areas protected under the MPA planning process as well as through other processes. The inventory will contribute to the national priorities by enabling identification of habitats and ecosystems that require new MPAs.

29 The tools that are expected to form the main body of the network (either as stand-alone tools or in combination with other tools) are described below:

Marine Reserves

30 Marine reserves will be used under the MPA Policy to contribute to the network via:

a) Selection as the most appropriate tool(s) in the MPA planning process; and

b) Selection to meet the Government decision that marine reserves will be used to protect:

(i) representative examples of the full range of marine communities and ecosystems that are common or widespread;

(ii) outstanding, rare, distinctive, or internationally or nationally important marine communities or ecosystems; and

(iii) natural features that are part of the biological and physical processes of the marine communities and ecosystems referred to in (i) and (ii), in particular those natural features that are outstanding, rare, unique, beautiful, or important.

31 Under the Marine Reserves Act 1971 (Marine Reserves Act), a broad range of activities and their effects within a reserve can be managed, controlled or excluded, including marine farming, fishing, minerals activities, other extraction, structures, public access and recreational uses, anchoring, point discharges, research, bioprospecting, and commercial tourism.

32 Marine reserves are a core tool in the development of a representative network of MPAs. The Marine Reserves Act currently provides for the setting up and management of areas of the sea and foreshore as marine reserves for the purpose of preserving them in their natural state as the habitat of marine life for scientific study. Marine reserves can currently only be applied out to 12 nautical miles. As recommended in the NZBS (Objective 3.6, Action (c)), the Marine Reserves Act is being reviewed in order to better provide for the protection of marine biodiversity.

33 Cabinet has made decisions on the purpose of marine reserves in relation to conserving biodiversity. Those decisions have been included in the Marine Reserves Bill. Under the Bill, marine reserves will preserve and protect areas in the marine environment for the conservation of marine biodiversity. That is, those areas identified in paragraph 30 above.

34 The MPA Policy provides the primary framework through which marine reserves will be established.

35 Where marine reserve proposals, approved by the Director-General of Conservation, are advanced independently of the MPA planning process and meet the MPA protection standard, those sites will be included in the MPA network through the inventory process.

3 Existing marine reserve applications will be progressed outside of the MPA planning process, but will be included in the MPA network via the inventory.

Fisheries Act Tools

36 Fisheries Act tools will be used under the MPA Policy to contribute to the MPA network via selection as the most appropriate tool(s) in the MPA planning process.

37 The Fisheries Act contains tools to manage the actual and potential adverse effects of fishing on the marine environment. These tools include regulatory powers to:

a) prohibit all fishing in particular areas; and

b) prohibit particular fishing methods.

38 All of these regulatory tools could be used to protect representative sites of marine biodiversity and therefore contribute to the MPA network – provided the tools are used in a manner consistent with the Fisheries Act, i.e. to address either actual or potential adverse effects of fishing on the environment, and are implemented in a manner consistent with the statutory requirements.

39 The development by the Ministry of plans to manage particular fisheries may also introduce management tools to address the impacts of fishing on marine biodiversity. Where these management tools meet the protection standard, they may be included in the MPA network.

40 The Fisheries Act also contains provisions for a range of customary fisheries management tools. These tools are discussed in a section below.

Resource Management Act Tools

41 The RMA sets up a framework for coastal management. The framework includes the New Zealand Coastal Policy Statement (NZCPS), which sets out national priorities for the coast, and Regional Policy Statements and Coastal Plans and District Plans, which must give effect to the NZCPS policies. Biodiversity protection is a function of both regional and district councils.

42 RMA tools can contribute to the network by:

a) establishing protected areas in coastal plans; and

b) contributing to the management of existing marine protected areas.

43 In preparing second generation coastal plans, regional councils, through the use of a zoning tool, can identify areas of high marine biodiversity, and develop methods, including rules, to ensure that these areas are protected from adverse environmental effects. Plans can also specify prohibited activities. This would ensure that resource consent applications would be unable to be approved for activities with significant adverse effects on marine biodiversity values.

44 In regions where MPAs have been established, no significant adverse effects on these areas could be included as assessment criteria for resource consent applications. Regional coastal plans can also contain objectives, policies and rules to ensure that the effects of activities such as structures, marine farms, and discharges are avoided in areas already protected. Other regional plans, such as soil, freshwater and sedimentation plans, can contain controls to ensure that non-point discharges do not impact on established marine protected areas.

45 RMA tools are only available out to 12 nautical miles.

Special Legislation

46 Special legislation has been used to protect the marine environment in some circumstances. These sites restrict particular activities (e.g. marine dumping, bottom impacting fishing methods), and may include a “no fishing” area. Some of the restrictions in an area may already be in place under other legislation like the Fisheries Act. Examples of areas established by special legislation include the Sugarloaf Islands Marine Protected Area and Fiordland (Te Moana o Atawhenua) Marine Area. It may be that parts of existing parks with the greatest restrictions in place, rather than the whole park, protect biodiversity to a sufficient level to be included in the network.

Wildlife Refuges, Sanctuaries and Management Reserves

47 Wildlife refuges, sanctuaries and management reserves may contribute to the network, including via selection as the most appropriate tool.

48 Wildlife refuges, sanctuaries and management reserves can be established under the Wildlife Act 1953, and are targeted at protecting particular species and their habitats in a defined area. Nevertheless, they could count towards the network if the measures to protect the wildlife have the effect of protecting the marine habitats and ecosystems in the area.

Other Conservation Areas

49 National Parks and other conservation areas under the Reserves Act 1977 can include intertidal areas. National Parks and some types of reserves provide a high level of protection and could count towards the network if they are of sufficient size. Nature reserves in particular may contribute to the network because they protect the area per se, not just the wildlife attributes. Reserves could contribute to the network by selection as the most appropriate tool in the MPA planning process.

Customary Fisheries Management Tools

50 The purpose of mātaitai reserves is to provide for customary fishing use and management practices. The purpose of taiāpure is to better recognise iwi management rights over areas important for spiritual needs or customary food gathering. Neither can be proposed primarily for biodiversity protection. Nevertheless, sustainable utilisation of fisheries resources and protection of marine biodiversity are not mutually exclusive. If tangata whenua so wish, it is possible that these tools could be applied in such a way that they can contribute to the MPA network.

51 As with any potential MPA, the management measures in the taiāpure or mātaitai reserve would need to meet the protection standard in order to be recognised as part of the network.

52 Tangata whenua may wish to consider having all or part of a taiāpure or mātaitai reserve recognised as part of the MPA because a greater sense of ownership may be provided than would be the case for a management tool initiated by the Crown.

Marine Mammal Sanctuaries

53 Marine mammal sanctuaries could contribute to the network where the measures to protect against the threats to a marine mammal have the effect of protecting the marine biodiversity of the habitat or ecosystem in the area. This may be the case particularly where sanctuaries are combined with other management tools like fisheries restrictions. Marine mammal sanctuaries are provided for under the Marine Mammals Protection Act 1978.

Cable Protection Zones

54 Cable protection zones prevent all marine-based activities that may threaten cables. They could therefore also prevent most marine-based activities that may threaten habitat and ecosystem biodiversity (except for cable laying and maintenance activities). If the protection is sufficient to meet the protection standard, such areas could contribute to the MPA network. Cable protection zones are established under the Submarine Cables and Pipelines Protection Act 1996.

Crown Minerals Act

55 The Department and the Ministry will engage with the Ministry of Economic Development to consider the way in which tools under the Crown Minerals Act 1991 (CMA) may contribute to the MPA Policy. This collaboration will ensure that activities under the CMA are managed in ways that minimise adverse impacts on MPA planning or establishment. CMA mechanisms can also be used as part of the suite of management measures to address threats to a particular MPA site.

Maritime Transport Act

56 The Maritime Transport Act 1994 (MTA) has a range of management tools that, if used alone, will not offer sufficient protection to meet the protection standard. However, the MTA tools (e.g. shipping controls, anchoring restrictions) could be used to bolster other management measures. For protection outside of the territorial sea, Maritime New Zealand (MNZ) is able to work with the International Maritime Organisation.

57 Where MTA management tools are identified as being required to meet threats to biodiversity within proposed MPAs, MNZ will be involved in the planning process.

Biosecurity Act

58 The Biosecurity Act has a range of tools that, if used alone, will not offer sufficient protection to meet the protection standard. However, the Biosecurity Act tools (e.g. controls on movement of pests) could be used to bolster other management measures. The Biosecurity Act is administered by the Ministry of Agriculture and Forestry/Biosecurity New Zealand.

59 The main tool within the Biosecurity Act relevant for MPAs is the controlled area notice provision. The purpose of a controlled area notice is to enable the institution of movement and other controls to achieve certain biosecurity objectives relating to unwanted organisms and pests. The limitation of this provision is that it relates to pests and unwanted organisms which are defined under the Act – so a controlled area cannot be instigated to protect an area from the introduction of organisms generally. Also, the controlled area notice can only be applied within the 12 nm limit.

60 Actions to manage biosecurity issues in marine protected areas may also be undertaken under other legislation including the Marine Reserves Act.

61 Where biosecurity management tools are identified as being required to meet threats to biodiversity within proposed MPAs, Biosecurity New Zealand will be involved in the planning process.

Implementing Principles

62 The principles set out in this section will guide the implementation process to establish a network of representative MPAs under this policy, and ensure the management tools adequately provide for the maintenance or recovery of biodiversity.

63 These implementing principles are organised as follows:

a) network design principles – to guide the design of the MPA network; and

b) planning principles – to guide MPA planning and management.

64 Each principle is followed by a brief explanation to guide interpretation and application of the principle.

Network Design Principles

65 Development of the representative network of MPAs will be guided by the principles set out below.

Network Design Principle 1: The MPA network will protect examples of the full range of natural marine habitats and ecosystems.

66 The sites included in the MPA network should be representative of all marine environment areas (at the agreed scale) and should cover centres of endemism and rare habitats or ecosystems.

Network Design Principle 2: MPAs should be designated based on a consistent approach to classification of habitats and ecosystems.

67 To establish a representative MPA network, decisions are needed by Ministers on the classification approach to be used, including the scale or scales at which marine habitats and ecosystems will be classified and the extent to which other biological and physical information may be used to assist classification. The classification approach may be reviewed in response to new information on the marine environment or classification systems.

68 A transparent process will be used to determine and review the classification approach.

Network Design Principle 3: The MPA network should be viable.

69 The marine environment is subject to ongoing stresses both natural and human-induced. A viable network will be more likely to withstand and recover from such impacts, increasing the likelihood of sustainably achieving the overall network. Viability will depend on matters including: the nature of the protection; the presence of replicate MPAs protecting particular habitat and ecosystem types; connectivity between MPAs; the nature of actual or potential threats to a particular habitat; and the amenability of those threats to mitigation using MPA management measures.

70 Where possible, MPA network planning should be designed to ensure the maintenance of ecosystem processes. The number of replicate MPAs included in the network will usually be two. However, in circumstances where a habitat or ecosystem is particularly vulnerable to irreversible change, more replicates may be established as a national priority.

71 Agencies will need to work together to respond effectively to external threats (such as sedimentation, incursion of exotic invasive species, or oil spills) to the MPAs.

Network Design Principle 4: National priorities for additions to the MPA network will be developed, and reviewed on an annual basis.

72 National priorities for MPA planning will be set for a five year period and the priorities will be reviewed annually. National priorities will guide and inform biogeographic region and offshore MPA planning.

73 The overall goal is to protect the full range of marine habitats and ecosystems. Prioritisation of actions will therefore be driven by the requirement to protect the under-represented habitats and ecosystems. "Outstanding, rare, distinctive, or internationally or nationally important" habitats or ecosystems will then be considered. Priorities will then be influenced by consideration of threats to under-represented habitats and ecosystems. Progress could also be made quickly where under-represented habitats and ecosystems can be protected with insignificant impact on existing users and Treaty settlement obligations.

74 A transparent process will be used to determine and review national priorities.

Network Design Principle 5: An evaluation programme will be undertaken.

75 Evaluation will focus on the implementation of the MPA Policy. It will:

a) assess progress in achieving the MPA Policy objective; and

b) assess MPA planning processes to ensure consistency with the implementing principles.

76 A stocktake of MPAs will be prepared each year to assess progress against priorities. Protected areas established outside the MPA planning process will be recognised as part of the MPA network provided they are representative of particular habitat and ecosystem types, and their management measures meet the protection standard.

77 The evaluation programme will provide information that will be fed into an annual report to decision makers to enable progress on implementing the network and consistency with the MPA Policy to be measured in a timely manner. The report will also be made publicly available.

Network Design Principle 6: A monitoring programme will be undertaken.

78 The monitoring programme will assess the performance of the MPA network, with respect to its viability, and the effectiveness of the individual MPAs at achieving their own specific biodiversity objectives. Results from the monitoring programme will be made publicly available.

79 For each MPA the monitoring programme will be based on the:

a) site biodiversity objectives – based on the attributes of the habitat and ecosystem; and

b) performance of the MPA management tools.

80 Where monitoring reveals that management tools are not adequately protecting the area, the management tools for that MPA will need to be reviewed.

Planning Principles

81 The planning process to establish new MPAs to contribute to the network will be guided by the principles set out below.

Planning Principle 1: Every MPA should be designated on the basis that it is representative of one or more habitats or ecosystems, and in a manner consistent with the national network priorities and the MPA implementing principles.

82 This will provide clarity about the anticipated contribution of each MPA to the network, guidance on tool selection, and a reference for performance monitoring. The attributes of the habitat and ecosystem that each MPA is protecting will be recorded in the inventory of MPAs.

Planning Principle 2: The management tool(s) used at a site must be sufficient to meet the protection standard.

83 To meet the protection standard, a management tool must enable the maintenance or recovery of the site's biological diversity at the habitat and ecosystem level to a healthy functioning state. In particular, the management regime must provide for the maintenance and recovery at the site of:

a) physical features and biogenic structures that support biodiversity;

b) ecological systems, natural species composition (including all life-history stages), and trophic linkages;

c) potential for the biodiversity to adapt and recover in response to perturbation.

84 Maintenance and recovery include, where feasible, the avoidance of change from human induced pollution, sedimentation, fishing, tourism or visitor-based disturbance, undersea or seafloor commercial activities, or scientific/research activities. The selection of tools for the management regime will require assessing their ability to address such human-related threats and activities.

85 The NZBS contemplates the use of some management tools that allow some level of extractive use in MPAs. Management tools must, however, not allow levels of biological removals or physical disturbance that would breach the requirements outlined above in paragraph 83.

Planning Principle 3: The special relationship between the Crown and Maori will be provided for, including kaitiakitanga, customary use and mätauranga Maori.

86 This principle reflects the need to take into account obligations that arise from Treaty of Waitangi commitments to tangata whenua that are included in marine management legislation and Treaty settlement legislation. Agencies need to ensure effective participation of tangata whenua in relevant processes. Whilst these commitments do not give tangata whenua a veto over MPA proposals, they do mean that where MPAs are being considered for a particular area, tangata whenua should be involved at an early stage.

87 Consideration of the impacts of MPAs on customary use and management practices is an essential part of creating an effective MPA network and avoiding unnecessary conflict.

Planning Principle 4: MPA establishment will be undertaken in a transparent, participatory, and timely manner.

88 Support for MPAs is likely to be increased where affected parties are adequately informed and have confidence in the integrity of the decision-making process. MPA implementation will be undertaken in a manner that constructively engages tangata whenua, regional councils, other government agencies and particular interests whose use of marine areas will be affected by MPAs, in addition to groups with an interest in marine biodiversity. These processes will be undertaken in a transparent manner that informs and allows for participation and input from the public.

89 In addition, agencies will meet any statutory consultation and participation obligations associated with implementing their management tools.

90 The establishment process will be documented to aid transparency for stakeholders. Each planning exercise will result in a report that outlines the marine protected area proposals identified.

Planning Principle 5: Adverse impacts on existing users of the marine environment should be minimised in establishing MPAs.

91 MPAs are more likely to be established in a timely and efficient manner where appropriate recognition is given to the rights and responsibilities of users of the marine environment. Gaps in the network may be able to be addressed at a number of different sites, and the protection standard will be able to be met using a variety of management measures.

92 Where there is a choice of several sites, which if protected would add a similar ecosystem or habitat to the MPA network, the site(s) chosen should minimise adverse impacts on existing users and Treaty settlement obligations. Where there is a choice to be made among minimum impact sites, selection may also be guided by:

a) accessibility for management and enforcement requirements; and

b) benefits such as educational, diving and tourism opportunities.

93 The tools used to meet the protection standard will be selected primarily on the basis of adequately managing foreseeable threats to the site's biodiversity. A marine reserve will be established to protect at least one sample of each habitat or ecosystem type in the network. A range of management tools may be used to protect further samples provided the tools meet the protection standard and minimise adverse impacts on existing users. Tools selected will be implemented consistent with legislation and Cabinet decisions.

94 The process to consider sites and tools in a region can be undertaken concurrently.

Planning Principle 6: The management tools used to establish MPAs should be consistent and secure in the long term, subject to any necessary changes to allow them to better achieve the MPA Policy objective, taking into account natural dynamics.

95 Many improvements in biodiversity will not happen in the short term. The MPA Policy represents a long-term investment in the marine environment with the expectation that benefits will arise over time. It therefore makes sense to work towards long-term protection. Nevertheless, it may be necessary to adjust the design and/or location of some MPAs in light of changing environmental conditions, improving knowledge and changes in the use of the marine environment.

Planning Principle 7: Best available information will be taken into account in decision-making.

96 Understanding of marine habitats and ecosystem processes is limited, as is information on current uses and the effects of those uses on biodiversity. MPA decision-making will be informed by the best available information. Best available information means the best information relating to ecological, environmental, social, cultural and economic aspects of the marine environment that is available without unreasonable cost, effort or time. Standards will be developed to outline the quality requirements for the use of information in MPA planning.

Planning Principle 8: Decision-making on management actions will be guided by a precautionary approach.

97 Management actions to implement MPAs should not be postponed because of a lack of full scientific certainty, especially where significant or irreversible damage to ecosystems could occur or indigenous species are at risk of extinction. Each agency will need to apply the precautionary approach in a manner consistent with its statutory obligations.

Planning Principle 9: The MPA management regime must be enforceable.

98 Where compliance and enforcement is inadequate, the MPA Policy objective is unlikely to be achieved. The level of enforcement and compliance required will be based on the risk of non-compliance and the impact of that non-compliance on achieving the MPA Policy objective.

Planning Principle 10: MPA research will be effectively planned and co-ordinated.

99 MPA research is important for a number of reasons. These include developing the classification approach, determining whether individual MPAs are meeting the MPA Policy objective, how MPAs should best be designed and managed, and the social and economic impacts of MPAs. MPAs also provide invaluable comparisons or controls for research investigating the ecological structure and function of marine communities, with potential benefits for fisheries and environment management.

MPA Policy Implementation Plan

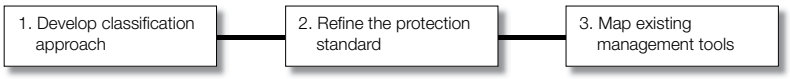
Introduction

100 The implementation of the MPA Policy will be based on a four stage process, which is described in broad terms below. The process will need to be reviewed following the workshops for Stage One.

Stage One Overview

101 Stage One develops an approach to classification of nearshore and offshore areas to form the initial basis for implementation, and a common protection standard that can be applied to all sites in both areas. Existing management tools and sites will also be mapped for possible inclusion in the MPA network. These tasks will be coordinated nationally by the Ministry and the Department.

Stage One: Preparation for Implementation



Stage One Tasks

102 Task 1: Develop a nationally consistent approach to classification. An expert workshop was convened in December 2005 to provide advice on this. Stakeholders were invited as observers. The workshop was asked to confirm the use of the Nearshore Marine Classification and Inventory's eight biogeographic regions as the first level of classification or offer alternative, biologically justifiable, representations of biogeographic regions. The workshop was also asked to advise on the use of combinations of key ecological drivers (depth, substrate type and energy) as the second level of classification in data poor areas, and on the use of biological information in areas where more data is available. In addition, the workshop was asked to confirm the use of the Marine Environment Classification (MEC) at 20 environment types as the basis for offshore classification and how the offshore classification could be improved by incorporating additional information.

103 Task 2: Refine the protection standard. The process for determining the protection standard may require some science input from a similar workshop. The primary task will be to refine the statement of the protection standard contained in Planning Principle 2. Further consideration is also required to ensure the protection standard is practical and can be applied without unduly onerous data requirements that would unnecessarily delay Stage Two of the MPA implementation.

104 Task 3: Map existing management tools. A geographic information system (GIS) would provide the best tool for managing information on potential and existing MPAs. Such a system would also allow for continued updating of the MPA inventory. An online system that is available to the public and stakeholders could be established by building on the Ministry's NABIS (National Aquatic Biodiversity Information System) database.

Timing and Delivery

105 Tasks 1, 2 and 3 can be completed concurrently. However, they must be completed before Stage Two can commence in any region.

106 The Ministry and the Department will produce a report on the classification approach and protection standard. For the purpose of consultation, this report will be

posted on relevant web pages and sent to those who received this MPA Policy and Implementation Plan. Final recommendations for a classification approach and protection standard will be presented to Ministers for their approval following the consultation period. The mapping of existing tools will also be made widely available.

107 This Stage is to be completed by June 2006.

Stage Two Overview

108 Stage Two involves constructing an inventory of current MPAs by assessing the management tools identified and mapped in Task 3 against the protection standard. These MPAs will then be assessed against the classification approach to identify gaps in the MPA network. Priorities for new MPAs can then be determined based on the principles of the MPA Policy.

Stage Two: Strategic Analysis

Stage Two Tasks

109 Task 4: Develop the inventory of MPAs. The management tools mapped in Task 3 will be evaluated against the protection standard. This will determine which management tools offer sufficient protection to habitats and ecosystems for the sites concerned to be considered MPAs. For efficiency and consistency in the application of the protection standard, this task would ideally be completed in all biogeographic regions simultaneously (subject to sufficient resources being available).

110 Task 5: Identify the gaps in the MPA network. The classification approach will need to be applied in each biogeographic region (or whatever MPA planning units are determined). Those MPAs designated in Task 4 will be compared to the classification approach to determine which habitats and ecosystems are adequately represented and which are under-represented.

111 Task 6: Prioritise habitats and ecosystems for new MPAs. Priorities for establishing new MPAs will be determined based on the gap analysis and the principles of the MPA Policy.

Stage Two Nearshore

112 The identification of gaps in the nearshore MPA network required in Task 5 could be done nationally or on a biogeographic region level (or smaller ecologically appropriate MPA planning unit) consistent with the approved classification approach. If resources allow, conducting this work simultaneously in all regions would provide greater efficiency and consistency. For the completion of Task 5, some additional information may be required to determine the habitat in which the MPA exists.

Stage Two Offshore

113 The spatial boundaries of offshore MPAs can be overlaid on Marine Environment Classification (MEC) classes to determine in which environments MPAs exist. Gaps in the MPA network can then be identified together with potential locations for additional MPAs.

114 Task 6 envisages that the gaps identified in Task 5 will inform the prioritisation of new MPAs; this prioritisation will be consistent with the implementing principles of the MPA Policy. The Department and the Ministry will oversee Task 6 with input from independent science advisors as required.

Timing and delivery

115 Timing for Stage Two will depend on the information requirements and resources committed. Once Stage One is completed, it will be possible to accelerate Stage Two work in some MPA planning units that are determined to be a high priority. Additional resourcing will be required to support the implementation of Stage Two. In the second half of the calendar year it is anticipated that particularly good progress will be able to be made in the offshore area, given that the MEC classification system is more advanced.

Consultation

116 At the conclusion of Stage Two tasks, agencies will circulate a report(s) for consultation by stakeholders. The report(s) will include details on the application of the protection standard, an inventory of MPAs, and details of the process used to identify the gaps in the MPA network. As indicated above, Stage Two can be "rolled out" on a national basis or on an MPA planning unit basis (i.e. biogeographic region or appropriate alternative representation; and the offshore area).

Stage Three Overview

Stage Three: Development of an MPA Network

117 Stage Three involves the identification of new MPAs based on the priorities developed in Task 6. This will be completed using different processes for the nearshore and offshore marine environments.

