Chapter 4 Establishing New Marine Protected Areas in the East Marine Region

Australia is committed to the development of a National Representative System of Marine Protected Areas with the primary goal to establish and manage a comprehensive, adequate and representative system of Marine Protected Areas to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia's biological diversity at all levels. In summary:

- each distinct provincial bioregion in Australian waters will be represented in a Marine Protected Area network;
- the design of the network should be sufficient to achieve the conservation of all major ecosystem functions and features; and
- the network should properly represent the identified habitats and biota (the range of plants and animals and the places where they live) characteristic of each provincial bioregion.

The Marine Protected Area network, established through the marine bioregional planning process, will include highly protected zones equivalent to IUCN Categories I and II and large areas initially assigned to IUCN Category VI (see box 4.1). This precautionary approach recognises that in many areas, the Marine Protected Area network will be developed in the absence of detailed biological information. Using this staged and adaptive approach to zoning is consistent with the principles of ecological sustainable development. A staged approach also allows for continued gathering of information about specific ecological, economic and social values in an area, and the threats to those values. Where a staged approach is taken, the Government will identify the information gaps and the strategy for addressing these gaps over time.

The National Representative System of Marine Protected Areas is being developed using the national *Guidelines for Establishing the National Representative System of Marine Protected Areas* agreed between the Australian Government, the States and the Northern Territory in 1998.

Since 1998, there have been many decisions that have helped formulate the Australian Government's approach to establishing a Marine Protected Area network. These include developing a clearer understanding of how the *Guidelines for Establishing the National Representative System of Marine Protected Areas* will be applied by the Australian Government, drawing on the best available scientific information. The Department of the Environment, Water, Heritage and the Arts, in consultation with other Australian Government agencies, has set out this approach in the *Goals and Principles for the Establishment of the National Representative System of Marine Protected Areas in Commonwealth Waters*.

The goals and principles are derived from the nationally agreed guidelines and from the Australian Government's implementation experience to date, to ensure proper consideration of ecological and socio-economic requirements. These goals and principles are set out in section 4.1 of this chapter.

The Australian Government considers that measures other than Marine Protected Areas also play a critical role in biodiversity conservation and that the existence and effectiveness of those measures should be taken into account in assessing the adequacy of any Marine Protected Area network.

In addition to Marine Protected Areas, the Government supports the use of spatial measures in fisheries management. While the two spatial management mechanisms are designed and used for different purposes, they can have mutually beneficial outcomes. Fisheries-specific measures, including both temporary and permanent area closures, are developed according to the particular goals and circumstances of each fishery. Marine Protected Areas are developed in Commonwealth waters for the purpose of general biodiversity conservation or to address threats to particular species or habitats – not to manage fisheries. Marine Protected Areas may lead to improved fisheries performance and fisheries closures may achieve biodiversity benefits. The Government seeks to ensure that the design of Marine Protected Areas takes into account the potential for beneficial impacts on fishery resources and that Marine Protected Areas are selected and zoned to enhance or conserve fisheries wherever possible.

Marine Protected Areas have long-term benefits for the environment and the economy, but even where impacts can be minimised, they may affect some businesses in the short- to medium-term. The Government recognises that a new Marine Protected Area network may transfer some marine resources from current production to biodiversity conservation. Therefore, before any new Marine Protected Areas are declared, it will assess the financial and economic costs and benefits of each proposed regional Marine Protected Area network and decide on the provision of any adjustment assistance to affected businesses.

4.1 Goals and principles

The Australian Government is committed to develop a National Representative System of Marine Protected Areas by 2012. The development of Marine Bioregional Plans for each of Australia's five large-scale Marine Regions provides an opportunity to make substantial progress towards this goal. Areas suitable for inclusion in the National Representative System of Marine Protected Areas will be identified during the planning process.

The network will be representative of the 41 provincial-scale bioregions recognised in Commonwealth waters, as identified by the *Integrated Marine and Coastal Regionalisation of Australia Version 4.1* (IMCRA v4.0). The focus is to ensure that Marine Protected Areas are developed for those provincial bioregions that are currently not represented, or are under-represented, in Marine Protected Areas.

The management of Marine Protected Areas may require conditions to be put on the nature and extent of activities that can occur within them. This means the identification of areas suitable for inclusion in the National Representative System of Marine Protected Areas needs to be based upon clear goals and principles. These goals and principles recognise both the scientific information available and the interests of ocean users whose activities may be impacted upon by new Marine Protected Areas.