Stage Three Tasks

118 Task 7: Nearshore implementation. This involves developing an integrated regional approach to planning and establishing new sites in the MPA network. This will use the results of Stages One and Two and be consistent with the Network Design and Planning Principles outlined in the MPA Policy. Regional planning projects commenced in or before 2005 will not be completed before they have been informed by, and therefore are fully consistent with, the MPA Policy and the completed Stage One and Two Tasks. Regional planning will proceed through the use of marine protection planning forums (MPPFs). Within each biogeographic region or ecologically discrete MPA planning unit, MPPFs will be convened by the Ministry and the Department and tasked to:

a) consider the classification and inventory information from Stages One and Two;

b) compile information on existing uses and interests in the area;

c) identify sites and potential tools for area based protection of biodiversity;

d) seek to establish consensus on areas to be set aside as MPAs.

119 Each MPPF will constructively involve and engage tangata whenua, regional councils, marine biodiversity interest groups and the users and stakeholders whose use of marine areas may be affected by MPAs. The Department and the Ministry will service the forums with information, advice, facilitation and guidance. It is expected that relevant agencies will develop and maintain a separate dialogue with tangata whenua to ensure that Treaty obligations are met.

120 MPPFs will be provided at the outset with a written brief on the task to be undertaken. This brief will ensure that a consistent standard of process and outcome is achieved within the MPA Policy requirements, implementing principles, and the national classification approach and priorities. The requirements in Planning Principle 4 for transparency and participation will be met.

121 Task 8: Offshore implementation. This will be conducted through an expert offshore panel with specific expertise and representation of offshore interests. As with Task 7, this panel will use the results of Stages One and Two and be consistent with the Network Design and Planning Principles outlined in the MPA Policy.

Timing and Delivery

122 While some provisional planning for regional nearshore implementation has been conducted, the programme will be confirmed when work on the national classification approach is completed.

123 Regional planning has commenced in a number of places in advance of national classification, notably the West Coast, sub Antarctics and the Hauraki Gulf. These planning projects are able to progress only to a stage where they will need to be informed by the completed work in Stages One and Two.

124 There is a need to ensure that regionally-based planning achieves the objective of a comprehensive and representative network of marine protected areas at the national level. This will require co-ordination and monitoring across regional processes.

125 Task 9: Designate new MPAs. Recommendations will be made to Ministers for new MPAs, both nearshore and offshore. Designation of new MPAs will then follow the statutory processes required to implement the proposed management tools.

Stage Four Overview

Stage Four: Monitoring and Evaluation

10. Monitor and evaluate the MPA network

Stage Four Tasks

126 Task 10: Monitor and evaluate the MPA network. An evaluation of progress in implementing the MPA Policy will be undertaken in line with Network Design Principles 4, 5 and 6. This will measure progress toward achieving the MPA Policy objective and will establish new priorities for future implementation of MPAs.

Timing and Delivery

127 Task 10 will be led by the Ministry and the Department, with assistance from the expert offshore panel and independent science advisors as required. The Ministry and the Department will annually review the results of the monitoring and evaluation.

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Sandymount, Otago Peninsula.
Photo: John Barkla

APPENDIX 2

Marine Protected Areas

CLASSIFICATION, PROTECTION STANDARD AND IMPLEMENTATION GUIDELINES

FEBRUARY 2008

Biodiversity
OUR LIVING TREASURE
HE KURA TAIAO

Marine Protected Areas
Classification, Protection Standard and Implementation Guidelines

February 2008

Department of Conservation
Ministry of Fisheries

SOURCING
Digital copies of this document are available at:

www.biodiversity.co.nz

CITATION
Ministry of Fisheries and Department of Conservation. 2008. Marine Protected Areas: Classification, Protection Standard and Implementation Guidelines. Ministry of Fisheries and Department of Conservation, Wellington, New Zealand. 54 p.

New Zealand Government

TABLE OF CONTENTS

SECTION ONE

COASTAL MARINE CLASSIFICATION - SUMMARY

COASTAL MARINE CLASSIFICATION - SUMMARY

1.1 INTRODUCTION

The following is a short summary of the approach to classifying the coastal marine environment. The full paper is also appended to the end of this paper.

There are a number of different approaches to marine classification, and the one outlined here is designed to underpin planning for the protection of marine biodiversity.

1.2 CLASSIFICATION APPROACH

The classification system consists of a hierarchy of five layers which categorise the physical environment (Table 1).

The first layer of the classification is the biogeographic region. Fourteen biogeographic regions have been identified in the classification (Figure 1). This approach assumes that physical habitats and ecosystems, if separated by enough space (100s to 1000s of kms), will contain different biological communities due to a combination of broad-scale factors. Such factors may include water temperature, oceanography, current dynamics, large-scale latitudinal gradients, climate or barriers to dispersal.

The second layer of the classification is the environment: estuarine and marine. This recognises that there are fundamental differences in biology associated with estuarine and marine environments.

The third, fourth and fifth layers of the classification are depth, exposure and substrate type. These three factors are thought to most strongly influence a site's biology. Within each biogeographic region and environment type, combinations of depth, exposure and substrate type will represent habitats to be protected. This means that within each biogeographic region, there are 44 potential habitats that should be protected; however, not all of these will be present in every biogeographic region. This will be discussed further in the section on MPA implementation.

Table 1. Coastal classification and mapping scheme (MHWS – 200 metre depth)

Level 1	Biogeographic region (14)									
Level 2	Environment type	Estuarine		Marine						
Level 3	Depth	Intertidal	Subtidal	Intertidal (MHWS – MLWS)			Shallow Subtidal (MLWS – 30m)			Deep Subtidal (30m – 200m)
Level 4	Exposure	low	low	low	med	high	low	med	high	low
Level 5	Habitat type	Mud flat	Mud flat	Mud flat	Sandy beach	Sandy beach	Shallow mud	Shallow sand	Shallow sand	Deep mud
		Sand beach	Sand flat		Gravel beach	Gravel beach		Shallow gravel field	Shallow gravel field	Deep sand
		Gravel beach	Gravel field		Cobble beach	Cobble beach		Shallow cobble field	Shallow cobble field	Deep gravel field
		Cobble beach	Cobble field		Boulder beach	Boulder beach		Shallow boulder reef	Shallow boulder reef	Deep cobble field
		Boulder beach	Boulder reef		Rocky platform	Rocky platform		Shallow Rocky reef	Shallow Rocky reef	Deep boulder field
		Rocky platform	Rocky reef					Shallow Biogenic reef	Shallow Biogenic reef	Deep rocky reef
			Biogenic reef							Deep Biogenic reef

Notes:

- Terms above are defined in the Appendix 1 Glossary
- Biogenic reefs include habitats such as bryozoan beds, rodolith beds, tube worm mounds and sponge gardens
- Artificial substrate such as marine farms and marinas has not been included in the classification as it is not considered important for representation in the network of protected areas, however, it should be considered for the purposes of mapping all features present in a biogeographic region
- This list presents the proxies for habitat types. Each listed category may not occur in every bioregion. Marine habitats do not typically function independently and these habitat types frequently occur in combination
- A proportion of all habitats identified in Table 1 that occur in a given Biogeographic Region are required to be protected in at least one marine reserve and at least one other form of marine protection

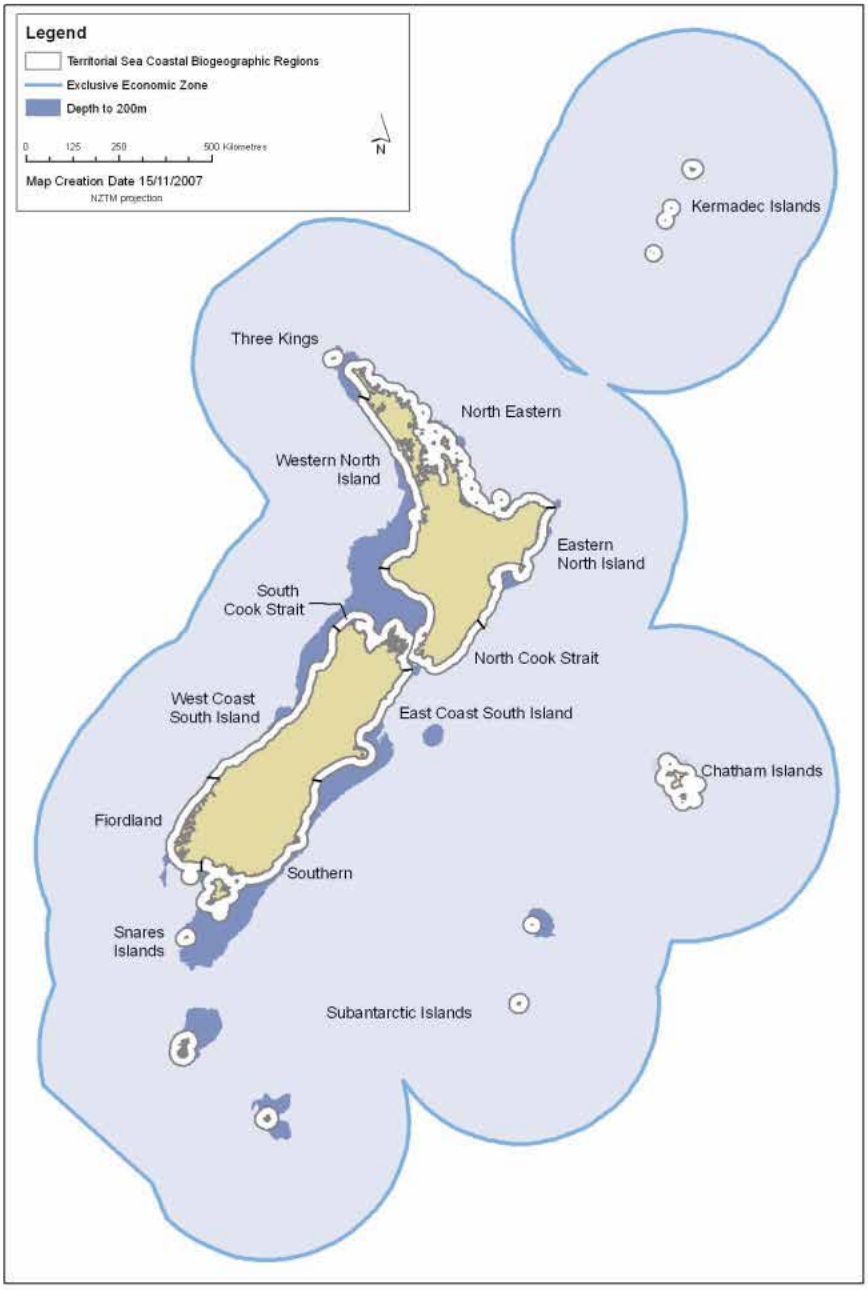

Figure 1. New Zealand's coastal biogeographic regions.

SECTION TWO:

MARINE PROTECTED AREAS PROTECTION STANDARD

MARINE PROTECTED AREAS PROTECTION STANDARD

2.1 INTRODUCTION

To implement the MPA Policy, management tools will be put in place to protect the habitats described in the classification system. This protection can be given using a range of tools of three types: Marine Reserve MPAs, other Marine Protected Areas and other Marine Protection Tools. All forms of marine protection (i.e. all three types in Table 2) are relevant when measuring progress towards the NZ Biodiversity Strategy target. However, only types 1 and 2 are considered to be MPAs for the purpose of the MPA Policy. MPAs may be created using Fisheries Act tools. Whether the tool in an individual circumstance meets the protection standard, i.e. creates an MPA, must be assessed on a case by case basis.

The marine protection types described below focus solely on fishing impacts. Considerations about whether areas offer sufficient protection to be called a protected area will also include consideration of non-fishing impacts.

Generally, non-fishing impacts will need to be assessed on a case-by-case basis using best available information. For example, whether mining and prospecting activities are appropriate will depend on the extent and frequency of the operation and its impacts on the physical structures of the seafloor and the species resident in the area.

Similarly, the effects of pollutants depend on their concentration, toxicity and how quickly they disperse or break down in the marine environment.

The MPA Policy requires that the impacts on existing users of the marine environment should be minimised when selecting new protected areas. The extent to which new protected areas will impinge on existing activities will depend on how widespread the activity is. Those activities that are spatially confined may not be affected, while other more widespread activities, such as fishing, may have greater limitations placed on them when establishing protected areas.

All uses of the marine environment will be given the same priority and the requirement to minimise impacts on existing users will be applied equally regardless of the activity. When a protected area is established officials will seek additional protection from regional councils through inclusion of the protected areas on relevant regional coastal plans.

2.2 MARINE RESERVE MPAS

Marine reserves are statutory tools that are established under the Marine Reserves Act for the purpose of preserving marine life for scientific study. A broad range of activities can be managed, controlled or excluded in marine reserves, including marine farming, fishing, other extraction, anchoring, point discharges, research, bio-prospecting and commercial tourism.

Given the high level of protection afforded by marine reserves, they will be considered as contributing to marine protection goals under the MPA Policy, and will meet the requirements of Planning Principle 2.

2.3 OTHER MARINE PROTECTED AREAS

Marine Protected Areas can be established using a range of management tools. The MPA protection standard sets the outcome that we want our MPAs to achieve irrespective of the management tool employed. That outcome is described in the MPA

Policy as enabling the maintenance or recovery of the site's biological diversity at the habitat and ecosystem level to a healthy functioning state.

The MPA Policy gives some further guidance about other particular factors that should be considered when deciding if an area should be an MPA. The management regime must provide for the maintenance and recovery at the site of:

a) physical features and biogenic structures that support biodiversity;
b) ecological systems, natural species composition (including all life-history stages), and trophic linkages; and
c) potential for the biodiversity to adapt and recover in response to perturbation

It is considered that, if (a) and (b) are satisfied, then (c) will have been provided for. These first two factors are discussed below and more detail is provided on how government will determine if these have been met at any potential MPA site. A summary of the approach is described in Table 2.

2.4 MAINTENANCE AND RECOVERY OF PHYSICAL FEATURES AND BIOGENIC STRUCTURES

This aspect of the MPA protection standard looks to ensure the seabed in an MPA is protected from physical damage. To ensure this, activities that may cause significant damage to the seabed and its associated biodiversity should be prohibited from an MPA.

Whether a particular activity causes damage to the seabed will depend on the nature of the seabed. Those seabed habitats that are particularly fragile will be damaged more easily than those that are exposed to natural disturbance.

When considering the effect of fishing activity, the main fishing methods used in New Zealand waters were ranked according to the relative damage they cause to the seabed. As a result, bottom trawling, dredging and Danish seining were considered not to allow maintenance and recovery of physical features and biogenic structures. As such, the presumption is that these methods would not be permitted within an MPA.

Benthic netting and potting were considered to cause only moderate damage. These methods would be allowed in an MPA unless the seabed was comprised of particularly fragile biogenic habitats. Other methods may be deemed acceptable but would need also to be considered as part of the second half of the MPA protection standard.

2.5 ECOLOGICAL SYSTEMS, NATURAL SPECIES COMPOSITION AND TROPHIC LINKAGES

This second aspect of the MPA protection standard looks to ensure any activity within an MPA does not unduly disturb ecological systems, natural species composition and trophic linkages.

When considering the effect of fishing activity, it is difficult to set a level of extraction that would ensure the MPA protection standard is met. Setting an acceptable quantity of extraction would require large amounts of information about the species present in an area and how they contribute to the associated ecological system. There are also considerable problems with compliance when setting catch limits at small spatial scales. Because of these difficulties, fishing methods have been used as a proxy for extraction from potential MPAs.

2.6 COASTAL MPAS

It is considered that purse seining, midwater trawling, midwater gillnetting and benthic netting either extract large quantities of fish over short time periods and/or are relatively unselective in nature. Many of the species harvested by the methods in coastal areas could have close affinities to the benthic environment. As such, these methods will probably not be permitted within an MPA.

Other methods such as benthic longlining, potting, pelagic longlining and hook and line fishing do not generally extract such quantities of fish over short time frames and are more selective. These methods may be allowed within an MPA subject to the case by case analysis as described below.

Case by case analysis

A case by case approach is necessary for two reasons. First, using fishing methods as a proxy may not accurately reflect the actual extraction from a site as much depends on the frequency and intensity with which that method is used.

Second, there are statutory requirements in the Fisheries Act that mean such an analysis is necessary prior to any method prohibition.

The factors that would be considered in a case by case analysis are further outlined in the implementation section.

2.7 DEEPWATER MPAS

In November 2007, government established 17 Benthic Protection Areas; primarily in New Zealand's Exclusive Economic Zone (EEZ). These areas protect about 30% of the seabed in the EEZ. Because of the contribution these protected areas make to benthic protection, government has chosen not to implement the MPA Policy in the EEZ until 2013. Implementing the MPA Policy will concentrate on Territorial Sea until then.

Prior to implementing the MPA Policy in the EEZ, government will revisit both the classification system and protection standard to incorporate improved knowledge and research conducted between now and 2013.

2.8 OTHER MARINE PROTECTION TOOLS

Tools similar to those for MPAs, but which in particular cases, do not protect sufficient biodiversity to meet the protection standard.

Table 2: MPA Policy Implementation – Marine Protection Types.

(1) Marine Reserve MPAs

Marine reserves established under the Marine Reserves Act 1971.

(2) Other MPAs

Fisheries Act prohibitions (i.e. those rules imposed primarily for the purpose of sustaining fisheries resources and for avoiding, remedying or mitigating the adverse effects of fishing on the environment) on:

- Dredging, bottom trawling, Danish seining
- Bottom gillnetting and potting when used on sensitive biogenic habitats
- Purse seining, midwater trawling, midwater gillnetting and bottom gillnetting. Prohibitions on other methods may be appropriate on a case by case basis.

Tools may also include cable protection zones, marine mammal sanctuaries, Resource Management Act, possibly in combination with other tools.

- Other tools may include provisions in:
- Crown Minerals Act
- Maritime Transport Act
- Biosecurity Act

(3) Other Marine Protection Tools

Tools similar to those for MPAs, but which in particular cases, do not protect sufficient biodiversity to meet the protection standard.

SECTION THREE:

IMPLEMENTATION GUIDELINES

IMPLEMENTATION GUIDELINES

3.1 INTRODUCTION

The MPA Policy[1] takes a regional approach to planning and establishing a network of protected areas around New Zealand. This new approach is designed to be inclusive and transparent. Government wants regional councils, marine users, tangata whenua and those with an interest in marine biodiversity to all be involved. Implementation of the network is to be based on best available information and a commitment to minimise effects of new protected areas on existing users.

The MPA Policy specifies separate processes for the coastal environment and one for the deepwater environment. For the purpose of implementing the network of protected areas, the coastal/deepwater boundary will be the limit of the Territorial Sea (12 nautical miles).

Planning for the coastal marine environment will be implemented independently in 14 biogeographic regions by community-based Marine Protection Planning Forums (MPPF).

Planning for protected areas in the deepwater environment will commence in 2013 and will be implemented at a national level by an expert offshore panel. This group will have specific expertise and representation of offshore interests.

DOC and MFish officials will service both the MPPFs and the offshore panel with information, advice, facilitation and guidance. This will include provision of ecosystem and habitat maps, and information derived using the marine and coastal classification approaches.

3.2 GOVERNANCE OF COASTAL MARINE PROTECTION PLANNING FORUMS

Objective

Each MPPF will be tasked to provide a report for Ministers recommending areas for various levels of marine protection consistent with the MPA Policy. Specifically an MPPF will:

- Consider the classification and inventory information
- Consult with existing users and interests in the area
- Identify sites and potential tools for area-based protection of biodiversity
- Seek to establish consensus on proposed areas to be set aside as protected areas
- Consult on protection options and make written recommendations to Ministers

Each MPPF will be given a written brief (terms of reference) from Ministers on the task to be undertaken. The brief will include objectives for the forum and timeframes.

Scope

Protected area planning has the principal objective of biodiversity protection; in many

[1] *Marine Protected Areas Policy and Implementation Plan*, December 2005.

cases tools used will also support other objectives. MPPFs are limited to protected area planning, and should not be diverted by RMA, aquaculture, or fisheries management issues.

MPPF chairs

The MPPF chair must have the skills necessary to lead the MPPF to a successful outcome. Chairs will be appointed by Ministers and chosen for their standing in the community, facilitation and interpersonal skills, and impartiality.

MPPF members

Each MPPF is to contain a maximum of 14 people, including the chair. DOC and MFish will be ex-officio members. Expressions of interest will be called through advertising and by approaching relevant stakeholders and user groups, and departmental forums. Ministers will endorse the appointment of forum members.

Forum members should be expected to have strong links to the region, be able to negotiate, compromise and work well with other people, and have the capacity to engage with their sector of interest to bring that sector's views forward to the forum.

The sectors that should, where relevant, be represented on an MPPF include:

- Tangata whenua
- Commercial fishers
- Recreational users including fishers, charter fishers and divers
- Conservation groups
- Tourism
- Aquaculture industry
- Marine science
- Minerals industry

All members of an MPPF (apart from ex-officio members) will have collective responsibility for its decisions and have equal status in discussions. Forum members must be able to attend meetings regularly, engage actively in information sharing, and be actively involved in decision-making. Proxy members should not be permitted. Members resigning from a forum should be replaced from the same sector of interest.

All MPPFs members must disclose their interests at the time of application, including who they represent, so that it is clear where they may have any conflicts of interest. Forum members must also work to build consensus to meet the MPA Policy objectives for the region.

Consultation

Each MPPF will constructively involve and engage with tangata whenua, regional councils, marine biodiversity interest groups, and the users and stakeholders whose interest in marine areas may be affected by protected areas.

MPPFs will customise plans for regional engagement considering the best tools to build links with the community and within associated budgetary constraints. However, MPPFs must undertake written consultation (allowing a minimum of 40 working days for submissions) on the recommendations being made.

The MPPF should look to engage fully with tangata whenua as key regional stakeholders. The Crown must also meet its obligations under the Treaty of Waitangi, through direct discussion and consultation with iwi where necessary. Formal consultation with tangata whenua will also occur as part of implementing proposed new protected areas through subsequent statutory processes.

Report for Ministers

The MPPF is expected to produce a report for Ministers recommending areas for various levels of marine protection, i.e. protected areas and management tools.

Recommendations must be underpinned by a commitment to minimise the impact of new protected areas on existing users of the marine environment and Treaty settlement obligations where there are options for alternate locations to achieve protection of particular habitats. Matters to consider in choosing between minimum impact sites are: accessibility for management and enforcement requirements; and benefits such as educational, diving and tourism opportunities.

MPPFs should recommend management tools that meet the requirements described in Table Two of 'Marine Protected Areas Protection Standard' in this paper. These recommendations should be made on the basis of adequately managing foreseeable threats to a site's biodiversity. The tools selected will be implemented in accordance with legislation.

Decision making within the MPPF

Management actions to implement protected areas should not be postponed because of a lack of information.

An MPPF should try to reach consensus on recommendations. However, if consensus cannot be reached, the MPPF should provide a range of options for the consideration of Ministers, making clear which options are favoured by which elements of the community/stakeholders and the advantages and disadvantages of each.

Timeframe for establishing MPPFs

DOC and MFish will undertake preparatory work before establishing each MPPF. Once each MPPF has been established, it will be expected to produce a set of recommendations for Ministerial decision within 18 months.

Phase	Timeframe	Tasks
One	Six months	• Preparatory work (DOC & MFish) • Appoint chair and members[2]
	Six months	• MPPF convened • Consultation with community
Two	Six months	• Review information • Develop recommendations
Three	Six months	• Public consultation on recommendations • Finalise report to Ministers

[2]DOC & MFish will develop a package of documents for appointing people to the MPPFs, including an application form, person specifications (skills/competencies), and a position description.

3.3 GUIDANCE ON THE SCALE OF AREA PROTECTION REQUIRED IN EACH REGION

When implementing the MPA Policy, the primary consideration should be achieving its purpose and objective – that is, a comprehensive and representative network of protected areas.

In implementing the classification system, the MPA Policy requires the MPA forum to ensure that "a marine reserve [is] established to protect at least one sample of each habitat and ecosystem type in the network. A range of tools may be used to protect further samples." The MPA Policy suggests that the usual number of replicate MPAs (i.e. those that cover the same ecosystem type) will be two.

This does not mean, however, that a region will have 44 marine reserves (i.e. the number of potential habitats to be protected). It is more likely that there will be fewer reserves which each protect a mosaic of different habitats. Principles of good reserve design would encourage the creation of fewer larger reserves, rather than multiple small reserves.

In addition, further marine reserves may be needed to protect any areas that are distinctive or rare, and therefore not picked up by the classification of "typical" habitats.

It is noted that the Classification and Protection Standard for MPA Policy implementation will continue to evolve as more marine science, research and information become available, and that the MPA Policy itself will be subject to review. The flexibility of marine protection proposed here should itself be subject to review, along with the MPA Policy, targets and components needed to fully meet the NZ Biodiversity Strategy's 2020 goal of a comprehensive and representative network of marine protected areas.

3.4 GUIDANCE ON THE CLASSIFICATION APPROACH

The Policy gives some guidance on the use of marine and coastal classification to represent marine habitats and ecosystems within protected areas:

- **Representativeness** – It is desirable that sites be prioritised on the basis that they are representative of one or more marine habitats or ecosystems. It is desirable that each protected area will contain a number of habitat and ecosystem types.
- **International or national importance** – It is desirable that sites be prioritised on the basis that they support outstanding, rare, distinctive or internationally or nationally important marine habitats and ecosystems (which will be expected to be set aside as marine reserves).
- **Network gaps and priority habitat and ecosystems** – The classification should be used to identify gaps and set priorities for representation of habitats and ecosystems within protected areas.

The classification approach adopted defines habitats and ecosystems at a scale suitable for implementing the MPA Policy. This does not constrain the collection of further information, or the expansion of the classification systems by incorporating as much information as is available to support site selection.

Note that it is important to distinguish between the collection and classification of

information and the implementation of the MPA Policy. It is not desirable, nor the intent of the MPA Policy, to acquire information at very fine scale, to use that information to classify habitats and require additional protection at increasingly finer scales. However, there is some value in collecting new information, or analysing existing data, to expand our knowledge of the marine environment.

Habitats in the coastal and deepwater classification systems will be separated into those that are "required" to be protected within protected areas, and those that would be "desirable" to protect.

For the purposes of the implementing the MPA Policy in the coastal marine environment, the definition of "habitat" is confined to those that are "required" to be represented in the network as identified in the Classification paper. The requirements for deepwater protection will be identified in the preparatory work leading up to implementation in 2013.

When recommending the protection of required habitats, or choosing among potential sites, MPPFs and the expert offshore panel may consider that additional desirable habitats could also be protected within a protected area to increase the biodiversity value of the network.

3.5 DESIGN GUIDELINES USED TO IDENTIFY AND SELECT POTENTIAL PROTECTED AREAS

Guidelines have been developed to help plan a representative network of protected areas. While the diversity of marine species, habitats and human uses thereof prevent a single optimum network design for all environments, the guidelines aim to provide a consistent starting point for discussions. Not all guidelines will necessarily be achieved in every protected area.

The guidelines fall into three categories and are further explained below:

- Site identification and protected area design guidelines: These provide guidance for identifying a potential protected area; and
- Site selection guidelines: These provide guidance for selecting candidate protected areas from among potential sites which will then be recommended to Ministers for protection
- Tool selection guidelines: The description of one of the three classes of protected area, class (b), requires that a case by case analysis be conducted. Guidelines on relevant considerations are given.

Site Identification and Protected Area Design Guidelines

The site identification and protected area design guidelines provide the basis for identifying potential sites as candidates for protected area status. Sites identified using these criteria will be considered in the context of selection guidelines (outlined below) to determine which should be developed as proposals that can be progressed through relevant statutory processes.

- **Protect whole habitats and ecosystems** – It is desirable that sites be selected on the basis that whole habitats or ecosystems can be protected, particularly where a habitat or ecosystem represents a relatively small mapped unit. For example it would be desirable to incorporate a whole reef in a protected area rather than establishing a boundary that cuts across the reef.
- **Size of protected areas** – Protected areas may be of various shapes and sizes

but should be of sufficient size to provide for the maintenance of populations of plants and animals. For the same amount of area to be protected it is desirable to protect fewer, larger areas rather than numerous smaller areas. This helps maintain healthy self-sustaining populations resilient to 'edge effects' resulting from use of the surrounding/adjacent areas. This also allows for more efficient and cost effective compliance and law enforcement.

- **Maximise connectivity** – the design of the protected area network should seek to maximise and enhance the linkages among individual protected areas, groups of protected areas within a given biogeographic region, and across biogeographic regions.
- **Represent latitudinal and longitudinal variation** – Many processes create latitudinal and longitudinal (cross-shelf) differences in habitats and ecosystems. This diversity is reflected partly in the distribution of the biogeographic regions, but care should be taken to identify potential protected areas sites that include differences in habitats and ecosystems that cover both latitudinal and longitudinal or cross-shelf ranges. It may be convenient to extend protected areas from the intertidal zone to deep waters offshore.
- **Consider sea and adjacent land uses in planning protected areas**– Placement of protected areas should take into account the adjacent terrestrial environment (including islands) and associated human activities. Past and present uses may have influenced the integrity of the biological communities, and designers should consider these effects, where known, when proposing the location of protected areas. For example, existing no-take protected areas and areas adjacent to terrestrial national parks are likely to have greater biological integrity than areas that have been used heavily for resource exploitation.
- **Keep boundaries simple and aim for low boundary to area ratio** – To achieve this, protected area design should aim for simple shapes and reduced fragmentation of areas. This can be achieved by using straight boundary lines and minimising the perimeter-to-area ratio. Protected areas should also be designed so they can be realistically enforced. Users and surveillance staff find straight lines much easier to find and follow than lines following depth contours or distance from land or reefs. Squares are easier for users and compliance staff to find and work with than odd shapes. Boundaries should follow major latitude and longitude lines where possible. This makes it easier for users to match with charts. For coastal zones, clear sight lines on-shore or using other fixed objects are good alternatives to areas defined by coordinates.

Site Selection Guidelines

Site selection guidelines provide guidance for selecting which candidate protected area sites should be recommended for protection. They will be considered in the context of the marine classification approaches and other information. There are two categories outlined below: those that take primacy due to them being requirements of the MPA Policy, and those that are desirable to increase the value or practicality of the protected area network.

Primary considerations

- **Protect the full range of marine habitats and ecosystems** – The MPA Policy calls for the protection of "the full range of marine habitats and ecosystems" as well as those which are rare, distinctive or internationally or nationally important. Within each biogeographic region, the approach to the classification of habitats and ecosystems should be used as a pragmatic guide to the representation

needed to achieve this goal.

- **Cultural use** – Consider information on traditional use, values, current economic value and Treaty settlement obligations.

- **Adverse impacts on users** – Where there are choices of several sites that would add a similar ecosystem or habitat to the protected area network if protected, the site(s) chosen should minimise adverse impacts on existing users and Treaty settlement obligations. Where there is a choice to be made among minimum impact sites, selection may also be guided by:
    - Accessibility for management and enforcement requirements; and
    - Benefits such as educational, diving and tourism opportunities.

- **Social and economic interests** – When choosing among potential sites, information related to social and economic interests should be considered to minimise adverse impacts on existing users. Such information may include: current and potential use for the purposes of extraction or exploration, or contribution to economic or intrinsic value by virtue of its protection.

Secondary considerations

- **Number of protected areas** – The number of potential habitat and ecosystem types, defined by the classification and mapped within a biogeographic region, does not equate to the number of protected areas required to protect the full range of natural marine habitats and ecosystems. Multiple habitats should be protected within each protected area.

- **Have fewer larger (versus numerous smaller) protected areas** – It is beneficial to have fewer larger protected areas representative of more than one habitat or ecosystem than a large number of small protected areas.

- **Susceptibility to degradation** – Incorporate information on the location of, for example, coastal structures, dredging or dumping sites that potentially may impact on the integrity of the site.

- **Compatibility with adjacent land-use** – It is desirable to design protected area boundaries to align with other protected areas. This includes national parks on land and other protected waters, such as fish habitat. This allows opportunities for collaborative compliance efforts between agencies.

- **Replication** – Consideration should be given to whether the site provides replication of habitats and ecosystems in a biogeographic region.

Tool selection guidelines

MPPFs will not just recommend potential sites for protected areas but also will consider which of the three classes of protected area to recommend. If MPPFs look to implement MPAs, a case by case analysis is required in order to meet the standard for that class of protection. If MPPFs are considering implementing the second class of marine protection (other MPAs), the following factors will be used to help determine whether certain fishing methods can be used whilst still meeting the MPA protection standard. Additional guidance will also be available to MPPFs by way of precedent decisions about other MPA sites.

- **The size of the MPA** – Larger MPAs will be more likely to compensate for any higher level of biological extraction when compared to smaller MPAs. As such, higher quantities of biological extraction would be acceptable in larger MPAs compared to those of smaller size.

- **The likely level of biological extraction from an MPA (from all sources)** – If the biological extraction from a potential MPA is having an adverse effect on the aquatic environment or creating a sustainability concern, then that level of extraction is not consistent with the protection objective of the MPA Policy. Method prohibitions would be put in place to increase the biomass to levels acceptable under the Fisheries Act.

- **The frequency of extraction** – A method such as recreational line fishing may not extract large quantities of species on any one occasion. However, where such a method is used frequently and/or by a large number of people, this may lead to a similar result as would large scale methods such as trawling.

- **The type of species being extracted and its ecological importance** – Because more mobile species cannot be constrained within the boundaries of MPAs, MPAs are better at protecting species that are sedentary or have limited mobility. For this reason, case by case analyses will consider those mobile species that have some seasonal affinity with the area but will focus on sedentary species or those with limited mobility.

APPENDIX ONE:

COASTAL AND DEEPWATER HABITAT AND ECOSYSTEM CLASSIFICATION: MAPPING THE MARINE ENVIRONMENT FOR IMPLEMENTATION OF THE MARINE PROTECTED AREAS POLICY

COASTAL AND DEEPWATER HABITAT AND ECOSYSTEM CLASSIFICATION: MAPPING THE MARINE ENVIRONMENT FOR IMPLEMENTATION OF THE MARINE PROTECTED AREAS POLICY

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COASTAL AND MARINE HABITAT AND ECOSYSTEM CLASSIFICATION

1. INTRODUCTION

Purpose of this Report

This report presents one of the tools that will be used to put the Marine Protected Areas Policy and Implementation Plan (MPA Policy) into practice.

It explains the classification approach that will be applied to the coastal marine environments and deepwater marine environments in New Zealand's wider exclusive economic zone (EEZ).

In brief, this classification report:

- Describes an approach to the classification of New Zealand's coastal and marine benthic and pelagic habitats and ecosystems for both the coastal and deepwater marine environments
- Describes the scale at which coastal and deepwater marine habitats and ecosystems will be classified and mapped for the purpose of protected area planning
- Provides guidance on the extent to which other biological and physical information may be used to assist classification and protected area planning

This report uses universally recognised and accepted terms for its classification descriptors. They are explained in the Glossary at the end of the report.

The protected area classification will be used in conjunction with the protection standard which sets a minimum level of protection for all protected areas.

Policy Context

The MPA Policy released in January 2006 is designed to give effect to the New Zealand Biodiversity Strategy (NZBS) which reflects the commitment by the Government, through its ratification of the international Convention on Biological Diversity, to help stem the loss of biodiversity worldwide.

The MPA Policy objective is to:

> *'Protect marine biodiversity by establishing a network of MPAs that is comprehensive and representative of New Zealand's marine habitats and ecosystems.'*

Area-based management through the use of protected areas is a central component of a wide ranging and integrated management approach designed to protect marine biodiversity and regulate use of New Zealand's Territorial Sea and EEZ. Management tools include marine protection under the Marine Reserves Act 1971, effects-based management of the coastal and marine area under the Resource Management Act 1991, managing effects of fishing under the Fisheries Act 1996, protection of marine mammals and threatened species under conservation legislation such as the Wildlife Act 1953, and management of marine incursions under the Biosecurity Act 1993.

One of the Policy's principles says that a consistent approach to classifying habitats and ecosystems is required to ensure that protected areas in the network are representative (Network Design Principle 2). It also says the approach may be reviewed if new

information on the marine environment or classification systems comes to light, and that a transparent process will be used to do so.

The Policy's implementation plan describes four stages that will use the classification approaches to achieve the Policy's objectives, namely to help:

- Develop an inventory of the habitats and ecosystems that are currently represented in protected areas
- Identify any gaps in the current representation of habitats and ecosystems in protected areas
- Prioritise which habitats and ecosystems are needed to fill any gaps to ensure the protected area network is representative, and
- Identify and select appropriate new protected area sites

Why Consistent Classification is needed to establish a protected area network

New Zealand's diverse marine environment covers an area of approximately 4.1 million square kilometers. Its characteristic features include long sand beaches and exposed cliffs, bays and estuaries of varying sizes, and deep sea habitats and ecosystems. Beneath the waves is a diverse range of marine biota, such as kelp forests, sponge gardens, shellfish beds and deep water coral communities all structured by complex interactions between biological and physical processes.

Knowledge of New Zealand's marine environment is expanding rapidly – new species continue to be discovered and natural features are becoming more precisely defined. Ideally, any classification should be based on detailed knowledge of the distribution and relative importance of marine biota. However, because biological information is missing, incomplete, or not at sufficient resolution for many areas, and a full inventory of habitats and ecosystems does not exist, an alternative approach is required to help identify where to place representative protected areas. The coastal and deepwater classification approaches in this report provide this alternative.

Key Points of the Classification Approach

While numerous approaches can be used to classify marine habitats and ecosystems, the approach presented in this report may best allow the objectives of the MPA Policy to be realised. The list below provides an overview of its fundamental features:

- Protected area decision-making will be guided by best available information relating to the ecological, environmental, social, cultural and economic aspects of the marine environment. 'Best available information' is that which is available without unreasonable cost, time or effort (Planning Principle 7 in the MPA Policy)
- The marine and coastal classification system provides standard terminology for maps used to identify, plan and manage protected areas
- The marine and coastal classification system describes separate methods of classification for the coastal and deepwater marine environment
- The classification of the coastal marine environment is based firstly on broad biogeographic regions that represent large-scale variation in physical and biological characteristics. Within each biogeographic region, variation in three key physical drivers will be used to describe habitats for the purposes of the MPA Policy – these are depth, substrate and exposure/energy
- Any additional biological and physical information will be incorporated into the

classification to more comprehensively describe the marine environment and inform decision-making

- In deepwater marine environments, the scale and nature of the information available necessitates a different approach to classification. Recent government decisions to close large areas of New Zealand's EEZ to bottom trawling and dredging have shifted the emphasis on protected area implementation to focus on the New Zealand Territorial Sea (12 nautical miles) until 2013. Until then, preparatory work to incorporate new research and classify the deepwater marine environment will continue
- For guidance on the scale and level of detail that may be applied to deepwater marine classification, a discussion is included of how the current Marine Environment Classification (MEC) could be used
- Because of the uncertainty and variability of available information, it is expected that the classification approach will be updated as new information and approaches become available. The public and stakeholders will be kept informed of such improvements

Factors Influencing Implementation

A number of factors will influence how the classification approaches in this report can be used to establish a protected area network. They include:

- The quantity and quality of available information will vary greatly among biogeographic regions. It is desirable to use all the available information to establish as comprehensive marine classification as is practicable
- This variability in available information will not influence the extent to which protected areas are implemented. Rather, good quality information will provide an opportunity to represent areas of greater diversity within each protected area
- The classification described in this report will be implemented only to a defined level of detail. This level of detail will define habitats for the purpose of the MPA Policy and these habitats and ecosystems will require protection within protected areas. Additional levels of detail in the classification do not have to be represented in protected areas. However, where information is available, and agreement is reached by the planning forum, further areas may be recommended for protection
- Not all habitat and ecosystem types that can be defined by the classification will necessarily be present or mapped in each biogeographic region

2. AN OVERVIEW OF DIFFERENT MARINE CLASSIFICATION APPROACHES

Classifications divide large spatial units into smaller units that have similar biological and/or environmental character. In this way, they provide spatial frameworks for systematic mapping and management.[1]

While many countries have developed marine classifications schemes to underpin protected area network identification,[2] there is still no generally accepted standardised marine classification scheme at any particular spatial scale.[3] However, it has been recognised that a hierarchical approach to marine and estuarine classification (such as the biogeographic framework discussed below), is suited to large-scale conservation planning programmes such as protected area network identification.[4]

A number of marine classification systems and biogeographic regionalisations have been developed for use in New Zealand. These include classifications based on distribution patterns of particular taxonomic groups, combinations of specified criteria and expert opinion, and quantitative analysis and modeling of different variables, such as the Marine Environment Classification (MEC).[5] Efforts have also been made to provide classification systems for New Zealand's estuaries.[6]

Ideally, any marine classification should be based on the ecology and distribution of marine flora and fauna. An important factor in New Zealand is the uneven spread and nature of such biological knowledge[7] and this frustrates attempts to apply a consistent classification system based on the biodiversity of habitats and ecosystems at a national level.

As an alternative to a biologically-driven classification, the approach to marine classification proposed here uses a mixture of biogeographical information and bio-physical properties to represent the distinctiveness between marine habitats and ecosystems. Bio-physical proxies are accepted as a reasonable surrogate for biological pattern, particularly at larger spatial scales, and can be used to provide a consistent description of the physical habitat types. Although such classifications do not yet reliably predict the biological communities associated with the physical properties of a site, they can provide a useful and cost effective method for identifying marine biodiversity over large geographic areas.[8]

Although surrogates are generally assumed to be sufficient to tell us that different areas are likely to differ in their benthic and demersal (bottom-dwelling) fauna they do not reveal in detail what those fauna are, or the pelagic communities that may be associated with particular zones or their ecology (length of life, critical habitat, adult home ranges, larval dispersal distances, trophic relationships between species, etc.) There is considerable room for research to more clearly define habitats and ecosystems and to test assumptions of surrogacy (both biological and physical surrogates) to describe the associated biological community, and further work is being undertaken.[9]

3.0 PROTECTED AREA CLASSIFICATION APPROACHES

The classification system described below has been derived from national and international literature and science advice and is structured so that it can be used in a consistent way to inform the process of establishing a protected area network in New Zealand's marine environment.

Coastal and Deepwater Classification

The MPA Policy states that the process to establish New Zealand's protected area network will differ in coastal and deepwater environments. This decision was made for three main reasons: (i) because of the different composition of stakeholders for coastal and deepwater areas; (ii) the nature of the information available to guide the implementation process; and (iii) the regulatory tools available for establishing protected areas.

Because of the difference in scale and availability of information between coastal and deepwater environments, two technical workshops held in March and December 2005 confirmed the decision to develop a separate coastal and deepwater approach to marine classification for marine protected area planning.

The coastal marine classification approach is described in section 4.0 of this report, and the deepwater marine classification approach is discussed in section 5.0. For the purposes of the classification the coastal marine boundary has been defined as the 200 metre depth contour (approximately the continental shelf break). The landward boundary for the coastal marine environment is the Mean High Water Spring line as defined by Regional Coastal Plans. The deep water marine environment extends seaward from the 200m depth contour to the extent of New Zealand's marine jurisdiction. This includes the limits of the Exclusive Economic Zone (EEZ) which is the area of sea and seabed that extends from 12 to 200 nautical miles offshore. Figure 1 provides a schematic illustration of the Coastal Marine and Deepwater Marine Classification.

Hierarchical Structure

The classification has been developed based on a broad hierarchical structure; this enables protected areas to be considered in a biogeographic and ecological context at regional and site scales. The classification follows a progressive scale from large spatial units in the upper levels of the hierarchy (for example, biogeographic regions and MEC Classes), to smaller units in the lower levels (for example, habitats and ecosystems).

The classification is three-dimensional, taking into account surface, water column and benthic features. The classification extends from tidal limits in the coastal zone to the deep oceans, and is applicable to all tidal and/or saline wetland, estuarine, coastal marine and oceanic systems.

Due to limitations in current knowledge, it will be rare that all habitat and ecosystem types in most areas can be immediately characterised. Mapping will be based on available information. As additional data are gathered in an area, gaps in the hierarchy will be filled and the classification will continue to grow, thus strengthening the understanding of the distribution of New Zealand's marine habitats and biodiversity.

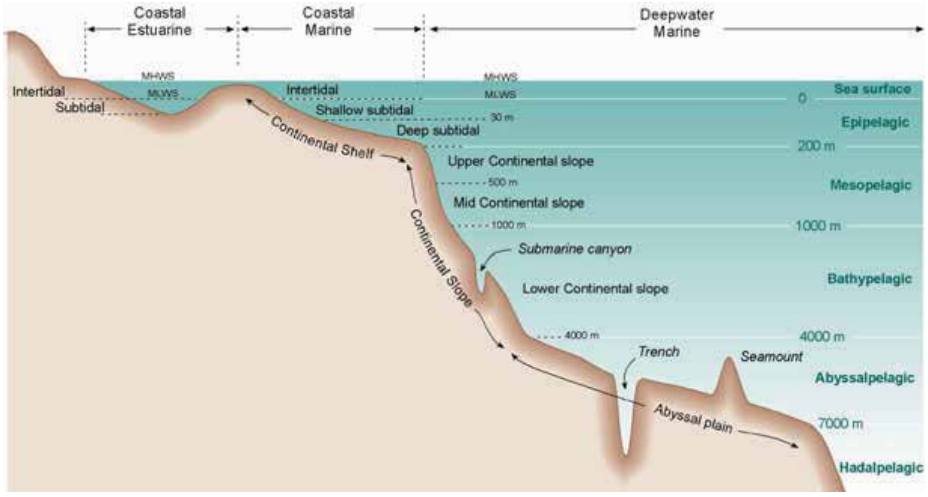

Figure 1. Schematic diagram illustrating the depth zones of the Coastal and Deepwater Classification.

4.0 COASTAL CLASSIFICATION

The coastal marine classification identifies and categorises the physical environment at different spatial scales in estuarine, coastal and marine systems.

Implementation of the classification in the coastal area will be guided by the following spatial scales:

- Biogeographic regions defined at the meso-scale (100s to 1000s of kilometres); and
- Habitats and ecosystems defined at the micro-scale (100s to 1000s of metres)

The first level – biogeographic regions – is overarching and inclusive of all coastal and marine ecological systems distinguished on the basis of biogeography. At the finer scales, the habitats and ecosystems have been defined based on physical or enduring features of the environment.

Coastal Biogeographic Regions

New Zealand has been divided into 14 coastal biogeographic regions (Figure 2). This approach is based on the premise that similar physical habitats and ecosystems, if separated by enough space (100s to 1000s of kms), will contain different biological communities due to a combination of broad-scale factors. Such factors may include oceanography, current dynamics, large-scale latitudinal gradients, climate or barriers to dispersal. Because the biogeographic regions have been determined with imperfect data and information, there is a degree of uncertainty with regard to the location of their boundaries; they are considered to reflect major coastal biological patterns. Table 1 provides a description of the 14 biogeographic regions.