This approach seeks to draw on available science while recognising from the outset that the information base is poor for some areas. Much of each Marine Region is far offshore, composed of very deep water, and has not been the subject of detailed study or data gathering. In these circumstances, existing detailed and peer-reviewed data will be supplemented with information drawn from known linkages between biodiversity and the physical environment; that is, where detailed species and habitat data is lacking, surrogates for diversity (such as water depth, substrate and geomorphology) will be used.

Key inputs to the process will include:

- existing scientific information underlying IMCRA v4.0 (e.g. bathymetry, geomorphic features, distribution of endemic biota);
- additional regional information on habitats, species distribution and ecology gathered during the marine bioregional planning process;
- data on the location and distribution of human activities in the Region;
- views of ocean users and stakeholders in each Marine Region;
- consideration of the contribution that existing spatial management measures can make to the National Representative System of Marine Protected Areas; and
- consideration of potential management effectiveness (e.g. feasibility of compliance).

4.1.1 The goals

Four goals to help maximise conservation outcomes will guide the identification of areas suitable to be included in the National Representative System of Marine Protected Areas. These goals apply nationally, and they will be used to guide identification of representative Marine Protected Areas in all the Marine Regions (except the South-east Marine Region, where the process has been completed). Additionally, a number of supporting principles will assist in determining the location, selection (when more than one option is available to meet the goals), design and zoning of suitable areas.

Goal 1 – each **provincial bioregion** occurring in the Region should be represented at least once in the Marine Protected Area network. Priority will be given to provincial bioregions not already represented in the National Representative System.

Goal 2 – the Marine Protected Area network should cover all **depth ranges** occurring in the Region or other gradients in light penetration in waters over the continental shelf.

Goal 3 – the Marine Protected Area network should seek to include examples of **benthic/demersal biological** features (e.g. habitats, communities, sub-regional ecosystems, particularly those with high biodiversity value, species richness and endemism) known to occur in the Region at a broad sub-provincial (hundreds of kilometres) scale.

Goal 4 – the Marine Protected Area network should include all **types of seafloor** features. There are 21 seafloor types across the entire Exclusive Economic Zone. Some provincial bioregions will be characterised by the presence of a certain subset of features, such as continental slope or seamounts.

4.1.2 Guiding principles

Location of Marine Protected Areas

1. Marine Protected Areas will be located taking into account the occurrence and location of existing spatial management arrangements (e.g. existing protected areas and sectoral measures) that contribute to the goals.

Humpback whale. Photo: Dave Paton.

2. The goals should be met with the least number of separate Marine Protected Areas (i.e. a smaller number of larger Marine Protected Areas rather than many small Marine Protected Areas) to maximise conservation outcomes.

Selection

3. The capacity of a Marine Protected Area to mitigate identified threats to conservation values.
4. The occurrence of spatially defined habitats for and/or aggregations of threatened and/or migratory species.
5. The occurrence of ecologically important pelagic features which have a consistent and definable spatial distribution.
6. The occurrence of known small-scale (tens of kilometres) ecosystems associated with the benthic/demersal environment.
7. Relevant available information about small-scale distribution of sediment types and sizes and other geo-oceanographic variables.
8. Occurrence of listed heritage sites (where inclusion in the Marine Protected Area network would improve administration of protection regimes).
9. Socio-economic costs should be minimised.

Design

Once the broad location of Marine Protected Areas has been determined, the following **design principles** should be applied to further refine the size and shape of individual Marine Protected Areas:

10. Individual areas should, as far as practicable, include continuous depth transects (e.g. from the shelf to the abyss).
11. Whole seafloor features (such as geomorphic features) should be included.
12. Features should be replicated wherever possible within the system of Marine Protected Areas (i.e. included more than once).
13. Size and shape orientation should account for inclusion of connectivity corridors and biological dispersal patterns within and across Marine Protected Areas.
14. Boundary lines should be simple, as much as possible following straight latitudinal/ longitudinal lines.
15. Boundary lines should be easily identifiable, where possible coinciding with existing regulatory boundaries.
16. The size and shape of each area should be set to minimise socio-economic costs.

For each area identified as a candidate Marine Protected Area, specific conservation objectives will be set. Area-specific conservation objectives will reflect the four goals. For example, they may relate to the integrity of bioregional characteristics (Goal 1) or of specific large-scale biological features (Goal 3) that the area aims to represent. They

Lord Howe Island Group. Photo: Ian Hutton and the Department of the Environment, Water, Heritage and the Arts.

may also relate to other relevant principles, such as the integrity of habitat important for a threatened species (Principle 4).