Table 1: Description of New Zealand's coastal biogeographic regions

	Biogeographic region	Boundary	Description
1	Kermadec Islands Coastal Biogeographic region	Kermadec Islands	This region is a unique marine environment. It comprises the submerged volcanic pinnacles of the Kermadec volcanic arc and lies between the South Fiji Basin (west) and the Kermadec Trench (east). Mainly influenced by the subtropical Tasman Front. Reef communities characterised by mix of endemic, tropical, subtropical and temperate elements. Areas of special interest include: sea caves.
2	Three Kings Islands Coastal Biogeographic region	Three Kings Islands	This region has a high level of endemism in sessile species. Three Kings Islands geology comprises hard sedimentary and volcanic rocks. Influenced by subtropical Tasman Front and localised up-welling of cooler subsurface waters during summer and autumn. Strong diurnal tidal flow around the islands. High degree of endemism (molluscs, algae, fish, and echinoderms), presence of some Australian and Southwest Pacific taxa not recorded elsewhere in New Zealand, noticeable absences of some genera common to mainland. Some taxa common to Three Kings and North Cape - molluscan records show locally restricted endemics. High diversity of sponges, bryozoans and other invertebrates offshore between Cape Reinga and North Cape. Areas of special interest include: sea caves, lava tubes.
3	Northeastern Coastal Biogeographic region	Ahipara around the tip of North Island and down to East Cape	This region is a warm temperate region influenced by the warm subtropical East Auckland Current, particularly around island groups of Cavalli, Poor Knights, Mokohinau, Rakitu (east coast Great Barrier Island), Alderman, Mayor, Volkner and White, and also some headlands, including Cape Karikari, Cape Brett and Cape Runaway. Region characterised by endemic algae, molluscs, echinoids, antipatharians; assemblages of sponges, ascidians, molluscs, fish, echinoids. Southern boundary is the confluence of the warm East Cape current that moves south and the cool Wairarapa Current that flows north. Areas of special interest include: high tidal flows areas of North Cape. Areas of special interest include: hydrothermal vents.
4	Eastern North Island Coastal Biogeographic region	East Cape to Cape Turnagain	This region is influenced by mixed water masses of subtropical and subantarctic origins - warm East Cape Current and northward flowing cooler Wairarapa Coastal Current. Local effects of silt-laden river inflows into coastal areas. Northeastern and Cook Strait marine biogeographic regions faunal elements exist, for example, decreasing northern reef fish species diversity. Algal and molluscan assemblages change at Cape Turnagain, and the Wairarapa Eddy moves offshore at this point. It is also the north eastern limit of "southern" seaweeds such as *Durvillaea willana*.
5	Western North Island Coastal Biogeographic region	Ahipara to Cape Egmont	This region is influenced by the northward flowing Westland Current and the southward flowing West Auckland Current, both of subtropical origin. Coastline is characterised by open, exposed sandy beaches interspersed by stretches of rocky platforms, bluffs and outcrops. Includes Hokianga, Whangape and Herekino, Kaipara, Manukau, Raglan, Aotea and Kawhia Harbours. Gravel sands and ironsands occur offshore. The fauna has affinities with both warm-temperate and cool-temperate/sub-antarctic faunas. Areas of special interest include: offshore islands – for example, Sugar Loaf Islands and Gannet Island.
6	North Cook Strait Coastal Biogeographic region	Cape Egmont on the west coast to Cape Turnagain on the east coast of North Island	This region lies in a transition area between northern and southern flora and faunas and has a high diversity of species. The tidal regimes each side of the strait are different and the water temperature is also very different. The northern side is greatly influenced by the easterly-flowing warm, saline D'Urville Current and the cooler Southland Current that travels northward through Cook Strait. This results in the presence of some sub tropical species on the west coast, compared to the east coast. Strong currents can exceed 10 knots along the eastern side of this section of the North Island. Palliser Bay is in the mixing zone of the warm D'Urville and East Cape currents and the cooler Southland Current. The Durville Current also flows up the west coast and is deflected offshore by the Mt Taranaki ringplain, resulting in very different biota further north of Cape Egmont. Includes Wellington Harbour, Plimmerton, Pauatahanui and Porirua inlets. Areas of special interest include: high tidal flows areas of Cook Strait, cold and freshwater seeps especially off the Wairarapa coast.
7	South Cook Strait Coastal Biogeographic region	Kahurangi Point on the west coast Strait and the Marlborough Sounds to Cape Campbell on the east coast of South Island	This region lies in a transition area between northern and southern flora and faunas although the tidal regimes each side of the strait are different and the water temperature is also very different. Cold water upwelling occurs off Farewell Spit in the region from Kahurangi Point. The current influences around Kahurangi Point result in a change in species assemblages. Includes Golden and Tasman bays, Clifford Bay and the Marlbourgh Sounds, D'Urville Island. Areas of special interest include: high tidal flows areas of Cook Strait and Sounds, Kahurangi Shoals.

	Biogeographic region	Boundary	Description
8	East Coast South Island Coastal Biogeographic region	Cape Campbell to Timaru	This biogeographic region is influenced by the northward extension of the cold Southland Current. There is a change in molluscan assemblages at Cape Campbell from those of Cook Strait. The gyre in the Canterbury Bight is noted as having an influence on species distribution in this region. Includes Banks Peninsula and Kaikoura Peninsula. Areas of special interest include: Banks Peninsula and Kaikoura Peninsula.
9	West Coast South Island Coastal Biogeographic region	Awarua Point north to Kahurangi Point	This region is influenced by the Westland Current fed mostly by warmer water derived from the Tasman Current. The origins of the Southland Current begins in the vicinity of Westland/northern Fiordland, forming from southern subtropical water of the Tasman Sea the waters diverge from the north-flowing Westland Current and flow south. Current patterns on the West Coast are complex due to coastally trapped waves influencing current flow within 50–100 kilometres of the coast, however, over most of the region, the mean flow moves weakly northward towards Cook Strait and Taranaki. The inflow of freshwater from several large rivers and resulting high sediment loading and detritus are key physical factors influencing the marine environment and biota.
10	Fiordland	Awarua Point south to Sand Hill Point, includes Fiords	This biogeographic region is influenced by the Southland Current from the Tasman Sea which flows around the south of the South Island and through Foveaux Strait and around Stewart Island northwards. This region. Being exposed to strong westerly winds from the Southern Ocean and the Tasman Sea year round, this coast is a high energy wave environment receiving some of the most significant coastal wave heights for mainland New Zealand. The continental shelf along much of the coast in this unit is very narrow and most of the fiord entrances drop away steeply into the Tasman Sea to several thousand metres depth. The edge of the shelf is less than 2 km from the coast over much of the region, widening to the south. Geologically, the area is predominantly gneiss, schist and marble with some diorite south of Nancy Sound. There is a noticeable change in composition and an increase in the diversity of marine flora from the West Coast southwards. Areas of special interest include the Fiords.
11	Southern Coastal Biogeographic region	Sand Hill Point around to Timaru on the east coast, includes Stewart Island/ Rakiura.	This region is influenced by cooler subantarctic water which combines with the Southland Current and flows in an anti-clockwise direction around the bottom of South Island and Stewart islands, and along the Canterbury–Otago coast to Banks Peninsula, before flowing eastward along the Chatham Rise. Freshwater input from large snow-fed rivers influences biota along the east coast of this biogeographic region. Centres of marine algae diversity occur around Stewart Island and along the Otago coast. Distinctive southern South Island molluscan fauna. Also subantarctic elements in the flora and sponge and ascidian assemblages of the southern part of South Island and Stewart Island. Areas of special interest include: high tidal flows areas of Foveaux Strait, brozoan beds off Otago,
12	Chatham Islands Coastal Biogeographic region	Chatham Islands/Rekohu	This region is a unique marine environment. Influenced by Subtropical Front. Marine algae assemblages comprise northern and southern elements of mainland species, including endemic species. Noticeable absence of some species common to the mainland (for example, *Ecklonia radiata*). Fish fauna has affinities with widespread species and central region, low species diversity compared with mainland New Zealand; mobile invertebrates have affinities with central and southern regions; encrusting invertebrates (such as, sponges and ascidians) show high levels of endemism. Areas of special interest include: sea caves, overhangs.
13	Snares Coastal Biogeographic region	Snares/Tini Heke	This region contains a unique mix of remnant mainland species. Influenced and surrounded by the Subtropical Front. Molluscan and fish fauna and flora have affinities with Southern Region. The region is also the southern distributional limit for some species of algae. Areas of special interest include: sea caves.
14	Subantarctic Islands Coastal Biogeographic region	Subantarctic Islands (Auckland/Motu Maha, Bounty, Antipodes and Campbell/Motu Ihupuku Islands)	This region is a unique marine environment and each island has distinctive assemblages of flora and fauna. Islands lie atop Campbell Plateau and Bounty Plateau. Influenced by Subtropical Front and colder Subantarctic Front. Fish, ascidians, sponges and flora have affinities with southern New Zealand; diverse range of endemic bryozoan species, limited molluscan fauna, low diversity of fish species. Areas of special interest include: sea caves, overhangs, inlets and harbours, rock stacks.

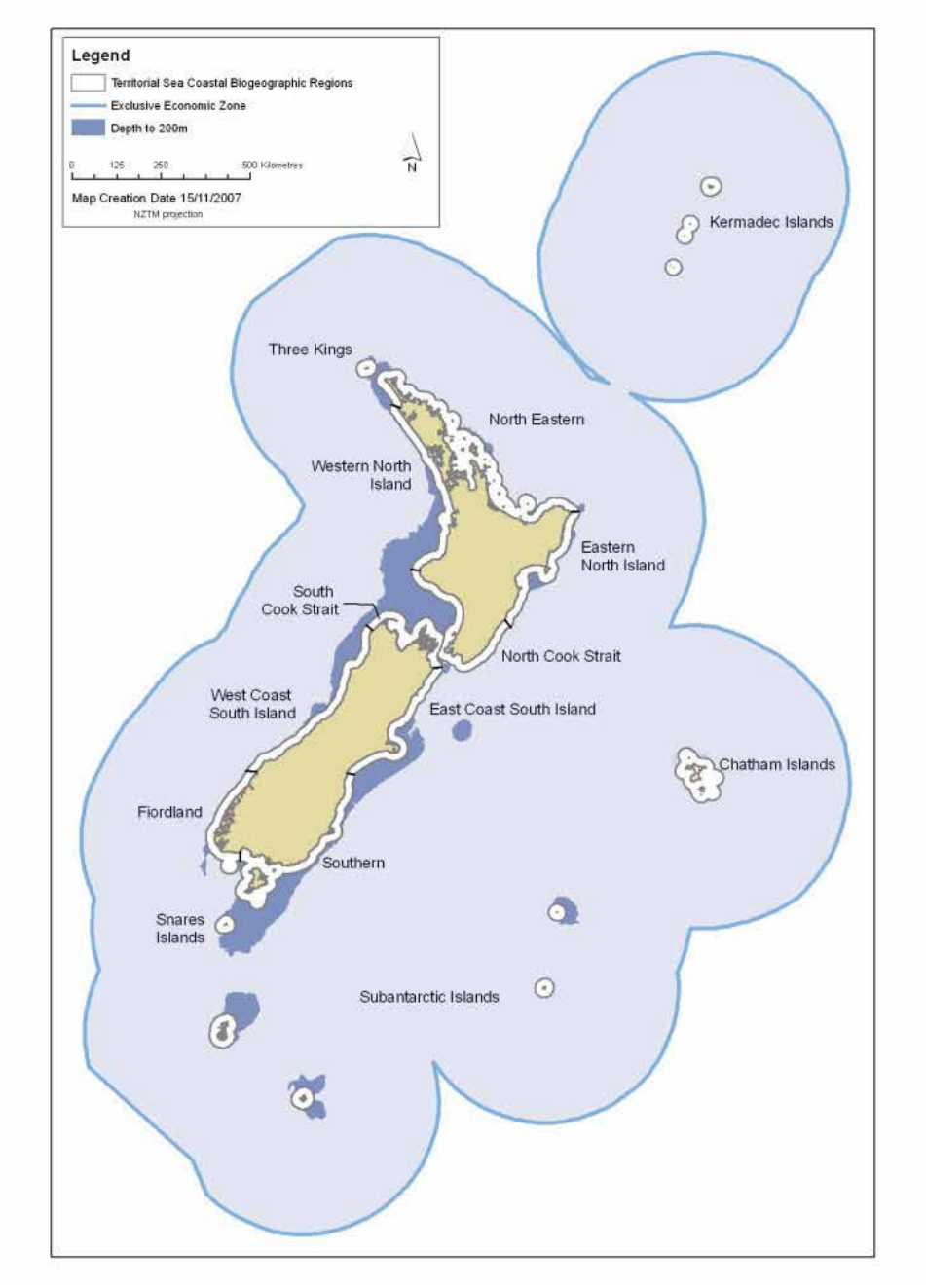

Figure 2: New Zealand's coastal biogeographic regions.

Defining coastal habitats and ecosystems

Nested within the 14 biogeographic regions, the hierarchical classification scheme is divided into two major environment types:

- **Estuarine environments** are large coastal water regions that have geographic continuity, are bounded landward by a stretch of coastline with fresh-water input, and are bounded seaward by a salinity front
- **Marine environments** include the saline waters of the open sea, the seabed and water column of open sea coasts

The main environmental factors which influence community structure (international and national literature) are considered to be depth, substrate, and exposure (wave action, tidal action and currents). These three key physical variables that influence coastal biodiversity will be used to identify habitat and ecosystems within each coastal biogeographic region.

Depth: There are three depth categories (intertidal, shallow subtidal to 30 metres, and deeper subtidal – between the 30 and 200 metre depth contours). This broadly reflects the role of light and physical disturbance in the coastal marine environment.

Substrate: There are eight substrate categories (mud, sand, gravel, cobble, boulders, bedrock, biogenic structures and artificial). These have been defined based on their role in structuring ecological communities. The 'artificial' category has been included to aid mapping for the purpose of protected area planning. Substrates are more fully explained in the Glossary.

Exposure: There are three exposure categories (low, medium and high). These have been defined based on their role in structuring intertidal and shallow subtidal communities. Exposure is more fully explained in the Glossary.

Table 2 shows how the environment types and the primary environmental drivers (depth, substrate and exposure) fit together in a hierarchy to classify coastal habitats.

Using additional physical and biological information

In all biogeographic regions, additional data will be available along with the depth and substrate categories. These data will result in a more comprehensive description of the marine environment and a more detailed classification. However, while the additional information results in a more detailed and comprehensive description of the coastal marine environment, it is not required to be represented in protected areas.

Additional biological and physical data* will allow more informed decisions to be made about the biodiversity value of specific sites. This can then be weighed against other considerations, such as minimising impact on existing users, when making recommendations for potential protected areas.

* Examples include seagrass and horse mussel beds, kelp forests, nursery areas, threatened species distributions, breeding sites, salinity gradients, wave exposure or current flow.

Table 2: Coastal classification and mapping scheme (Mean High Water Spring – 200 metre depth).

Level 1	Biogeographic region (14)									
Level 2	Environment type	Estuarine		Marine						
Level 3	Depth	Intertidal	Subtidal	Intertidal (MHWS – MLWS)			Shallow Subtidal (MLWS – 30m)			Deep Subtidal (30m – 200m)
Level 4	Exposure	low	low	low	med	high	low	med	high	low
Level 5	Habitat type	Mud flat	Mud flat	Mud flat	Sandy beach	Sandy beach	Shallow mud	Shallow sand	Shallow sand	Deep mud
		Sand beach	Sand flat		Gravel beach	Gravel beach		Shallow gravel field	Shallow gravel field	Deep sand
		Gravel beach	Gravel field		Cobble beach	Cobble beach		Shallow cobble field	Shallow cobble field	Deep gravel field
		Cobble beach	Cobble field		Boulder beach	Boulder beach		Shallow boulder reef	Shallow boulder reef	Deep cobble field
		Boulder beach	Boulder reef		Rocky platform	Rocky platform		Shallow Rocky reef	Shallow Rocky reef	Deep boulder field
		Rocky platform	Rocky reef					Shallow Biogenic reef	Shallow Biogenic reef	Deep rocky reef
			Biogenic reef							Deep Biogenic reef

Notes:

- Terms above are defined in the Glossary
- Biogenic reefs include habitats such as bryozoan beds, rodolith beds, tube worm mounds and sponge gardens
- Artificial substrate such as marine farms and marinas has not been included in the classification as it is not considered important for representation in the network of protected areas, however, it should be considered for the purposes of mapping all features present in a biogeographic region
- This list presents the proxies for habitat types. Each listed category may not occur in every bioregion. Marine habitats do not typically function independently and these habitat types frequently occur in combination
- A proportion of all habitats identified in Table 2 that occur in a given Biogeographic Region are required to be protected in at least one marine reserve and at least one other form of marine protection

5.0 DEEP WATER MARINE CLASSIFICATION

Implementation of the classification in deep water will be guided by the following spatial scales:

- Broad scale variation at the meso-scale (100s to 1000s of kilometres); and
- Habitats and ecosystems at the local-scale (10s to 100s of kilometres)

Significant recent work on classifying New Zealand's marine environment includes, most notably, the Marine Environment Classification 2005 (MEC) which was developed for the Government by the National Institute of Water and Atmospheric Research (NIWA). The Ministry of Fisheries has commissioned a revision of the MEC to further contribute to understanding of New Zealand's deepwater marine habitats and ecosystems.

The Government recently accepted a proposal from representatives of the fishing industry to establish Benthic Protection Areas (BPAs); primarily in the EEZ. As part of that proposal, the Government has agreed that implementing the MPA Policy in the EEZ will not commence until 2013.

In the interim, further preparatory work on marine classification in the deep water will continue. This work will further refine the current MEC and lead to a more comprehensive classification of deepwater marine habitats and ecosystems.

When implementing the MPA Policy in the deepwater, it will be necessary to consider what constitutes best available information. Significant input will be sought from the panel of offshore experts which will make recommendations for deepwater protected areas.

To give an indication of the level of detail considered necessary to represent habitats and ecosystems in the deepwater marine environment, the following section discusses how the current MEC (2005) could be used to plan a deepwater protected area network.

The Marine Environment Classification 2005

The MEC aims to provide a spatial framework to facilitate the conservation and management of indigenous marine biodiversity by subdividing the marine environment into units with similar environmental characteristics.10

The MEC uses predominantly physical variables (for example, depth, sea surface temperature, seabed slope and annual solar radiation) to create proxies for marine environments and groups them into broadly similar areas, called "environment classes". Each class is labelled by a number, which has no specific meaning but is associated with delineating the distinctiveness of one class from another. While the MEC currently does not predict the biota that is present in a specific area, the pattern of physical variables provides an indication of possible broad-scale environment types that are likely to influence the biota associated with a particular environmental class. An important assumption is that areas within the same environment class will be expected to have more in common with each other than with areas falling into other classes.

It is generally accepted that the MEC is a primary tool for classification in the deepwater marine environment, although it is also acknowledged that the MEC is not ideal for defining protected areas, rather, it identifies general areas that may warrant further investigation.

The 20 class level of the MEC is considered to provide a useful surrogate for ecological (biological and environmental) variation. However, given that MEC represents

environmental variation only at a broad scale, it is proposed that additional information be represented within each MEC class to capture further variation at the habitat and ecosystem level (see Figure 3). Table 3 provides a hierarchical classification scheme which aims to identify habitat and ecosystem variability in the pelagic and benthic environments within the MEC at the 20 class level.

Within each MEC class, it is desirable that protected areas represent the variation in substrate that is known to have a significant influence on the associated biota at a variety of different depths.

Table 3: Deepwater marine ecosystem and habitat classification and mapping scheme (> 200 metres depth).

Large Scale				**Small Scale**
Biogeographic range	**Environment**	**Depth**	**Substrate**	**Habitat and ecosystem examples**
MEC	Benthic or sea floor	Upper Continental slope (200-500 m)	Represent the biologically-significant variation in substrate type	High-relief hard-bottom or deep water reefs Hydrothermal seeps and vents Seamounts and guyots Banks Submarine canyons Trenches Marine Terraces Plains
		Mid Continental slope (500-1000 m)	Represent the biologically-significant variation in substrate type	
		Lower Continental slope (1000-4000 m)	Represent the biologically-significant variation in substrate type	
		Abyssal plain (>4,000 m)	Represent the biologically-significant variation in substrate type	
	Pelagic or water column	Sea surface (surface 0 m) Epipelagic (0 – 200 m) Mesopelagic (200-1000 m) Bathylpelagic (1000-4000 m) Abyssalpelagic (4000-7000 m) Hadalpelagic (>7000 m)	N/A	Eddies Mixed layers Upwellings Frontal boundaries Benthic boundary layers Stratified layers

Note: Not all depths identified above will exist within all MEC classes. The terms above are defined in the Glossary.

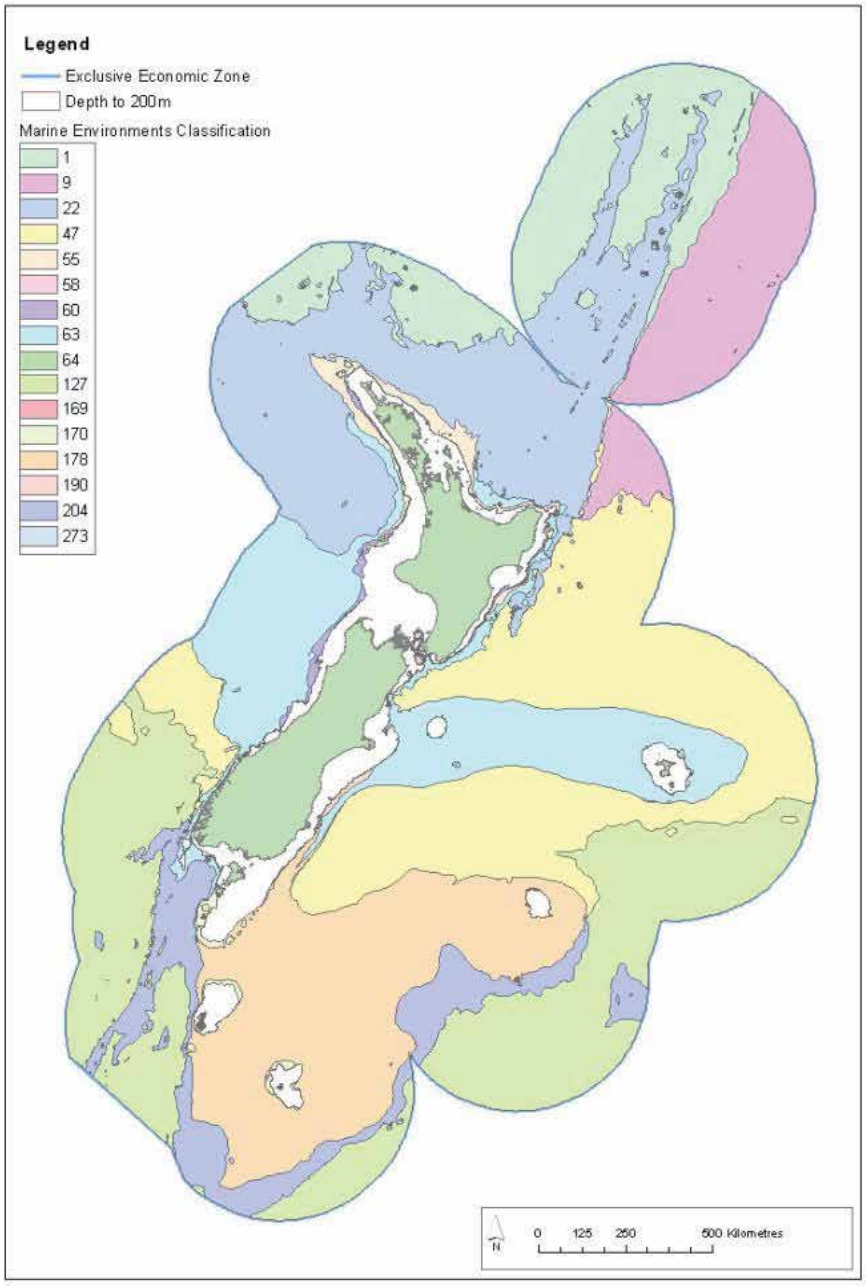

Figure 3. New Zealand's Deepwater regions. Each colour represents a different environment class and is represented by an arbitrary number.

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7. GLOSSARY

Abyssal plain: The deep ocean floor, an expanse of low relief at depths greater than 4000 metres.

Abyssopelagic zone: The ocean water column depth 4000 to 7000-metre-depth zone, seaward of the shelf-slope break. The Bathypelagic and Abyssopelagic sometimes termed the “midnight zones".

Artificial: Human-made structures that are placed in the marine environment for the purpose of human use (for example, marinas, wharfs, marine farms), habitat enhancement or recreation.

Bathypelagic zone: The 1000 to 4000-metre-depth zone seaward of the shelf-slope break. The number of species and populations decreases greatly as one proceeds into the bathypelagic zone where there is no light source other than bioluminescence. Temperature is uniformly low, and pressures are great. This overlies the abyssopelagic zone and is overlain by the mesopelagic zone.

Bedrock: Stable hard substratum, not separated into boulders or smaller sediment units. These rock exposures, typically consisting of sedimentary rock benches or platforms, may also include other rock exposures such as metamorphic or igneous outcrops. Possibly with various degrees of concealment from attached plant and animal colonisation.

Benthic: Dwelling on or associated with the seabed. Benthic organisms live on or in the seabed. Examples include burrowing clams, sea grasses, sea urchins and acorn barnacles. Deep-sea benthic fauna are zoned with depth and show marked changes in diversity and composition with topographic features, current regimes, sediments and oxygen-minimum zones (for example, Rex 1981; Grassle 1989; Etter &, Grassle 1992; Grassle & Maciolek 1992; Levin *et al* 2001; Rowden *et al.* 2002, Nodder *et al.* 2003, Stuart *et al.* 2003, Rowden *et al.* 2003, Rowden & Clark 2004, Rowden *et al.* 2004, Rowden *et al.* 2005). A great variety of chemosynthetic communities also exist (for example, Rex *et al.* 1997; Levin *et al.* 2001; Stuart *et al.* 2003). It is clear that many deep-sea soft-sediment, hard-substrate and chemosynthetic communities share some proportion of their faunas. However, the extent to which this is true and the importance of dispersal among habitats in the persistence of species remain unclear.

Benthic boundary layer: The dynamic environment at the interface between the deep water and the ocean floor.

Biodiversity: The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Convention on Biological Diversity). Components include:

> ***Genetic diversity:*** The variability in the genetic make up among individuals within a single species. In more technical terms, it is the genetic differences among populations of a single species and those among individuals within a population.
> ***Species diversity:*** The variety of species – whether wild or domesticated – within a particular geographical area. A species is a group of organisms, which have evolved distinct inheritable features and occupy a unique geographic area. Species are usually unable to interbreed naturally with other species due to such factors as genetic divergence, different behaviour and biological needs, and separate geographic location.
> ***Ecological (ecosystem) diversity:*** The variety of ecosystem types (for example, forests, deserts, grasslands, streams, lakes, wetlands and oceans) and their biological communities that interact with one another and their non-living environments.
> (Source - http://www.biodiversity.govt.nz/picture/doing/nzbs/glossary.html#ecosystems)

Biogenic reefs: Biogenic reefs (elevated structures on the seabed constructed of living and dead organisms) include fragile erect bryozoans and other sessile suspension feeders. Examples are bryozoan beds, rhodolith beds, tube worm mounds, sponge gardens and cold-water corals. These communities develop in a range of habitats from exposed open coasts to estuaries, marine inlets and deeper offshore habitats, and may be found in a variety of sediment types and salinity regimes.

Biogeographic region (100s to 1000s of kilometres)**:** An area that is defined according to patterns of ecological and physical characteristics in the seascape. Biogeographic regions will form the basis of protected area coastal planning.

Boundary current: Large-scale water stream in the upper ocean that separates water masses and is driven by a combination of wind temperature, geostrophic or coriolis effects.

Coastal: For the purposes of developing a network of protected areas, the MPA Policy specifies two planning processes – one for the coastal environment and one for the deepwater marine environment. For the purpose

of implementing the network of protected areas, the coastal/deepwater planning boundary is the limit of the Territorial Sea (12 nautical miles).

Coastal marine: For the purposes of this classification coastal marine refers to the estuarine and coastal marine habitats and ecosystems which include the saline waters of estuarine areas and of the open coast, the seabed and water column of open sea coasts to a depth of 200m. These coastal environments are generally subject to higher temperature and salinity fluctuations, nutrient run-off, sediment re-suspension, productivity and species' growth and reproduction than deep waters.

Chemosynthetic communities: Chemosynthetic communities include assemblages of tubeworms, clams, mussels, bacterial mats, and a variety of associated organisms. They use a carbon source independent of photosynthesis and the sun-dependent photosynthetic food chain that supports all other life on earth. Features or areas that support high-density chemosynthetic communities include cold seep hydrocarbon-charged sediments associated with anomalous mounds or knolls, whale falls, gas or oil seeps, and hydrothermal vents and seeps.

Community: An association of species which has particular species, at certain densities, in common.

Continental shelf: A broad expanse of ocean bottom sloping gently and seaward from the shoreline to the shelf-slope break. The shelf area is commonly subdivided into the inner continental shelf, mid continental shelf, and outer continental shelf. The sea floor below the continental shelf break is the continental slope. Below the slope is the continental rise, which finally merges into the deep ocean floor, the abyssal plain. The pelagic (water column) environment of the continental shelf constitutes the neritic zone. The continental shelf and the slope are part of the continental margin.

Continental shelf break: Line marking a change from the gently inclined continental shelf to the much steeper depth gradient of the continental slope. The character of the shelf changes dramatically at the shelf break, where the continental slope begins. Eade and Carter (1975) define the "shelf break" as the depth at which there is a marked change in the slope of the shelf to greater depths, generally taken as between 130–200 m. Off New Zealand the shelf width is usually 16–64 km, but ranges from 1.6 km off Fiordland to over 160 km for the Taranaki shelf.

Continental slope: A steep-sloping bottom extending seaward from the edge of the continental shelf and downward toward the rise. Continental slopes are the relatively steep inclines between the continental shelf and the surrounding ocean basins and, in New Zealand, are typically inclined at an angle of three to six degrees (Lewis et al. 2006). The slope is often cut with submarine canyons.

Deepwater: For the purposes of developing a network of protected areas the MPA Policy specifies two planning processes – one for the costal environment and one for the deepwater marine environment. For the purpose of implementing the network of protected areas, the coastal/deepwater planning boundary is the limit of the Territorial Sea (12 nautical miles).

Deepwater marine: For the purposes of this classification deepwater marine refers to the seabed and water column habitats and ecosystems of the open ocean beyond the depth of 200m.

Demersal: Occurring near the seabed. Demersal organisms live near, but not on, the seabed, and usually feed on benthic organisms.

Depth classes of the oceanic bottom: This category of depth zone (continental shelf, upper continental slope, mid continental slope, lower continental slope and abyssal plain) for the sea floor is based on the importance of the continental platforms and their associated features. On the oceanic sea floor, vertical depth zones of the bottom are defined by depth. The depths of these zones vary depending on regional geology.

Depth classes of the oceanic water column: The oceanic regime is distinguished by water depth range. In the water column, hydrographic features are identifiable water circulations, discontinuities or barriers that affect biological processes by containing, dispersing, transporting them, or concentrating food and spawning individuals. Hydrographic features in the water column include: warm core rings, cold core rings, upwelling, downwelling, major current systems, mesoscale eddies, stratified layers, frontal boundary and benthic boundary layers.

Ecosystem: An interacting system of living and non-living parts such as sunlight, air, water, minerals and nutrients. Ecosystems encompass communities and their surrounding environments and function through three basic cycles of matter and energy: extraspecific cycles (biogeochemical cycles), intraspecific cycles (life cycles and histories), and interspecific cycles (food webs). Marine ecosystems are dynamic complex three-dimensional systems. The "interconnectedness" within and among ecosystems is provided both by the physical environment (for example, currents transporting larvae from one part of the ecosystem to another)

and by biological interactions (for example, kelp forests or seagrasses creating habitat or predators consuming prey). Environments covered in the marine environment include estuarine, near-shore coastal, continental shelf, seamounts, and sea trenches. Ocean ecosystems include pelagic (water column) and benthic (sea floor) communities. Coastal ecosystems include subtidal rocky reefs, subtital soft sediments, kelp forests, biogenic reefs, pelagic habitat, rocky and sandy beaches, mangrove forests, seagrass beds, estuaries and salt marshes. Ecosystems come in many sizes, often with smaller systems embedded within larger ones. For example, a kelp forest in northeastern coast of New Zealand represents a small habitat ecosystem that is nested within the larger northeastern coastal region. Individuals of a few marine species spend their entire life within a single habitat such as a kelp forest, but most have larval or juvenile stages that are transported across habitats. Some wide-ranging animals, including certain large fish and marine mammals, cross large ecosystem boundaries just as migrating birds move across large distances on land.

Epipelagic zone: The 0 to 200 metre depth zone, seaward of the shelf-slope break. The epipelagic zone extends from the surface downward as far as sunlight penetrates during the day. It is a very thin layer, up to about 200 metres deep. The endemic species of this zone either do not migrate, or perform only limited vertical migrations, although there are many animals that enter the epipelagic zone from deeper layers during the night or pass their early development stages in the photic zone. The epipelagic zone overlies the mesopelagic zone.

Estuarine: The estuarine environment includes estuaries, tidal reaches, mouths of coastal rivers and coastal lagoons. The dominant functions are the mixing of freshwater and seawater, and tidal fluctuation, both of which vary depending on degrees of direct access to the sea. Estuaries are semi-enclosed bodies of water which have a free connection with the open sea. They differ from other coastal inlets in that sea water is measurably diluted by inputs of freshwater and this, combined with tidal movement, means that salinity is permanently variable. The mixing of two very different water masses gives rise to complex sedimentary and biological processes and patterns. New Zealand has diverse examples of estuarine systems including drowned river valleys, barrier-enclosed estuaries, estuarine lagoons, river mouth estuaries, structurally influenced, technically influenced (such as the Marlborough Sounds) and fiords (Hume 2003). Six broad habitat types have been identified for New Zealand fiords, based primarily on the three physical variables above (Wing et al., 2003; 2004; 2005). The diversity of estuary types and habitats are a function of New Zealand's active margin and headland dominated coastal setting, diverse geologic past and catchment sediments, variable wave climate and rainfall. Estuaries enclose a diverse range of habitats from subtidal areas to intertidal areas. These include sheltered upper estuary mangroves, seagrass beds and marshes, highly energetic beaches on the ocean side of the estuary, rocky reefs, wave built bars in estuary mouths, deep estuarine channels where swift tidal currents flow, shallow open salt water and fresh water, river deltas, tidal pools, muddy fringing marshes, mid-estuary sand banks, intertidal flats, estuarine beaches and mangrove forests.

Estuary: A partially enclosed coastal body of water which is either permanently or periodically open to the sea and within which there is a measurable variation of salinity due to the mixture of seawater and freshwater derived from land drainage (Day 1981 in Hume & Herdendorf 1988). Estuaries vary in size, with the largest in New Zealand being Kaipara Harbour (74,000 ha), while the smallest are less than 10 ha.

Exposure: Exposure is related to the prevailing energy of water movement, tidal, wave or current. Exposure level also influences the substrate type by suspending, transporting and sorting fractions of substrate particulates of smaller grain size. Exposure is an important factor that influences the kinds of animals and plants that can maintain attachment or position in a particular habitat. Wave exposure is determined by the aspect of the coast (related to direction of prevailing or strong winds), the fetch (distance to nearest land), openness (the degree of open water offshore) and profile (the depth profile of water adjacent to the coast). Energy can shape the seafloor (forming sand waves, sand ripples) and erode or accrete areas. For example high energy environments are typified by the presence of erosive features, such as beach scarps or bare rock substrates. Exposure can be measured using two components: (i) long-term wave climate - a surrogate for wave energy impacting primarily on the intertidal and subtidal fringe; (ii) orbital velocity - to indicate subtidal areas that experience significant stirring by wave action. A number of exposure scales have been developed (e.g. Ballantine 1961, Thomas 1986, Hiscock 1996). For the purposes of the protected area coastal classification three levels of relative exposure are used to identify deferent categories structuring intertidal and shallow subtidal communities.

- High – describes areas where wind/wave energy is high in areas of open coasts which face into prevailing winds and receive oceanic swell (fetch >500 kilometres e.g. ocean swell environment; current >3 knots).
- Medium – describes areas of medium wind/wave energy generally including open coasts facing away from prevailing winds and without a long fetch (fetch 50-500 kilometres e.g. open bays and straits).
- Low – describes areas where local wind/wave energy is low (fetch <50 kilometres e.g. sheltered areas; small bays and estuaries; current <3 knots).

Fetch: The distance across water over which the wind blows from a particular direction uninterrupted by land.

Guyot: A flat-topped extinct volcanic seamount.

Habitat: The place or type of area in which an organism naturally occurs. Habitat is a term that evokes debate and is often difficult to describe because there are different perspectives on its definition. Habitat is generally thought of as a place where an organism is found (Odum 1971), such as estuaries, salt marsh, seagrass, kelp forests and cobble fields that fringe our coastlines, to deep sea habitats and ecosystems, such as offshore bryozoan beds, deep sea coral reefs, extensive areas of fused manganese nodules that forms a solid 'pavement' at 5000 metres depth, vast areas of abyssal 'ooze' and the various depth zones of the water column (Baston 2003). Marine habitats include those below mean spring high tide (or below mean water level in non-tidal waters) and enclosed coastal saline or brackish waters, without a permanent surface connection to the sea but either with intermittent surface or sub-surface connections (as in lagoons) out to the to the extent of New Zealand's marine jurisdiction. Describing habitat is complicated by issues of scale and complexities in natural processes. Right whale habitat is described in terms of oceans (1000s of kilometres), while juvenile fish habitat is described by unique seafloor characteristics or microhabitats (centimetres to metres). Many marine organisms require a range of habitat types throughout their life cycle. Some species of fish and shellfish spend their early lives in estuaries or bays where food and shelter are plentiful. Later in life, these same animals move into different environments in the open ocean where they eat different types of food. In spite of how habitat is described and issues of scale, New Zealand has a rich and complex marine environment covering an area of approximately 4.1 million square kilometres.

Hadaalpelagic: Depth zone greater than 7000 metres, seaward of the shelf-slope break.

Hard bottom: Substrates defined by large particle sizes or cemented substrates, generally with organisms that live attached on the surface (for example, bedrock, boulder, deep sea manganese nodule pavements and artificial substrate).

Hydrothermal vents: Hydrothermal seeps and vents are sites in the deep ocean floor where hot, sulphur-rich water (for example, methane CH_4) is released from geothermally heated rock. Commonly found in places that are also volcanically active, where hot magma is relatively near the planet's surface. Some deep submarine hydrothermal vents (known as "black smokers") can reach temperatures of over 400° Celcius. This super-heated mineral-rich water helps support diverse communities of organisms in an otherwise species depauperate environment.

Intertidal: The area of land at the land-sea interface that is marine in character influenced periodically by the rise and fall of twice-daily tides, of bimonthly spring and neap tides, or by ebb and flow in tidal reaches of rivers.

Mangroves: A community of manawa (*Avicennia marina* subsp. *australasica*), vascular shrubs or trees which typically produce erect aerial roots. Occurs in the warm harbour and estuarine waters of the northern third of the North Island, north of about 38° South. Fringing plant communities, such as salt marshes and mangroves, play an important role in our estuaries and coastal ecosystems. These fringing habitats are a key source of organic material and nutrients, which help to fuel the estuarine food web. Stems and leaves of salt marsh and mangrove plants provide a three-dimensional structure in which animals can hide from predators, and they create habitat for fish species and wading birds.

Marine Protected Area network: It is generally accepted that an ecologically representative network of protected areas should, by definition: capture the full range of ecological variability; ensure functioning ecosystems by encompassing the temporal and spatial scales at which ecological systems operate ;and provide for effective management of large-scale processes and patterns. It is considered that multiple reserves, or replication, reduces risk that populations or habitat are destroyed by a catastrophe. While no widely accepted definition exists, a number of definitions have been developed, including Roff (2005) who specifies the characteristics a network should embody *"multiple sites with replicates of all habitat types that are oceanographically connected; individually or in aggregate they are of sufficient size to sustain minimum viable populations of the largest species in a region (including those of seasonal migrants to the region) and their resident species can sustain their populations by recruitment from one MPA to another"*. Another definition developed by United States National Oceanic and Atmospheric Administration (NOAA) in collaboration with the World Commission on Protected Areas (WCPA)/IUCN states the and MPA network is *"A collection of individual marine protected areas operating cooperatively and synergistically, at various spatial scales, and with a range of protection levels, in order to fulfil ecological aims more effectively and comprehensively than individual sites could alone. The network will also display social and economic benefits, although the latter may only become fully developed over long time frames as ecosystems recover"* (WCPA/IUCN 2007).

Mesopelagic:. The 200 metre - 1000 metre depth zone, seaward of the shelf-slope break. Midwater or "twilight zone", where there is still faint light but not enough for photosynthesis. Bacteria, salps, shrimp, jellys, swimming (cirrate) octopods, vampire and other squids, and fish are typical; many are bioluminescent.

Neritic zone: This spans from the low-tide line to the edge of the continental shelf and extends to a depth of about 200 metres.

Network design principles: Principles that guide the design of the protected areas network (including concepts of representative, rare/unique, viable, replication, resilience, connectivity). There have been a number of papers published recently that have evaluated the effects of larval dispersal, physical oceanography, source-sink dynamics, disturbance, and climate variability for marine protected area and reserve design and focused on the development of principles and tools to design efficient reserve systems that represent as much biodiversity as possible (for example: Bohnsack 2000, Crowder *et al.* 2000, Tuck & Possingham 2000, Botsford *et al.* 2001, Roberts *et al.* 2001, Sala *et al.* 2002, Sponaugle 2002, Stevens 2002, Allison *et al.* 2003, Botsford *et al.* 2003, Gaines *et al.* 2003, Halpern 2003, Halpern & Warner 2003, Hastings & Botsford 2003, Kinlan & Gaines 2003, Lubchenco *et al.* 2003, Neigel 2003, Roberts *et al.* 2003, Palumbi 2003, Shanks *et al.* 2003, Palumbi 2004, SCBD 2004, Bell & Okamura 2005, Fernandes *et al.* 2005, Carson & Hentschel 2006, Cowen 2006, Halpern *et al.* 2006, Laurel & Bradbury 2006, Laffoley 2006, Leis 2006, Possingham *et al.* 2006, Nicholson *et al.* 2006, Parnell 2006, Salomon *et al.* 2006, Sarkar *et al.* 2006, Gladstone 2007, Baskett *et al.* 2007; Wagner *et al.* 2007; Winberg *et al.* 2007, Wood & Dragicevic 2007). A single reserve design will not be optimal for all species or in all locations. However, these studies provide general guidelines to support the identification and design of sites considered to meet biodiversity objectives. In addition, evidence suggests that there will never be a perfect surrogate or suite of surrogates that can be used to efficiently represent all elements of biodiversity. The choice of surrogate will depend on both the presumed effectiveness of the surrogates available, and the amount of time, cost and effort required to develop alternatives. Conservation planners therefore should make the best use of all available environmental and biological data to inform decision-making (Possingham *et al.* 2006).

Oceanic water column: Those waters of the 'open ocean,' in areas beyond the shelf break (about 200-250 metres depth) extending to the maximum ocean depths. These waters are removed from primary continental influences, and the sea bottom interacts little or not at all with the water column.

Pelagic: Associated with open water. Pelagic organisms live in the open sea, away from the seabed.

Representativeness: Marine areas selected for inclusion in reserves should reasonably reflect the biotic diversity of the marine ecosystems from which they derive.

Salinity: The quantity of dissolved salts in water, especially of seawater or its diluted products. Salinity is recorded, by convention, as parts per thousand (‰); that is, grams of salts per litre of water. Fully saline - 30 - 40‰; variable salinity/salinity fluctuates on a regular basis - 18 - 40‰; reduced salinity -18 - 30‰; low salinity - <18‰.

Saltmarsh: A wetland in estuarine habitats of mainly mineral substrate in the intertidal zone.

Seagrass: Seagrasses are vascular marine plants with the same basic structure as terrestrial (land) plants. They have tiny flowers and strap-like leaves. They form meadows in estuaries and shallow coastal waters with sandy or muddy bottoms. Most closely related to lilies, they are quite different from seaweeds, which are algae. The leaves support an array of attached seaweeds and tiny filter-feeding animals like bryozoans, sponges, and hydroids, as well as the eggs of ascidians (sea squirts) and molluscs. They also provide food and shelter for juvenile and small fish.

Seamounts: Formations rising higher than 1000 metres from the seafloor, or formations with a vertical elevation above the surrounding base slope of 250 metres or greater.

Soft bottom: Substrate defined by small particle size and unstable bottom conditions, generally with organisms that live buried beneath the surface (for example, cobble, gravel, sand and mud bottoms).

Straits and sounds: Any relatively narrow channels linking two larger areas of sea and occurring between islands, or between islands and the mainland. Straits and sounds are often characterised by strong tidal currents.

Submarine canyon: A valley on the seafloor of the continental slope. Submarine canyons are generally found as extensions to large rivers, and have been found to extend 1 kilometre below sea level, and extend for hundreds of kilometres. The walls are generally very steep. The walls are subject to erosion by turbidity currents, bioerosion or slumping.

Substrate: The type of bottom sediments, such as sand and gravel. Substrate type and sediment grain size have a strong influence on the types of plants and animals that can inhabit a given place. Substrates and sediment sizes range from tiny mud particles, to fine sand, to coarse sand, to pebbles, to cobbles, to boulders, to solid rock outcrop. The precise mix of species inhabiting a rocky habitat is strongly affected by water depth, sunlight, wave exposure, and stability of the substrate. Species on intertidal rocky outcrops tend to be

relatively large, long-lived and securely attached to the rock, while species living on wave-tossed intertidal cobbles tend to be small, mobile and short-lived. In general, stable rocks like bedrock, boulders and partially buried cobbles have greater diversity of species than rocks and finer sediments that are frequently shifted by waves (Schoch and Dethier 1996). For the purposes of this classification the substrate categories are defined where the particle size or the primary material of the substrate comprises > 50% of the substrate.

Soft substrates (generally defined by small particle size and unstable/unconsolidated seafloor substrate):

- Mud <0.07 millimetres: Muddy bottoms are areas of fine unconsolidated sediment comprised of silt, clay and fines that may be un-vegetated or patchily covered with green algae and benthic diatoms. These habitats occur in calm, sheltered, depositional environments in both the subtidal and intertidal zone. A variety of invertebrates and fish inhabit subtidal mud bottoms. Grain size can range from pure silt to mixtures containing clay and sand. The sediments of muddy habitats boast a higher proportion of nutrient-rich, organic-mineral aggregates (detritus) than the sediments in sandy habitats (Van Houte-Howes *et al.* 2004). Tidal mudflats frequently occur next to eelgrass meadows and salt marshes. Many of the invertebrates in mud bottoms live near the mud's surface because oxygen typically becomes scarce within a few centimetres of the sediment surface. In very deep, undisturbed basins, sea pens and other species may live on the muddy seabed.
- Sand 0.07-2 millimetres: Sand beaches are constantly in motion. Their shape, size, and location shift continually due to wind, waves and storms. Beaches constructed from sand tend to dominate the North Island, whereas gravel beaches are more common along the east and west coasts of the South Island, but not exclusively so (Shulmeister & Rouse 2003). Storm-generated waves and currents shape sandy bottoms into ripples and ridges in shallow subtidal sandy habitats. In deeper water, storms don't affect the bottom topography, but currents can create sand waves or the bottom can be relatively featureless. Few animals live atop the sandy seafloor. Instead, they bury themselves in the sand to avoid predators, currents and shifting grains. Can include broken shell remnants.
- Gravel 2-75 millimetres: Mixed sand and gravel beaches are common in New Zealand, particularly on the east coast of both the North and South Islands (Shulmeister & Rouse 2003). Subtidal gravel habitats host many of the same species as boulder reefs and generally occur on flat or low slope areas forming low relief habitat. Can include broken shell remnants.
- Cobble 75-260 millimetres: Intertidal cobble and pebble habitats tend to have higher species diversity than mud and sand because the rocks provide refuges for algae and small animals. Invertebrates and algae attach to cobbles or take shelter in crevices. Flat or partially buried cobbles often harbour the greatest diversity of species because these rocks are less frequently overturned by waves. In the wave-swept intertidal zone, cobble habitats are typically devoid of long-lived seaweed, but ephemeral algae, such as sea lettuce or laver, may colonise some relatively stable rocks. Rock barnacles often attach to cobbles, and the mussel byssal threads can partially anchor cobble to the underlying substrate. Many gastropod, amphipods, isopods and worm species dwell among cobbles or pebbles. Subtidal cobble and pebble habitats host many of the same species as boulder reefs. Some of the organisms that attach to cobble include anemones, tunicates, hydroids, soft corals and sponges. In places where storm waves and other disturbances are infrequent, these organisms may become abundant and cover cobble substrates. Generally occurring on flat or low slope areas forming low relief habitat.