To accommodate climate change as far as practicable, design principles and zoning that promote resilience and adaptation will be incorporated, in particular, accommodating latitudinal or longitudinal movement in ecosystem or species distributions and changes in oceanographic features and currents anticipated in response to climate change.

Zoning

Because zoning of Marine Protected Areas (i.e. the allocation of appropriate management regimes to different areas) has the potential to affect the socio-economic costs associated with the establishment of any protected area, the Australian Government recognises the importance of addressing zoning considerations as early as possible in the process. The following **zoning principles** will be applied in developing the regional systems of Marine Protected Areas:

17. Zoning will be based on the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)/the World Conservation Union (IUCN) categories of protection (see box 4.1).
18. The regional Marine Protected Area network will aim to include some highly protected areas (IUCN Categories I and II) in each provincial bioregion.
19. Zoning will be based on the consideration of the threat that specific activities pose to the conservation objectives of each Marine Protected Area.
20. Zoning of Marine Protected Areas will seek to ensure that the conservation objectives of the area are protected, taking into account a precautionary approach to threats as well as the relative costs and benefits (economic, social and environmental) of different zoning arrangements.

Box 4.1 Categories assigned under the EPBC Act for Marine Protected Areas

Under the EPBC Act marine reserves must be assigned to an IUCN category. These IUCN categories are:

- Strict nature reserve (IUCN Ia): Managed primarily for scientific research or environmental monitoring;
- Wilderness area (IUCN Ib): Protected and managed to preserve its unmodified condition;
- National Park (IUCN II): Protected and managed to preserve its natural condition;
- Natural Monument (IUCN III): Protected and managed to preserve its natural or cultural features;
- Habitat/species management area (IUCN IV): Managed primarily, including (if necessary) through active intervention, to ensure maintenance of habitats or to meet the requirements of specific species;
- Protected landscape/seascape (IUCN V): Managed to safeguard the integrity of the traditional interactions between people and nature; and
- Managed resource protected area (IUCN VI): Managed to ensure long-term protection and maintenance of biological diversity with a sustainable flow of natural products and services to meet community needs.

See <www.iucn.org/themes/wcpa/pubs/guidelines.htm>

4.2 Regional specifications for identifying representative Marine Protected Areas in the East Marine Region

4.2.1 Meeting the national goals in the East Marine Region

To achieve the four national goals for the establishment of the National Representative System of Marine Protected Areas in the Region, the following set of regional specifications have been developed, drawing on available biophysical information. Much of this information is available in more detail in this Bioregional Profile or in the associated web-based products.

Specifying Goal 1 – provincial bioregions

The network of representative Marine Protected Areas in the East Marine Region will represent each of the fourteen provincial bioregions (figure 2.4). Each provincial bioregion has been identified because it reflects broad-scale patterns of biodiversity and evolution. In identifying new areas for inclusion in the National Representative System of Marine Protected Areas, priority will be given to areas representative of provincial bioregions with no, or very low levels, of current representation.