Hard substrates (generally defined by large particle sizes or cemented substrates):

- Boulder >260 millimetres: Because they are not frequently overturned by waves due to their large size, boulders support similar species as rocky outcrops. Long-lived algae and animals can survive attached to them. In the intertidal zone, boulders provide a substrate for algae, molluscs, barnacles, hydroids and other sessile organisms. In addition, boulders provide shelter from wind, sun, rain and predators for small organisms that can take shelter underneath and beside them. Boulders are large rocks that can form high relief habitat when piled up or when their diameter exceeds 1 metre. Large underwater piles of boulders, known as boulder reefs, provide an important habitat for algae, anemones, molluscs and sponges that attach to the rock surfaces or dwell in crevices. Lobsters, crabs and many fish associate with boulder reefs.
- Rocky substrate: Rocky substrate, for the purposes of this classification, includes consolidated material and bedrock platforms of various relief and roughness, rockpools, caves and reef cliffs (e.g. High Profile Reef - consolidated substrate with a change in vertical profile >4 m over a horizontal distance of 10 m, Medium Profile Reef - consolidated substrate with a change in vertical profile greater than 1-4 m over a horizontal distance of 10 m. Low Profile Reef - consolidated substrate with a change in vertical profile <1 m over a horizontal distance of 10 m, steep rocky cliffs), and patchy mixed soft bottom and reef habitats. These 'patch reef habitats' are quite common over large areas and are defined as 15% to 60% hard reef interspersed between boulder or unconsolidated substrate. Rocky reef provides an important habitat for the kelp such as *Ecklonia radiata* and other mixed algae forests, molluscs and encrusting invertebrate groups that attach to the rock surfaces or dwell in crevices. Lobsters, crabs and many fish associate with rocky reefs.
- Biogenic reefs: Biogenic reefs (elevated structures on the seabed constructed of living and dead organisms) include fragile erect bryozoans and other sessile suspension feeders. For example, byrozoan beds, rhodolith beds, tube worm mounds and sponge gardens. These communities develop

in a range of habitats from exposed open coasts to estuaries, marine inlets and deeper offshore habitats, and may be found in a variety of sediment types and salinity regimes.

- Artificial: Artificial category includes human developed artificial structures constructed in the coastal marine area (such as artificial reefs, marinas, marine farms and drilling platforms). The artificial category has been included to aid mapping for the purposes of protected areas planning.

Subtidal: The zone of estuarine and coastal areas below the level of lowest tide; permanently inundated.

Subtidal (MLWS – 30 metres): Coastal waters where the salinity is substantially marine, that is, >30 psu throughout the year. The zone extends from below the level of lowest tide, mean low water springs (MLWS), to the 30 metre depth contour. In these waters, benthic processes can strongly influence the ecology and biology throughout the water column and the water column interacts strongly with the benthos.

Subtidal (30 metres – 200 metres): The deep coastal marine environment is the region of marine waters between the 30 metre depth contour and the continental shelf break, at approximately at 200 metres water depth. Depending on shelf morphology, waters at the 30 metre isobath can be quite distant from the mainland or they may lie quite close to land. Depth is more important ecologically than the distance from land.

Trench: Deep and sinuous depression in the ocean floor, usually seaward of a continental margin or an arcuate group of volcanic islands.

Upwelling: A process where subsurface, nutrient-rich, and usually cooler water is carried upward into the ocean's surface layers. Upwelling is caused by a complex interaction of wind, currents and the topography of the sea floor.

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APPENDIX 3
SUMMARY OF COMMUNITY ENGAGEMENT

Public Meetings

The series of public meetings introduced communities to what the MPA Policy is trying to achieve, and the role of the Forum was explained. At these meetings the Forum also learnt about the issues and concerns of local communities. Venues varied with some meetings being held on local marae and some at fishing clubs.

Questionnaire

The *Our Sea Your Say - Kei A Koe Te Questionnaire* was one of the early points of contact with stakeholders during the initial stages of the project. It was an opportunity for the Forum to gather quite broad information about the areas of importance to the person filling in the questionnaire; where the place is, what they do there, any changes they may have seen and if they believe that some sort of protection is needed. It was not intended to be a rigorous social survey, rather it allowed the Forum to identify activities and areas of interest and enable further discussions within the Forum and across stakeholder groups.

The questionnaire was distributed to interested members of the public and was available on the website. 303 people participated in the questionnaire. Participants who expressed an interest in following the progress of the Forum also went into the database of interested users of the coast.

The following provides an overview of the main themes raised in the results of the questionnaire with regard to the values of the area; threats / risks to the marine environment; changes and threats in the environment; sorts of protection that may need to be put in place; and activities that should be allowed to continue if an area is going to be protected.

What the community values in its marine spaces

The most popular activities selected by the online questionnaire participants were:

Going to the beach	(70%)
Swimming	(54%)
Fishing – recreational	(52%)
Marine mammal watching	(50%)
Collecting shellfish	(50%)

The main values that the south-east region holds include:

- Biodiversity values - bryozoan reefs and other biogenic habitats
- Coastal reefs
- Educational value
- Employment (fishing, shellfish harvesting, tourism etc)
- Family holidays
- Fishing, food gathering, mahika kai, kaimoana
- Good access
- Healthy marine environment / ecosystem
- Intrinsic values
- Recreation – swimming, surfing, diving, snorkeling, boating etc.
- Scenic value, beauty, landscape, remoteness, natural features
- Spiritual/emotional connections with the area
- Topūni, (areas of significance) wāhi tapū, wāhi tāoka
- Artifacts dig, fossils
- Vegetation – rare natural coastal conditions
- Water quality/water visibility (e.g. for swimming, diving, snorkeling, spear fishing)
- Wildlife –dolphins, whales, seals/sea lions, fish, shorebirds, penguins (many places are breeding sites, migration roots and home for wildlife).

Has the environment changed?

The majority of respondents considered that the environment had declined to some degree (50%), with 15% believing it hasn't changed and 8% considering the environment had improved to some degree. This was relatively consistent across all regions of the questionnaire.

The main risks/threats to the environment identified related to: fishing, wildlife, land use practices and development, water quality, erosion, rubbish and pollution, sedimentation, pests, vehicles and dogs, and visitor pressure.

Is protection something the community would like in place?

The questionnaire results showed that:

- 90% of the respondents said 'Yes something needs to be done to protect the values of the region'
- 8% of the respondents said 'Nothing needs to be done'.

What sort of protection or management would the community like in place?

The main matters raised were regarding: commercial fishing, recreational fishing, protected areas, monitoring and compliance, wildlife protection and habitat restoration, surf breaks, more education, protect native plants and algae, eradication of invasive vegetation, land use management and water quality, access/vehicles/dogs, and rubbish.

Overall, the main suggestions for protection were: Marine reserves, various options for Type 2 Marine Protected Areas, network of MPAs, land/sea protection and restoration, access, fisheries restrictions and to not impact recreational fishing.

What activities the community thinks should be allowed to continue if an area is going to be protected.

The main activities that the respondents thought should be allowed to continue included:

- Allow Mahika Kai practices to continue
- Blanket and permanent closure of areas to all fishing would restrict people's ability to feed themselves from the marine environment. This traditional practice must be allowed.
- Continue to have access to kaimoana in all coastal areas with restrictions (local catch limits, etc) based on real local data (possibly collected from local people)
- Make sure the local fishing fleet can still function and Kāi Tahu people can carry on traditional food gathering from the sea and rocks
- Scuba diving, swimming, surfing, snorkeling, boating, walking
- Sustainable practices enforced, cultural rights recognised and respected
- Sustainable recreational and commercial fishing and shellfish collection

Website

The Forum website www.south-eastmarine.org.nz was developed as the primary communication tool for community engagement.

The website has also posted all Forum meeting minutes, media releases and newsletters, Q&As and encourages people to make contact either by email or via the 0800 number.

SeaSketch

The online tool SeaSketch has been used to engage stakeholders and the public in developing their plans. SeaSketch is a valuable resource that supports collaborative marine spatial planning and provides easy to find marine information. The SeaSketch site also hosts an interactive public discussion Forum and encourages people to share their ideas.

Social Media

Facebook has been used to raise awareness of the opportunity to contribute to decisions through the Forum and to receive feedback.

Print Advertising

Advertisements were carried in daily newspapers and a variety of magazines including *The Fishing Paper*, *Fish and Game Magazine*, *Te Karaka* and *Mana Magazine*. These had a call to action to encourage people to have their say via the 0800 number, online or by post.

Email Newsletter

The database of interested parties has received numerous email newsletters notifying them of the Forum's progress. Information they have received has included:

- Granting of time extension for the process and new timetable for consultation
- Summary of Questionnaire findings
- Links to media stories about the process and other articles related to marine environment issues.
- Updates on SeaSketch and its capabilities
- Encouragement to have their say and channels available to do so.

Mailouts

There has been widespread distribution in the region of two information posters and a fact sheet. These have been sent to camping grounds, coastal taverns and hotels, hunting and fishing shops, fishing clubs, fish shops, sea sport and recreational clubs and coastal tourism operators.

All mail outs have carried a strong call to action to 'have your say' and to visit the website.

- An introductory poster on the Forum – *"Consulting on what's important to you in our marine environment from the Timaru Breakwater to Waipapa Point."*
- Poster with map showing areas under discussion by the Forum and details of the new Forum timeframe.
- Fact sheet
- Public events

Media Activity

- In relation to communicating with the media, the Chair of the Forum, Maree Baker- Galloway, has been the Forum's spokesperson.
- In the early stages of the Forum's formation the major daily newspapers in the region, the *Timaru Herald*, the *Southland Times* and the *Otago Daily Times* ran stories on the process along with Radio New Zealand. Media releases were distributed following public meetings.
- Interest was reignited in the media with the announcement of the Forum requesting an extension of time for the process and again when that extension was granted.
- In April 2016 the *Otago Daily Times*, in its weekend magazine *The Mix*, ran a three-page feature on the Forum and its work. This included interviews with the Forum Chair and marine scientist Dr. Chris Hepburn, plus a representative from each stakeholder group contributed a 100 word summary on their perspective and these were all published verbatim.
- The *Otago Daily Times* also published an Opinion Piece written by recreational fishers representative Tim Ritchie – encouraging recreational fishers to have constructive input into the process.
- A media release on the summary of findings of the *OurSeaYourSay* Questionnaire - Community Support for Marine Protection on south-east coast – was given coverage in the *Timaru Herald*, the *Otago Daily Times* and *The Star* community newspaper. Plus it prompted an interview with Neville Peat on Channel 39 Dunedin Television and featured in Mediaworks local news bulletins.
- The *Taieri Times* ran a story about local concerns about what form of protection might be proposed for Green Island, and *The Star* community newspaper also followed up with their own story.

Summary of Stakeholder Engagement

Public Meetings

Public meetings were held at the following locations and dates:

- October 2014 – Puketeraki
- November 2014 – Bluff
- February 2015 – Oamaru
- March 2015 – Owaka
- April 2015 – Dunedin
- May 2015 – Timaru
- June 2015 – Invercargill
- July 2015 – Port Chalmers
- August 2015 – Dunedin
- October 2015 – Waikawa

Recreational Fishers Engagement

Meetings & publications included:

- Tautuku Fishing Club Meeting (with Nick Smith Minister for the Environment) Sept 2014
- Direct Mail to fishing clubs and boat shops Dec 2014
- Brighton Fishing Competition Feb 2015
- FMA 3 & 5 Recreational Forum Meeting Feb 2015
- Lure News Feb 2015
- Oamaru Fishing Club Feb 2015
- Measly Beach Fishing Club Feb 2015
- South Otago Town and Country Club - Hunting and Fishing Competition Feb 2015
- Kakanui Combined Fishing Club March 2015
- Seaweek Meeting at Toitu Museum March 2015
- Kaka Point Fishing Competition April 2015
- Fisheries Officers Meeting April 2015
- Balclutha Town and Country Club April 2015
- Fortrose Fishing Club April 2015
- Gore Fishers April 2015
- MPI FMA 3 and 5 Recreational Fishing Forum Meeting May 2015
- Lure Publication May 2015
- Bluff Oyster Festival May 2015
- Matariki Meeting Otago Museum June 2015
- Kakanui Combined Fishing Clubs July 2015
- The Fishing Paper July 2015
- Fish and Game Magazine July 2015
- Blueskin Bay Meeting July 2015
- MPI FMA 3 and 5 Recreational Fishing Forum Meeting July 2015
- Green Island Fishing Club Meeting, August 2016
- Shag Point, Moeraki, Karitāne and Palmerston Fishing Clubs Nov 2015
- MPI Recreational Fishing Team Meeting Dec 2015
- Shag Point, Moeraki, Karitāne and Palmerston Fishing Clubs Feb 2016
- Dunedin Combined Club, Tautuku, Green Island, Brighton and Otago Dive Club March 2016
- Opinion Piece Otago Daily Times - Tim Ritchie April 2016
- Responses to a variety of letters to the Editor in the Otago Daily Times, May 2016
- Tautuku Fishing Clubs including Club Reps from Green Island, Port Chalmers May 2016
- Kāi Tahu and Commercial Dunedin May 2016

- Kāi Tahu and Commercial Ōtākou June 2016
- Kakanui Combined Fishing Clubs June 2016
- Otago Dive Club July 2016
- Fortrose Fishing Club/Gore Fishers July 2016
- Owaka, Measly Beach and Nuggets Fishing Club July 2016
- Various meetings and conversations with members of Pāua to the People 2014-16
- Brighton Fishing Club August 2016
- Tautuku Fishing Club September 2016

In addition, various meetings with individual fishers and fishery officers in the region.

Commercial Fishers Engagement
Meetings & publications included:
- Federation of Commercial Fishermen's newsletter November/December 2014
- Otago Harbour Salmon Fishing Competition Jan 2015
- Cra8 Executive Meeting Invercargill Feb 2015
- Fisher Sector Meeting Invercargill/ Bluff March 2015
- Dive Otago March 2015
- Southern Inshore Fisheries Board Meeting Christchurch March 2015
- Hampden, Port Chalmers and Timaru Fishers April 2015
- Mail out to commercial fishers April 2015
- Timaru Fishermen's Association Meeting April 2015
- NZ Federation of Commercial Fishermen's Annual Conference Napier May 2015
- Seafood Magazine June 2015
- Port Chalmers Seafood Festival Sept 2015
- Seafood Industry Annual Conference Wellington Oct 2015
- Port Chalmers Fishermen's Co-op Meeting April 2016
- Federation of Commercial Fishermen's Facebook Page and Newsletter – Fact sheet and Poster – April 2016
- Distribution of maps to network of commercial fishermen May - April 2016
- Waikawa Commercial Fishers Meeting July 2016
- Taieri Mouth Commercial Fishers Meeting July 2016
- Bluff Commercial Fishers Meeting July 2016

Tourism Engagement
Meetings & events included:
- Poster distribution Nov 2014 (x 44 outlets)
- Kaka Point Market Day Dec 2014
- Oamaru Farmers Market Dec 2014
- Papatowai New Year Carnival 2015
- Owaka Boating Clubs Fishing Competition Jan 2015
- Papatowai and Districts Association Annual Meeting Jan 2015
- Waitaki Tourism Association Feb 2015
- Direct Mail to Tourism Industry March 2015
- Tourism Waitaki April 2015
- Yellow-Eyed Penguin Trust newsletter (1300 hard copies) May 2015
- Forest and Bird Meeting Southland Organisation May 2015
- Waitaki Tourism Email April 2015
- Nugget Point /Kaka Point Fishing Competition April 2015
- Catlins Coast website

- Southland Forest and Bird AGM April 2016
- Meeting with Environment Southland staff April 2016
- Catlins Promotions Group kept updated at all meetings – continuous.
- Tourism email database (including tourism operators, locals and interested parties) developed and kept informed- continuous.
- South Catlins Charitable Trust AGM July 2016

Marine Science Engagement
Events included:
- East Otago Taiāpure Research Evening at Puketeraki Dec 2014
- Science Workshops 2015
- Posters and fliers sent to University Departments May 2015
- NZ Marine Science Conference Auckland July 201

Community Engagement
Events & publications included:
- Palmerston A and P Show Feb 2015
- North Otago A and P Show Feb 2015
- Oamaru Library Seaweek Feb 2015
- Waitaki District Council Public Meeting Feb 2015
- Seaweek Meeting Toitu Museum March 2015
- Otago and Southland Mayoral Forums March 2015
- Enviroschool Stand Otago Farmers Market Feb/March 2015
- Otago Conservation Board April 2015
- Yellow-eyed Penguin Trust at Trust Office May 2015
- Local Government Magazine May 2015
- FYI (DCC website and publication) May 2015
- Southland Conservation Board June 2015
- Input to Dunedin City Council's inaugural Environment Strategy May 2016
- Neville Peat interview on Channel 39 Dunedin Television May 2016
- Canterbury Conservation Board June 2015
- Otago Mayoral Forum Balclutha June 2015
- Port Chalmers Seafood Festival Sept 2015

Environmental Engagement
Events & publications included:
- Oamaru Penguin Symposium June 2014
- Discussions with Pew Charitable Trusts & Yellow-Eyed Penguin scientists, at Zoology Department University of Otago Nov 2014
- Yellow-eyed Penguin Symposium Aug 2014
- Yellow-eyed Penguin Trust AGM March 2015
- Southland Forest and Bird May 2015
- Ornithological Society of NZ newsletter June 2015
- Southern Forest and Bird News Letter – January and June 2015
- Otago Dive School June 2015
- Otago Tramping and Mountaineering Club June 2015
- Forest and Bird AGM in Upper Clutha 2015
- Musselburgh School 2015
- Southern Forest and Bird publication2015
- Yellow-Eyed Penguin Symposium August 2015
- Waitaki Forest and Bird - February Talk (Sue Maturin) 2016
- Waitaki Forest and Bird AGM – April 2016
- Southland Forest and Bird AGM April 2016
- Oamaru Penguin Symposium May 2016

- Forest and Bird Annual General Meeting Wellington June 2016
- Sector group log in on SeaSketch
- Regular Forest and Bird Dunedin Branch meetings 2015/16

Kāi Tahu Engagement
Events & publications included:
- Full page Mana Magazine and online June/July 2015
- Panui Runaka June/July2015
- Hui of Ōtākou Runaka members, August 2015
- Waka Ama Invercargill 2015
- Trustees Hui Bluff 2015
- Monthly update to Awarua Runanga Trustees
- Mahika Kai Forum. Quarterly Forum Meetings 2015
- Southland Conservation Board Meeting 2015
- Matariki Week Kāi Tahu Gallery Toitu June 2015
- Karaitiana, RL Karaitiana & Taituha Trust, October 2015
- Korako Karetai Trust, October 2015
- Hui-a-iwi November 2015
- Consultation with Waikoau Runaka (South Otago Runaka), Balclutha, November 2015
- Otakou Rūnanga Hui 2016
- Moeraki Rūnanga Hui 2016
- Hui for Kāi Tahu, Ōtākou Marae, January 2016
- Komiti Kaupapa Taiao Hui 2016
- Hokonui Rūnanga Hui April 2016
- Consultation with Te Runanga o Moeraki, April 2016
- Ōtākou Hui with MPI to discuss Otakou Mataitai Reserve application April 2016
- Kāi Tahu, Ōtākou Marae, May 2016
- Ōtākou Hui May 2016
- Mahinga Kai Forum Muruhiku Marae, June 2016
- Regular liaison and discussion with Te Runaka o Ōtākou
- Karaitiana, RL Karaitiana & Taituha Trust, October 2016
- Korako Karetai Trust, October 2016

Whakaherekau.
Photo: John Barkla


SANSPEUR 7383

APPENDIX 4
FISHERIES REPORTING

Otago Peninsula.
Photo: Otago Daily Times

Overview

The Ministry for Primary Industries (MPI) requires reporting of catch and method details of fishing events in all commercial fishing trips in the EEZ. Since October 2007, MPI has modelled the likely or possible space involved in all fishing events and mapped the aggregated average annual intensity of fishing or catch.

The detail that the spatial information supplied to MPI by commercial fishers varies, depending on the fishing methods they are using. Fishing methods like offshore trawling require the recording of both start and end points but other methods (like hand gathering) may only require a statistical area as a locational reference for a fishing event. Any point location supplied to MPI usually has an accuracy of approximately 1 nautical mile (1.8 km).

The Ministry is in the process of providing updated fisheries information, to include the two most recent complete fishing years in SeaSketch. SeaSketch currently includes data to the end of the 2012-2013 fishing year. Data for the 2013-14 and 2014-15 fishing years will be added shortly. The Forum has not had this additional information and so has not been able to discuss it at the time of writing, and it is not provided in this document or the tables for fishery displacement. But, the Forum will consider it in its final deliberations along with information from submissions.

How are fishing events drawn?

- In the case of inshore trawling, the end position of tows is estimated based on the location of the next trawl start position in that fishing trip.
- A similar rectangle is created for tuna longline start and end positions with 100m width, giving an estimate of the number of hooks/ha.
- The start position of other long line sets are buffered by a radius of the length of the line set to give a circle. Set net fishing is mapped to 2 nm (3.6 km) buffered circles around the reported start position for each event.
- For all other fishing events including set netting and long lining by vessels less than 6m length, which are not required to report start positions, the location of fishing is reported by large statistical areas. Where possible the likely location of each fishing event is constrained within the reported statistical area based on environmental data like depth, topography, habitat type, or narratives provided by fishers.

METHOD	REQUIRED REPORTED LOCATION	APPLIED AREA VALUES	ESTIMATED LOCATIONS
Trawl (offshore)	Start and end points	Trawl doorspread width (specific to different fisheries)	
Trawl (inshore)	Start point	Trawl doorspread width (specific to different fisheries)	End points are estimated using the bearing to the start location of the next tow within the same trip. Trawl length is calculated using the reported time and speed values. Missing values are populated using medians from similar fisheries
Set Net (>6m vessel length)	Start point	Buffered by 2 nautical miles (3.6 km)	
Longlining (>6m vessel length)	Start point	Buffered using the reported line length	
Jig	Location at midnight	Buffered by 5 nautical miles (9.2 km)	
Pāua	Statistical area		Rocky reef locations within the statistical areas
Pot (with coordinates)	Start point	Buffered by 1 nautical mile (1.8 km)	
Cray pot	Statistical area		Rocky reef locations within the statistical areas
Crab pot	Statistical area		Areas described by fishers within statistical areas
Pot (without coordinates)	Statistical area		Statistical areas reduced to certain depths in certain fisheries
All other fishing events	Statistical area		

Figure 1: Reported location and any assumptions made when mapping commercial fishing methods.

Forum region layers

The information made available to the South-East Marine Protection Forum during the proposal development stage represented the reported commercial catch within the Forum region between October 2007 and September 2013. All commercial catch data had been averaged over all to the available years to create annually averaged catch data.

The information provided to the Forum was in two parts:

1. Layers for display as map layers within the SeaSketch application, and
2. Layers used for analysis and reporting by SEMPF members within SeaSketch.

Display layers

The commercial fishing intensity layers visible within the SeaSketch application represent the average reported catch of all species within the Forum region over the six years of available information. The layers have a spatial resolution of 1 km^2 and have been separated by fishing gear type (Trawl = bottom and midwater trawl, Pot = cod, rock lobster and crab pots etc.) as well as a single layer containing the total catch for all combined fishing methods.

As these layers were intended for public viewing, there was a requirement to ensure the activities of individual fishers are not identifiable. To maintain fisher confidentiality a methodology was developed which identified areas where fewer than three permit holders were active. These areas were then merged with neighbouring areas which also contained fewer than three permit holders to form 2 km^2 grid cells. If three or more permit holders were present within the expanded area, the catch values were averaged across all those values present within the larger cell areas. If the number of permit holders present within one of the increased cells was still fewer than three, the cell size was increased to 5 km^2 and so on up to 50 km^2, or until three or more permit holders were active within an area.

The map layers were then classified into a 10-class, high to low ranking system. The ranking system allows for the identification of areas with differing fishing intensity and also removed the ability for users to extract catch estimate values from the data.

Analysis layers

The layers used within the SeaSketch reporting are based on the same base information used to create the display layers but with two differences. These layers did not undergo the same anonymising process as the display map layers, and the categories were broken down into individual fisheries rather than the broad scale gear types present in the display maps.

The 'Fishery Displacement' category represents the percentage of fishery catch within an area of interest compared to the total catch for that fishery within the Forum region. For example; if a SeaSketch report indicates an MPA option has a fishery displacement value of 10%, it indicates that 10% of that fishery within the Forum region was likely caught in that particular area and might move elsewhere if the commercial fishing restrictions provided by that MPA are enforced.

Otago Peninsula.
Photo: Otago Daily Times

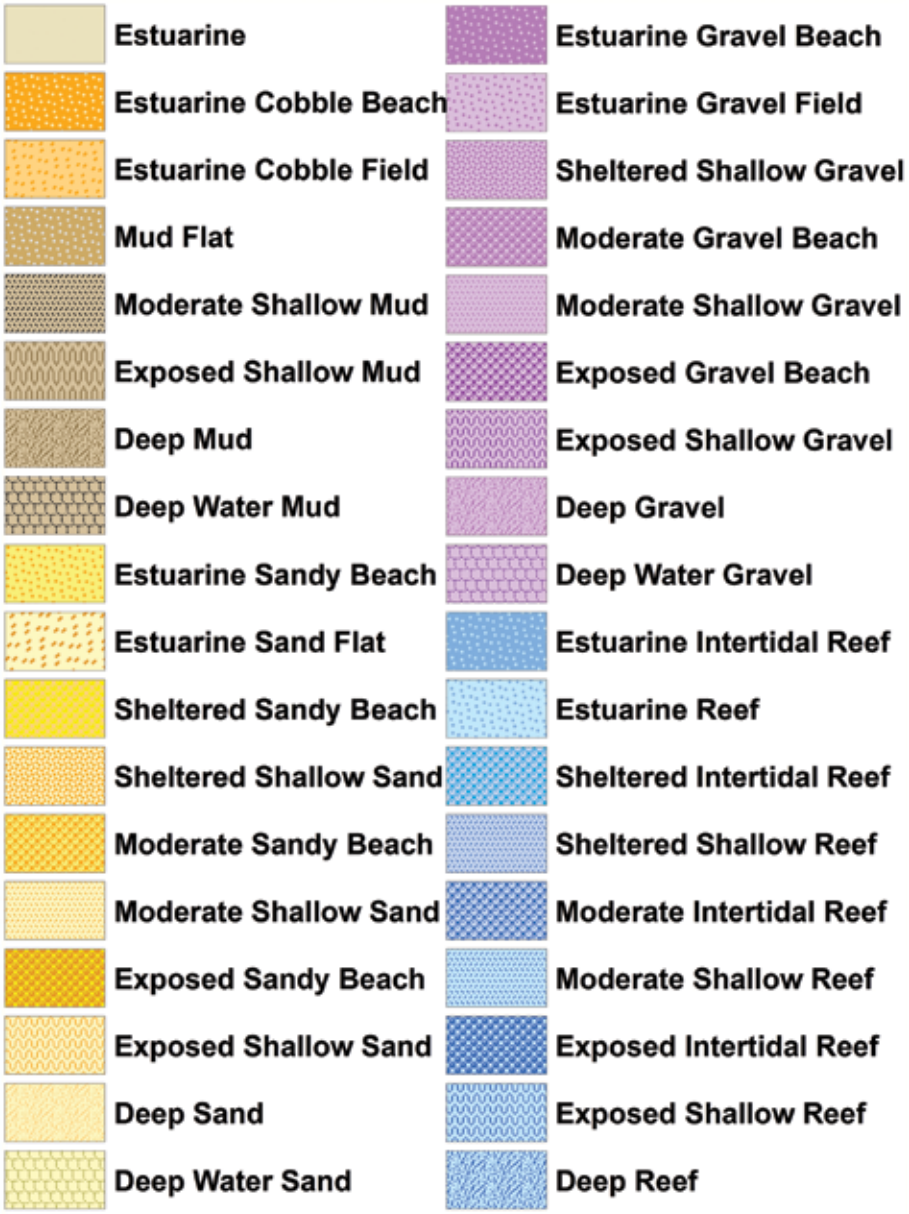
Okahau / Warrington, Dunedin.
Photo: John Barkla

APPENDIX 5
HABITAT TYPE MAPS OF THE FORUM REGION

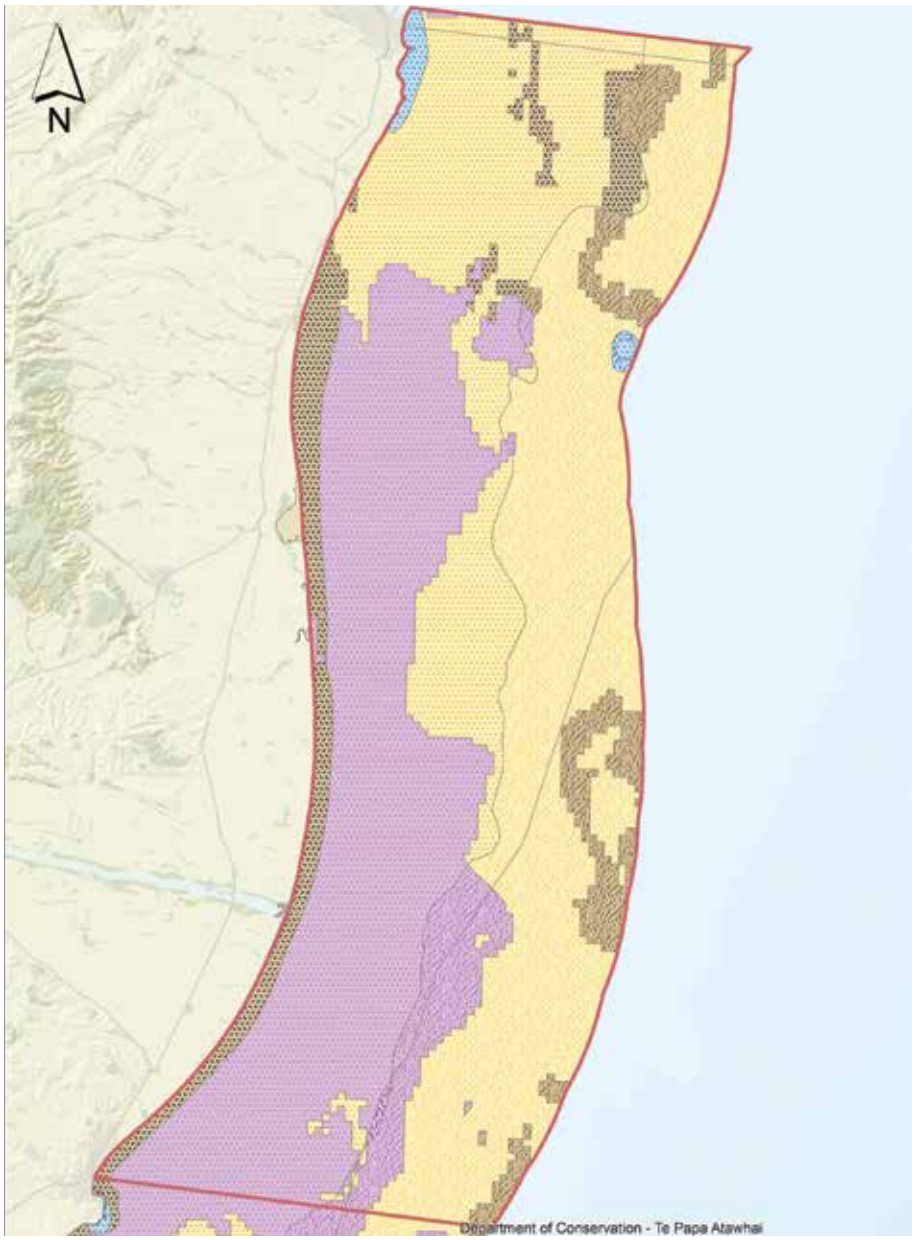
The habitat classification, as defined in the 'Marine Protected Areas classification, protection standard and implementation guidelines', uses a combination of depth, exposure and substrate (seafloor type) to create a number of different habitat types.

While based on best available information it is acknowledged that the habitat types modelled are an approximation. Wherever possible, additional information has been used to supplement the habitat classification.

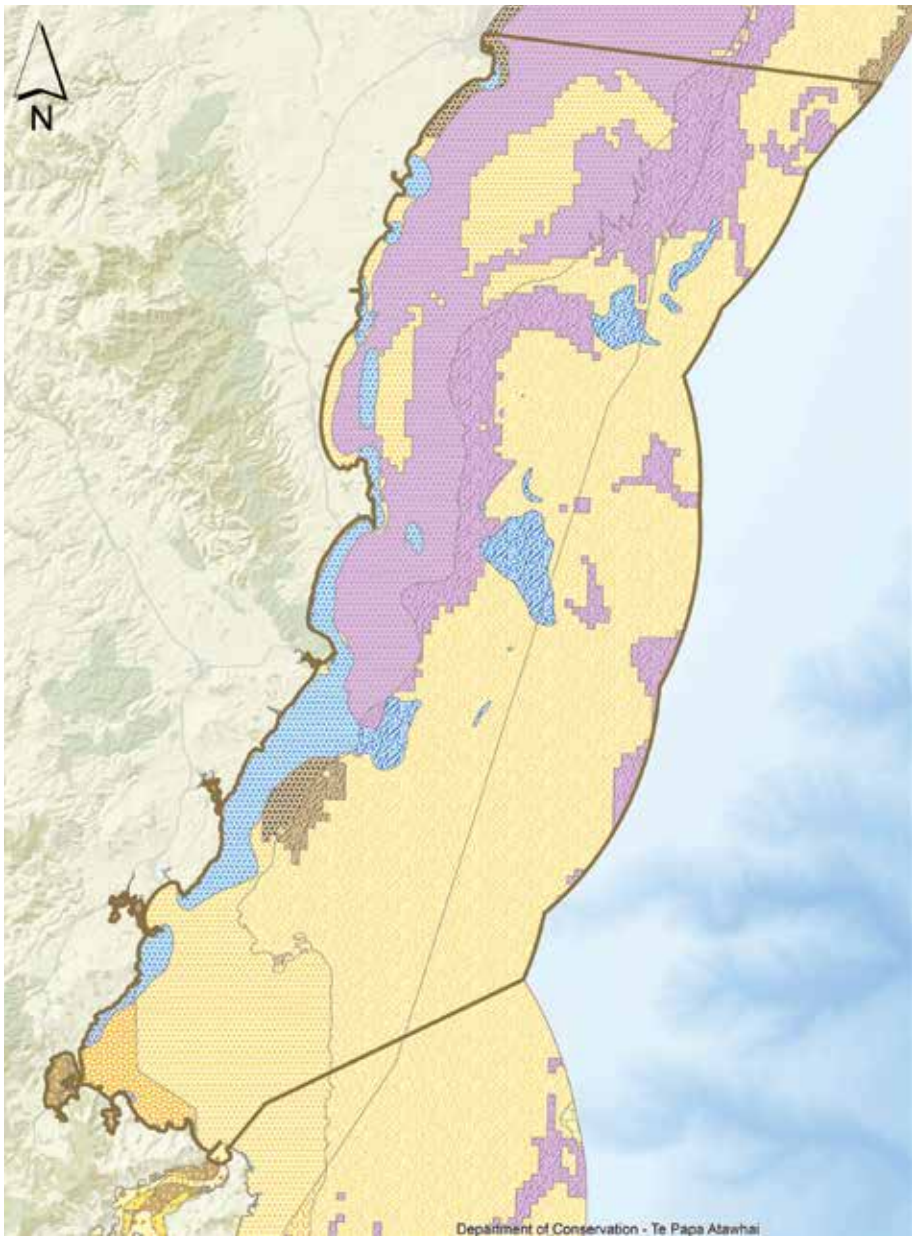
KEY TO COLOURS FOR HABITAT REGIONS



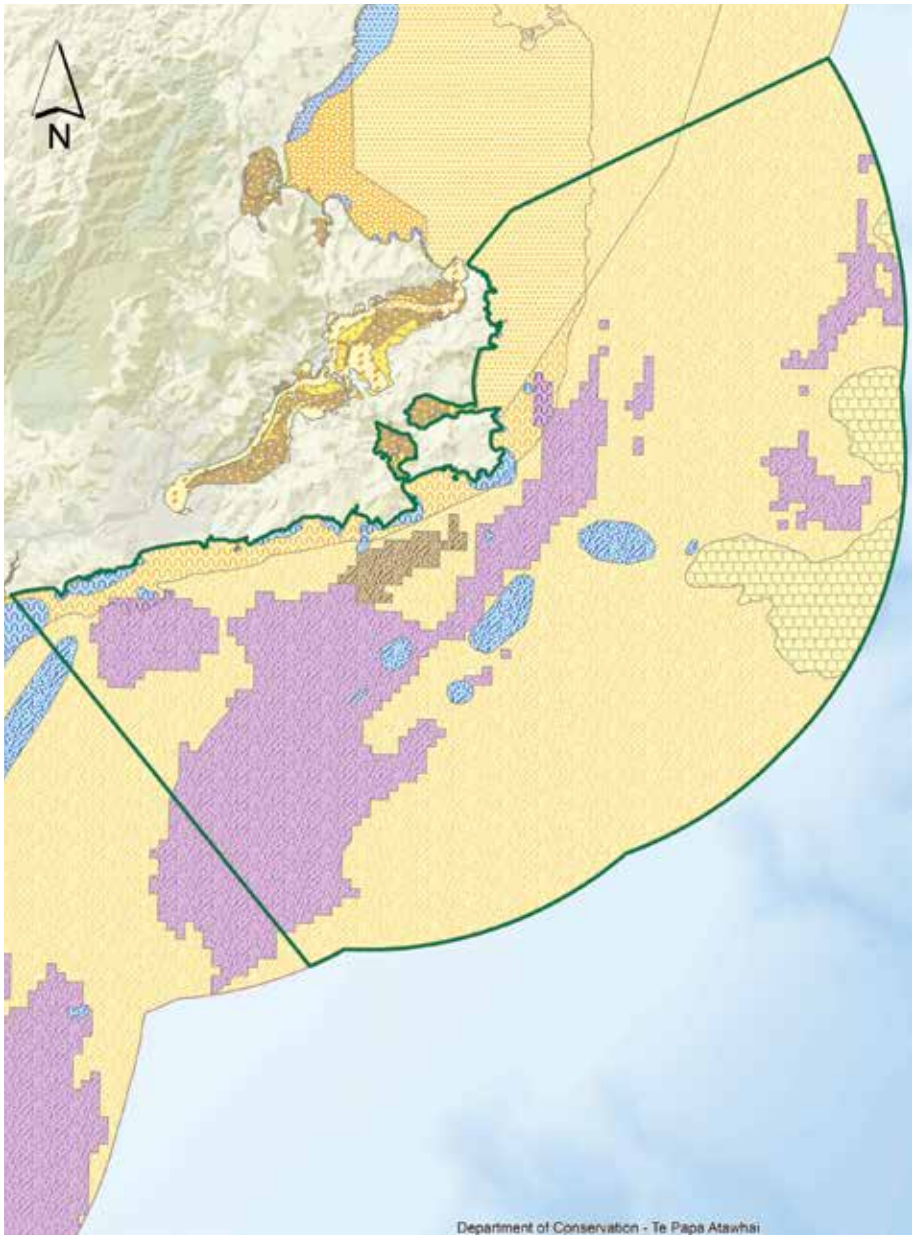
SOUTH CANTERBURY BIGHT



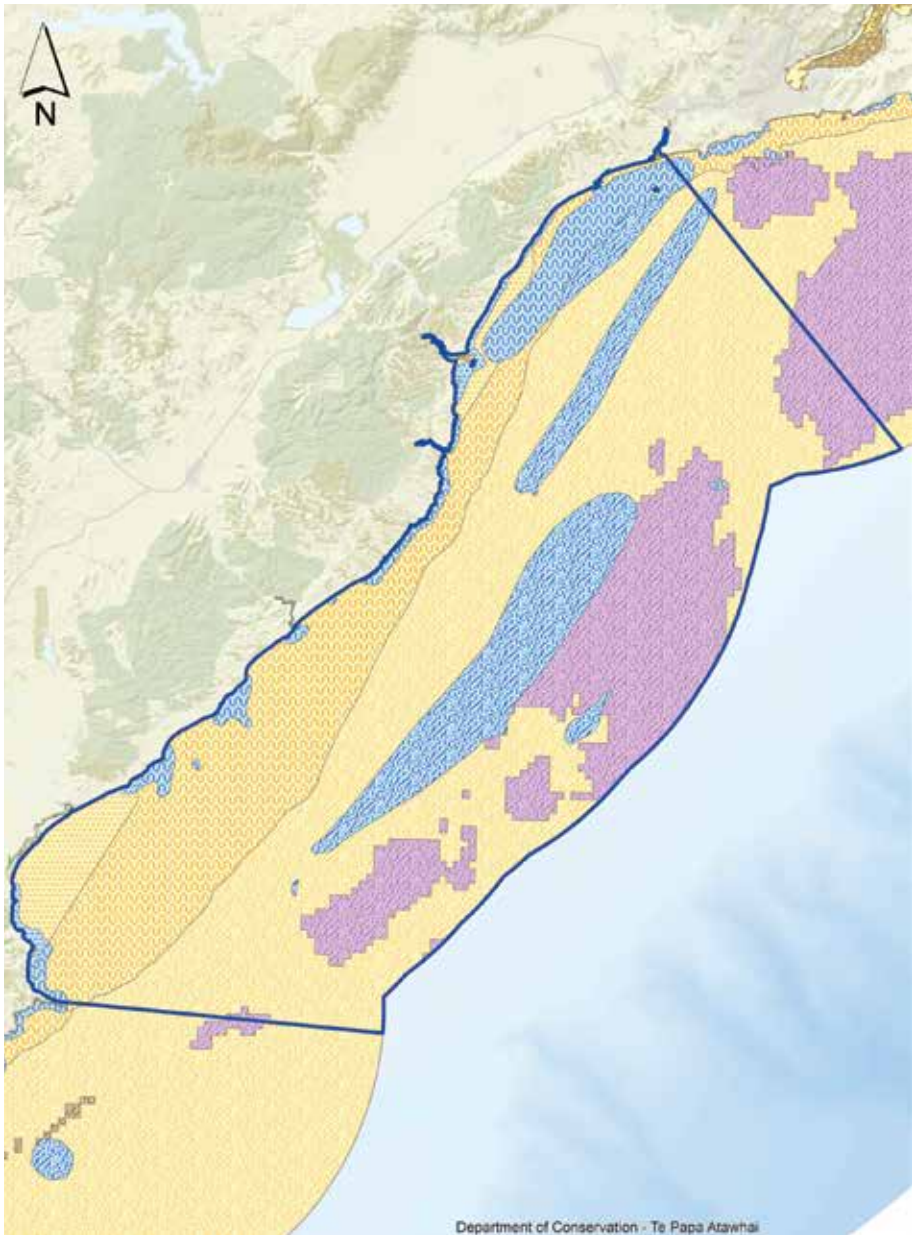
NORTH OTAGO



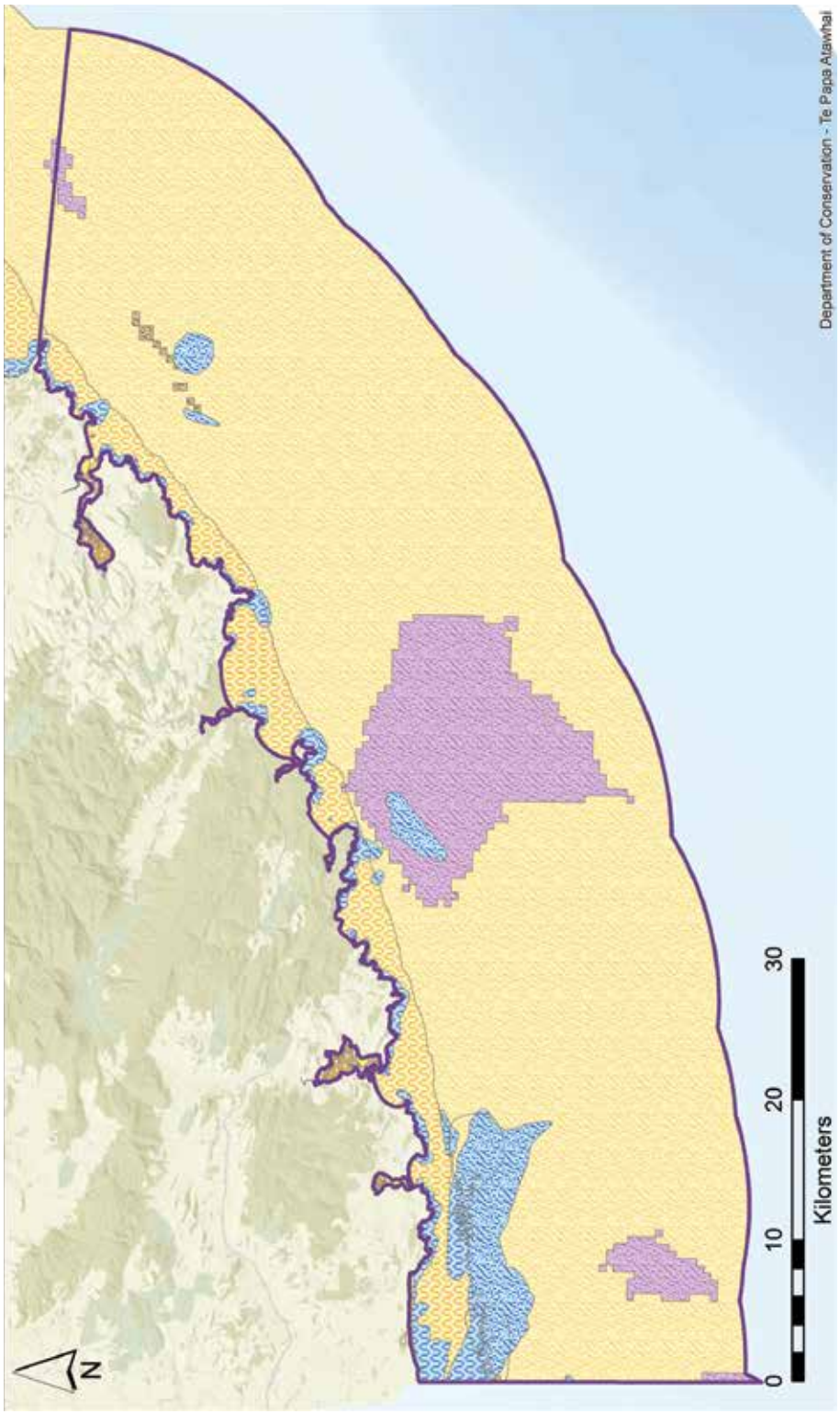
OTAGO PENINSULA



CLUTHA



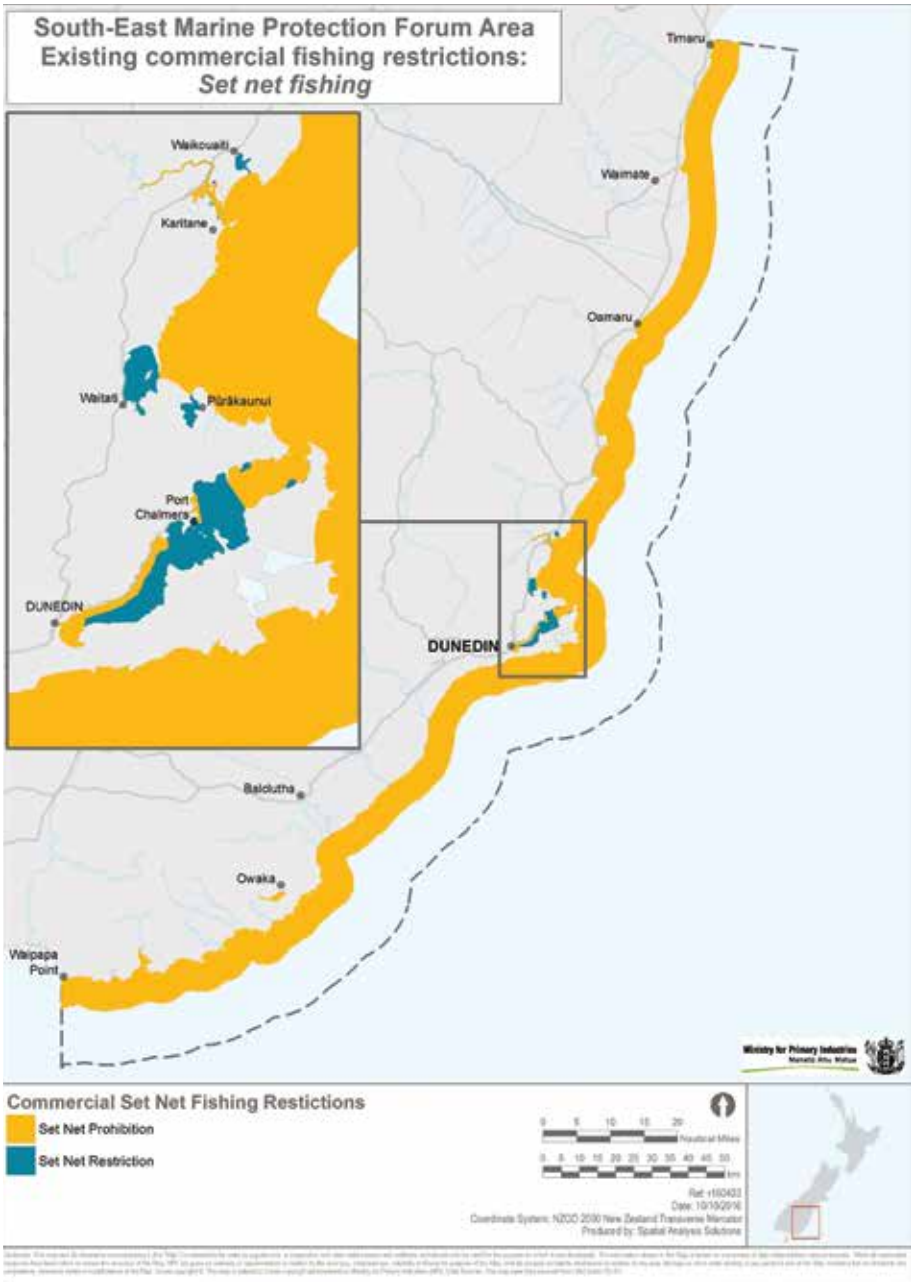
CATLINS

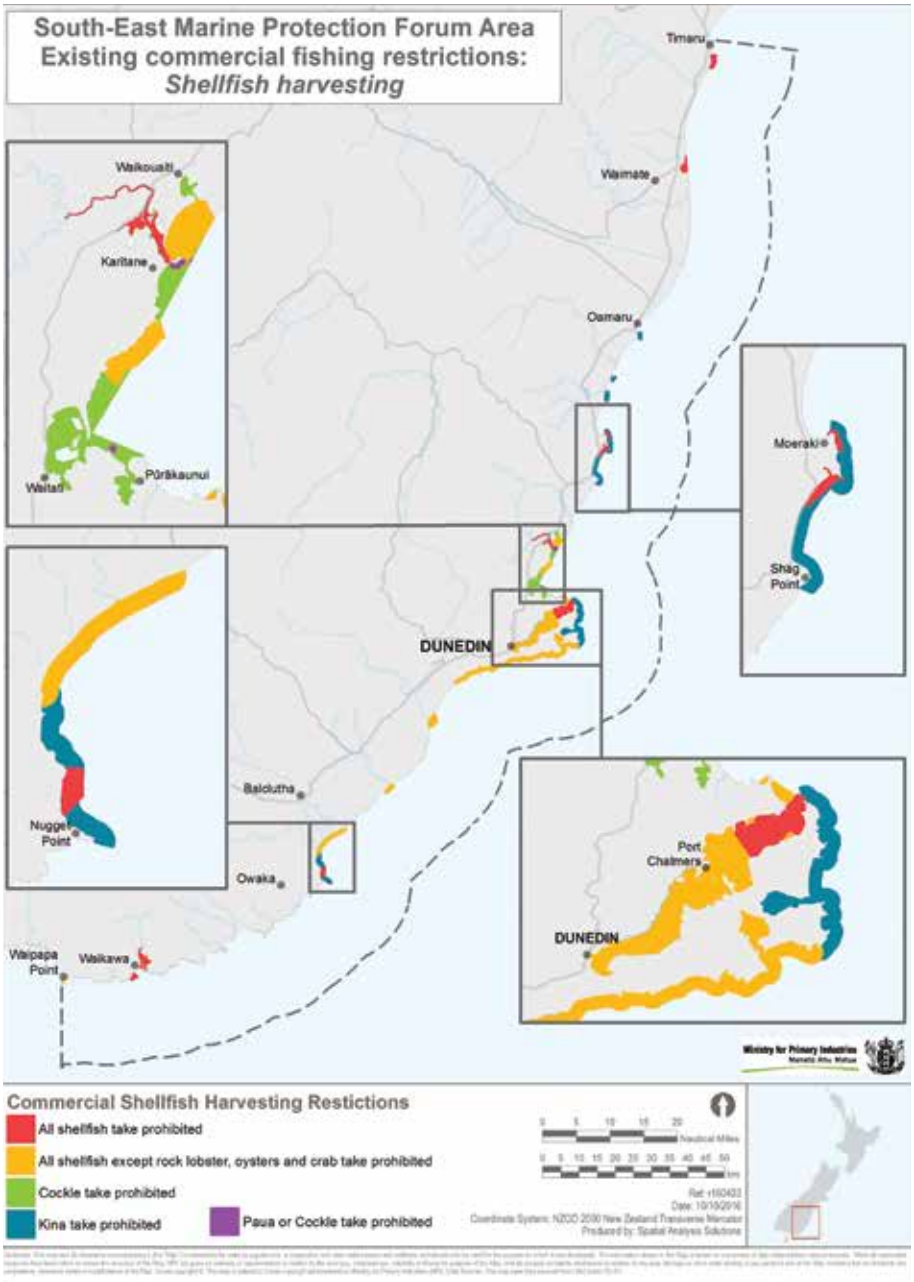

Department of Conservation - Te Papa Atawhai
N
0
10
20
30
Kilometers

Deborah Bay, Dunedin.
Photo: Otago Daily Times

APPENDIX 6
EXISTING FISHING RESTRICTIONS

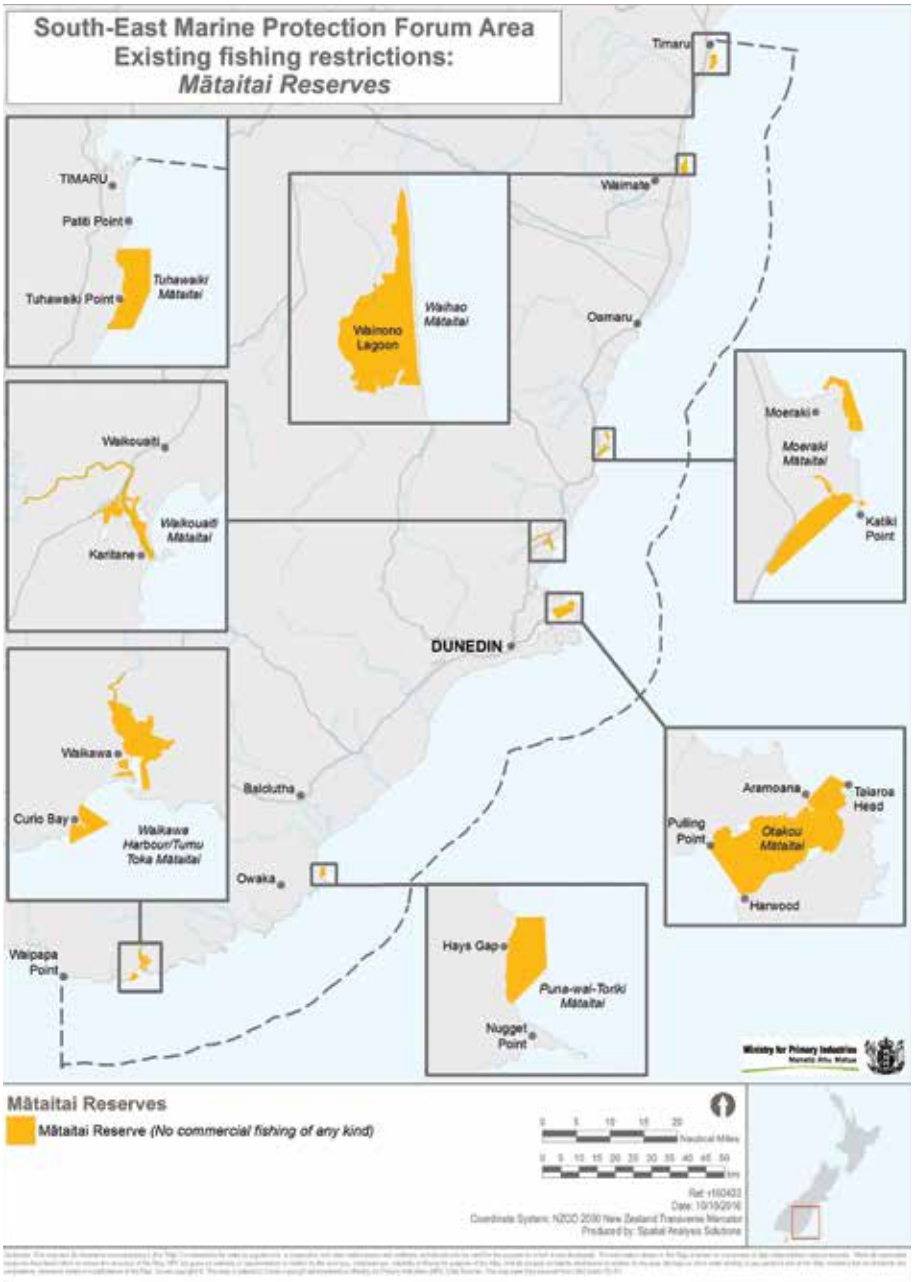

South-East Marine Protection Forum Area
Existing commercial fishing restrictions:
Danish seine, Purse seine and Trolling
Timaru
Waimate
Oamaru
Moeraki
Waikouaiti
DUNEDIN
Balclutha
Owaka
Waipapa Point
Waikawa
Commercial Danish seine, Purse seine and Trolling Fishing Restictions
Purse Seine, Trolling and Danish Seine Prohibition
Trolling and Danish Seine Prohibition
Danish Seine Prohibition


South-East Marine Protection Forum Area
Existing commercial fishing restrictions:
Set net fishing
Timaru
Waimate
Oamaru
Waikouaiti
Karitane
Waitati
Pūrākaunui
Port Chalmers
DUNEDIN
DUNEDIN
Balclutha
Owaka
Waipapa Point
Ministry for Primary Industries
Commercial Set Net Fishing Restictions
Set Net Prohibition
Set Net Restriction


South-East Marine Protection Forum Area
Existing commercial fishing restrictions:
Shellfish harvesting
Timaru
Waimate
Oamaru
Waikouaiti
Karitane
Waitati
Pūrākaunui
Moeraki
Shag Point
DUNEDIN
Nugget Point
Balclutha
Owaka
Waipapa Point
Waikawa
Port Chalmers
DUNEDIN
Ministry for Primary Industries
Manatū Ahu Matua
Commercial Shellfish Harvesting Restictions
All shellfish take prohibited
All shellfish except rock lobster, oysters and crab take prohibited
Cockle take prohibited
Kina take prohibited
Paua or Cockle take prohibited


South-East Marine Protection Forum Area
Existing commercial fishing restrictions:
Trawl fishing
Timaru
Waimate
Waitaki Mouth
Oamaru
Moeraki
Waikouaiti
DUNEDIN
Balclutha
Owaka
Waipapa Point
Waikawa
Ministry for Primary Industries
Commercial Trawl Fishing Restictions
Commercial trawl prohibitions
Seasonal commercial trawl prohibition (1 Jan - 10 Apr)
Must use low headline trawl nets
Trawling by vessels over 46m prohibited
Nautical Miles
Ref: r160403
Date: 19/10/2016
Coordinate System: NZGD 2000 New Zealand Transverse Mercator
Produced by: Spatial Analyses Solutions


South-East Marine Protection Forum Area
Existing amateur fishing restrictions:
All fishing methods
Timaru
Waimate
Oamaru
Waikouaiti
Karitane
Huriawa
Mapoutahi
Waitati
Pūrākaunui
Port Chalmers
DUNEDIN
DUNEDIN
Balclutha
Owaka
Waipapa Point
Ministry for Primary Industries
Manatū Ahu Matua
Amateur Fishing Restrictions
Set Net Prohibition
Set Net and Drag Net Prohibition
Paua Take and Set Net Prohibition
Set Net Fishers Must Remain in the Immediate Vicinity of the Net
Nautical Miles
Ref: r160403
Date: 10/10/2016
Coordinate System: NZGD 2000 New Zealand Transverse Mercator
Produced by: Spatial Analyses Solutions


South-East Marine Protection Forum Area
Existing fishing restrictions:
Mātaitai Reserves
Timaru
TIMARU
Patiti Point
Tuhawaiki Point
Tuhawaiki Mātaitai
Waimate
Waihao Mātaitai
Wainono Lagoon
Oamaru
Moeraki
Moeraki Mātaitai
Katiki Point
Waikouaiti
Waikouaiti Mātaitai
Karitane
DUNEDIN
Waikawa
Curio Bay
Waikawa Harbour/Tumu Toka Mātaitai
Balclutha
Owaka
Waipapa Point
Aramoana
Taiaroa Head
Pulling Point
Otakou Mātaitai
Harwood
Hays Gap
Puna-wai-Toriki Mātaitai
Nugget Point
Ministry for Primary Industries
Mātaitai Reserves
Mātaitai Reserve (No commercial fishing of any kind)
Nautical Miles
km

New Zealand fur seals.
Photo: John Barkla

APPENDIX 7
TĀONGA SPECIES NTCSA, SCHEDULES 97 & 98

Schedule 97
Taonga species

s 287

Birds

Name in Māori	Name in English	Scientific name
Hoiho	Yellow-eyed penguin	*Megadyptes antipodes*
Kāhu	Australasian harrier	*Circus approximans*
Kākā	South Island kākā	*Nestor meridionalis meridionalis*
Kākāpō	Kākāpō	*Strigops habroptilus*
Kākāriki	New Zealand parakeet	*Cyanoramphus* spp
Kakaruai	South Island robin	*Petroica australis australis*
Kakī	Black stilt	*Himantopus novaezelandiae*
Kāmana	Crested grebe	*Podiceps cristatus*
Kārearea	New Zealand falcon	*Falco novaeseelandiae*
Karoro	Black-backed gull	*Larus dominicanus*
Kea	Kea	*Nestor notabilis*
Kōau	Black shag	*Phalacrocorax carbo*
	Pied shag	*Phalacrocorax varius varius*
	Little shag	*Phalacrocorax melanoleucos brevirostris*
Koekoeā	Long-tailed cuckoo	*Eudynamys taitensis*
Kōparapara *or* Korimako	Bellbird	*Anthornis melanura melanura*
Kororā	Blue penguin	*Eudyptula minor*
Kōtare	Kingfisher	*Halcyon sancta*
Kōtuku	White heron	*Egretta alba*
Kōwhiowhio	Blue duck	*Hymenolaimus malacorhynchos*
Kūaka	Bar-tailed godwit	*Limosa lapponica*
Kūkupa/Kererū	New Zealand wood pigeon	*Hemiphaga novaeseelandiae*
Kuruwhengu/Kuruwhengi	New Zealand shoveller	*Anas rhynchotis*
Mātā	Fernbird	*Bowdleria punctata punctata* and *Bowdleria punctata stewartiana* and *Bowdleria*

Name in Māori	Name in English	Scientific name
		punctata wilsoni and *Bowdleria punctata candata*
Matuku moana	Reef heron	*Egretta sacra*
Miromiro	South Island tomtit	*Petroica macrocephala macrocephala*
Miromiro	Snares Island tomtit	*Petroica macrocephala dannefaerdi*
Mohua	Yellowhead	*Mohoua ochrocephala*
Pākura/Pūkeko	Swamp hen/Pūkeko	*Porphyrio porphyrio*
Pārera	Grey duck	*Anas superciliosa*
Pateke	Brown teal	*Anas aucklandica*
Pīhoihoi	New Zealand pipit	*Anthus novaeseelandiae*
Pīpīwharauroa	Shining cuckoo	*Chrysococcyx lucidus*
Pīwakawaka	South Island fantail	*Rhipidura fuliginosa fuliginosa*
Poaka	Pied stilt	*Himantopus himantopus*
Pokotiwha	Snares crested penguin	*Eudyptes robustus*
Pūtakitaki	Paradise shelduck	*Tadorna variegata*
Riroriro	Grey warbler	*Gerygone igata*
Roroa	Great spotted kiwi	*Apteryx haastii*
Rowi	Ōkārito brown kiwi	*Apteryx mantelli*
Ruru koukou	Morepork	*Ninox novaeseelandiae*
Takahē	Takahē	*Porphyrio mantelli*
Tara	Terns	*Sterna* spp
Tawaki	Fiordland crested penguin	*Eudyptes pachyrhynchus*
Tete	Grey teal	*Anas gracilis*
Tīeke	South Island saddleback	*Philesturnus carunculatus carunculatus*
Tītī	Sooty shearwater/Muttonbird/ Hutton's shearwater Common diving petrel South Georgian diving petrel Westland petrel Fairy prion Broad-billed prion White-faced storm petrel Cook's petrel	*Puffinus griseus* and *Puffinus huttoni* and *Pelecanoides urinatrix* and *Pelecanoides georgicus* and *Procellaria westlandica* and *Pachyptila turtur* and *Pachyptila vittata* and *Pelagodroma marina* and *Pterodroma cookii* and *Pterodroma inexpectata*

Name in Māori	Name in English	Scientific name
	Mottled petrel	
Tītitipounamu	South Island rifleman	*Acanthisitta chloris chloris*
Tokoeka	South Island brown kiwi	*Apteryx australis*
Toroa	Albatrosses and Mollymawks	*Diomedea* spp
Toutouwai	Stewart Island robin	*Petroica australis rakiura*
Tūī	Tūī	*Prosthemadera novaeseelandiae*
Tutukiwi	Snares Island snipe	*Coenocorypha aucklandica huegeli*
Weka	Western weka	*Gallirallus australis australis*
Weka	Stewart Island weka	*Gallirallus australis scotti*
Weka	Buff weka	*Gallirallus australis hectori*

Plants

Name in Māori	Name in English	Scientific name
Akatorotoro	White rata	*Metrosideros perforata*
Aruhe	Fernroot (bracken)	*Pteridium aquilinum* var *esculentum*
Harakeke	Flax	*Phormium tenax*
Horoeka	Lancewood	*Pseudopanax crassifolius*
Houhi	Mountain ribbonwood	*Hoheria lyalli* and *H. glabata*
Kahikatea	Kahikatea/White pine	*Dacrycarpus dacrydioides*
Kāmahi	Kāmahi	*Weinmannia racemosa*
Kānuka	Kānuka	*Kunzia ericoides*
Kāpuka	Broadleaf	*Griselinia littoralis*
Karaeopirita	Supplejack	*Ripogonum scandens*
Karaka	New Zealand laurel/Karaka	*Corynocarpus laevigata*
Karamū	Coprosma	*Coprosma robusta, coprosma lucida, coprosma foetidissima*
Kātote	Tree fern	*Cyathea smithii*
Kiekie	Kiekie	*Freycinetia baueriana* subsp *banksii*
Kōhia	NZ Passionfruit	*Passiflora tetranda*
Korokio	Korokio Wire-netting bush	*Corokia cotoneaster*

Name in Māori	Name in English	Scientific name
Koromiko/Kōkōmuka	Koromiko	*Hebe salicfolia*
Kōtukutuku	Tree fuchsia	*Fuchsia excorticata*
Kōwahi Kōhai	Kōwhai	*Sophora microphylla*
Mamaku	Tree fern	*Cyathea medullaris*
Māni a	Sedge	*Carex flagellifera*
Mānuka Kahikātoa	Tea-tree	*Leptospermum scoparium*
Māpou	Red matipo	*Myrsine australis*
Mataī	Mataī/Black pine	*Prumnopitys taxifolia*
Miro	Miro/Brown pine	*Podocarpus ferrugineus*
Ngaio	Ngaio	*Myoporum laetum*
Nīkau	New Zealand palm	*Rhopalostylis sapida*
Pānako	(Species of fern)	*Asplenium obtusatum*
Pānako	(Species of fern)	*Botrychium australe* and *B. biforme*
Pātōtara	Dwarf mingimingi	*Leucopogon fraseri*
Pīngao	Pīngao	*Desmoschoenus spiralis*
Pōkākā	Pōkākā	*Elaeocarpus hookerianus*
Ponga/Poka	Tree fern	*Cyathea dealbata*
Rātā	Southern rātā	*Metrosideros umbellata*
Raupō	Bulrush	*Typha angustifolia*
Rautāwhiri/Kōhūhū	Black matipo/Māpou	*Pittosporum tenuifolium*
Rimu	Rimu/Red pine	*Dacrydium cypressinum*
Rimurapa	Bull kelp	*Durvillaea antarctica*
Taramea	Speargrass, spaniard	*Aciphylla* spp
Tarata	Lemonwood	*Pittosporum eugenioides*
Tawai	Beech	*Nothofagus* spp
Tētēaweka	Muttonbird scrub	*Olearia angustifolia*
Tī rākau/Tī Kōuka	Cabbage tree	*Cordyline australis*
Tīkumu	Mountain daisy	*Celmisia spectabilis* and *C. semicordata*
Tītoki	New Zealand ash	*Alectryon excelsus*
Toatoa	Mountain Toatoa, Celery pine	*Phyllocladus alpinus*

Name in Māori	Name in English	Scientific name
Toetoe	Toetoe	*Cortaderia richardii*
Tōtara	Tōtara	*Podocarpus totara*
Tutu	Tutu	*Coriaria* spp
Whararikī	Mountain flax	*Phormium cookianum*
Whīnau	Hīnau	*Elaeocarpus dentatus*
Wī	Silver tussock	*Poa cita*
Wīwī	Rushes	*Juncus* all indigenous *Juncus* spp and *J. maritimus*

Marine mammals

Name in Māori	Name in English	Scientific name
Ihupuku	Southern elephant seal	*Mirounga leonina*
Kekeno	New Zealand fur seals	*Arctocephalus forsteri*
Paikea	Humpback whales	*Megaptera novaeangliae*
Parāoa	Sperm whale	*Physeter macrocephalus*
Rāpoka/Whakahao	New Zealand sea lion/ Hooker's sea lion	*Phocarctos hookeri*
Tohorā	Southern right whale	*Balaena australis*

Schedule 98
Customary fisheries

s 297

Part A
Taonga fish species

Name in Māori	Name in English	Scientific name
Kāeo	Sea tulip	*Pyura pachydermatum*
Koeke	Common shrimp	*Palaemon affinis*
Kōkopu/Hawai	Giant bully	*Gobiomorphus gobioides*
Kōwaro	Canterbury mudfish	*Neochanna burrowsius*
Paraki/Ngaiore	Common smelt	*Retropinna retropinna*
Piripiripōhatu	Torrentfish	*Cheimarrichthys fosteri*
Taiwharu	Giant kōkopu	*Galaxias argenteus*

Part B
Shellfish Species

Name in Māori	Name in English	Scientific name
Pipi/Kākahi	Pipi	*Paphies australe*
Tuaki	Cockle	*Austrovenus stutchburgi*
Tuaki/Hākiari, Kuhakuha/Pūrimu	Surfclam	*Dosinia anus, Paphies donacina, Mactra discor, Mactra murchsoni, Spisula aequilateralis, Basina yatei,* or *Dosinia subrosa*
Tuatua	Tuatua	*Paphies subtriangulata, Paphies donacina*
Waikaka/Pūpū	Mudsnail	*Amphibola crenata, Turbo smaragdus, Zedilom* spp

Back cover photos (from top):
Otago Daily Times
John Barkla
Otago Daily Times
Chris Hepburn
Otago Daily Times