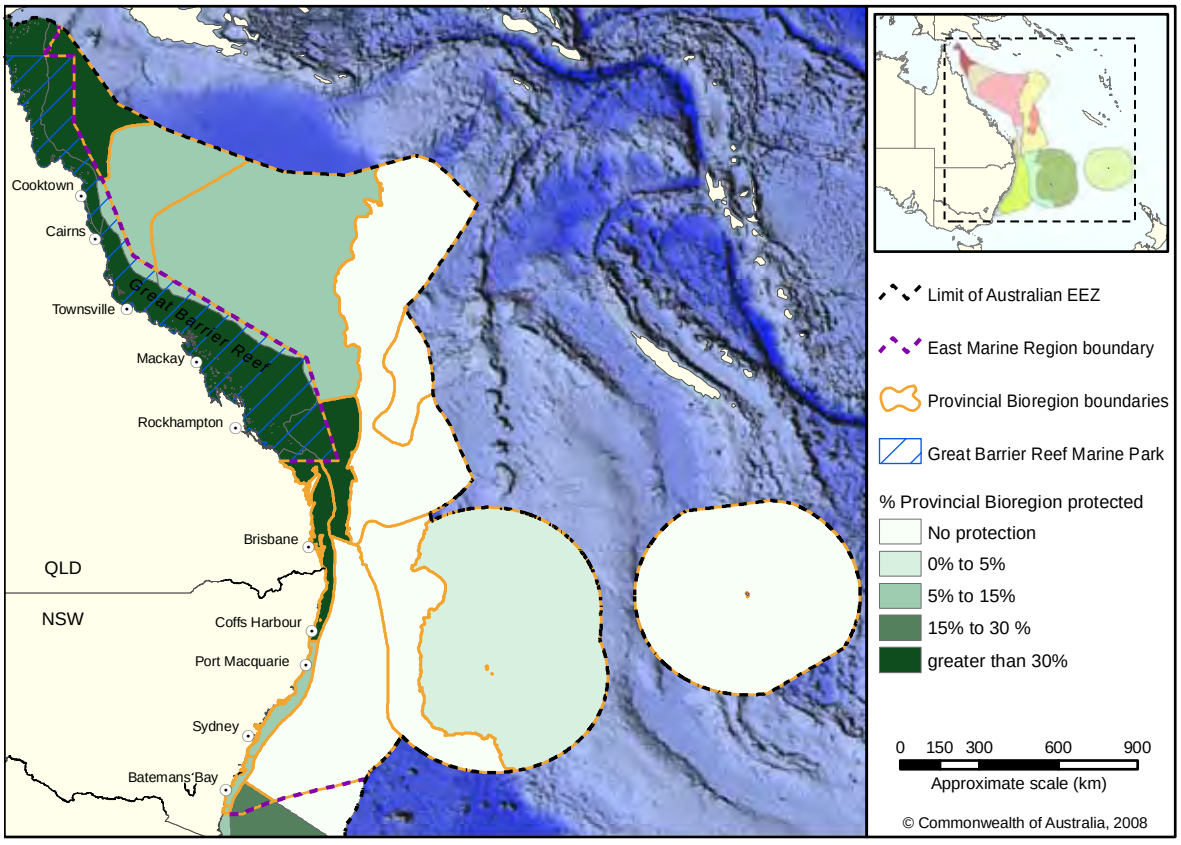
The Region has existing Marine Protected Areas within nine of the fourteen provincial bioregions represented. A number of protected areas have been designated in coastal waters and there are a range of spatial management measures in place, as outlined in the next section of this chapter. See figure 4.1 for information on existing Marine Protected Area coverage in each provincial bioregion.

All of these reserves contribute to the National Representative System of Marine Protected Areas, and several were established primarily to protect specific features or sites and are not necessarily broadly representative of provincial bioregions. The Great Barrier Reef Marine Park includes only the edges of several provincial bioregions in the Coral Sea.

In identifying new areas in the Region suitable for inclusion in the National Representative System of Marine Protected Areas, priority will be given to areas representative of the following provincial bioregions:

- Northeast Transition
- Northeast Province
- Kenn Transition
- Kenn Province
- Central Eastern Province

Figure 4.1 Proportion of provincial bioregions in the East Marine Region protected by existing Marine Protected Areas and other spatial measures for marine or coastal conservation



- Tasman Basin Province
- Lord Howe Province
- Norfolk Island Province

Specifying Goal 2 – depth ranges

Depth is one of the main factors determining distribution of benthic and demersal biological communities. Depth reflects certain basic physical variables – such as light penetration and pressure – that determine what types of animals and plants are found in particular locations.

The Region includes an extensive expanse of abyssal plain, a narrow continental shelf, and chains of seamounts that run north-south, rising up from the abyssal plain. In these deep water systems, water depth is the primary determinant of light penetration. There is a high level of certainty that different types of biological communities will be associated with different depths or with different levels of light penetration.

The range of depths that occur in the East Marine Region will be represented in the network of representative Marine Protected Areas. Water depths in the Region range from 0 – 5 000 m, but the majority of the Region is represented within depths of 1000 – 5000 m (figure 4.2). The Region's provincial bioregions occur mainly in deep waters off the shelf and display significant variation in depth (see depth transects at figure 4.3). The biota (plants and animals) and habitats vary with the significant changes in depth across the Region. More detail on the depth ranges observed for each provincial bioregion is provided in table 4.1.

Specifying Goal 3 – large-scale biological features

The network of Marine Protected Areas will seek to include examples of known large-scale (greater than hundreds of kilometres) key ecological features. This will supplement the habitats and biota included through representing each of the provincial bioregions in the network.

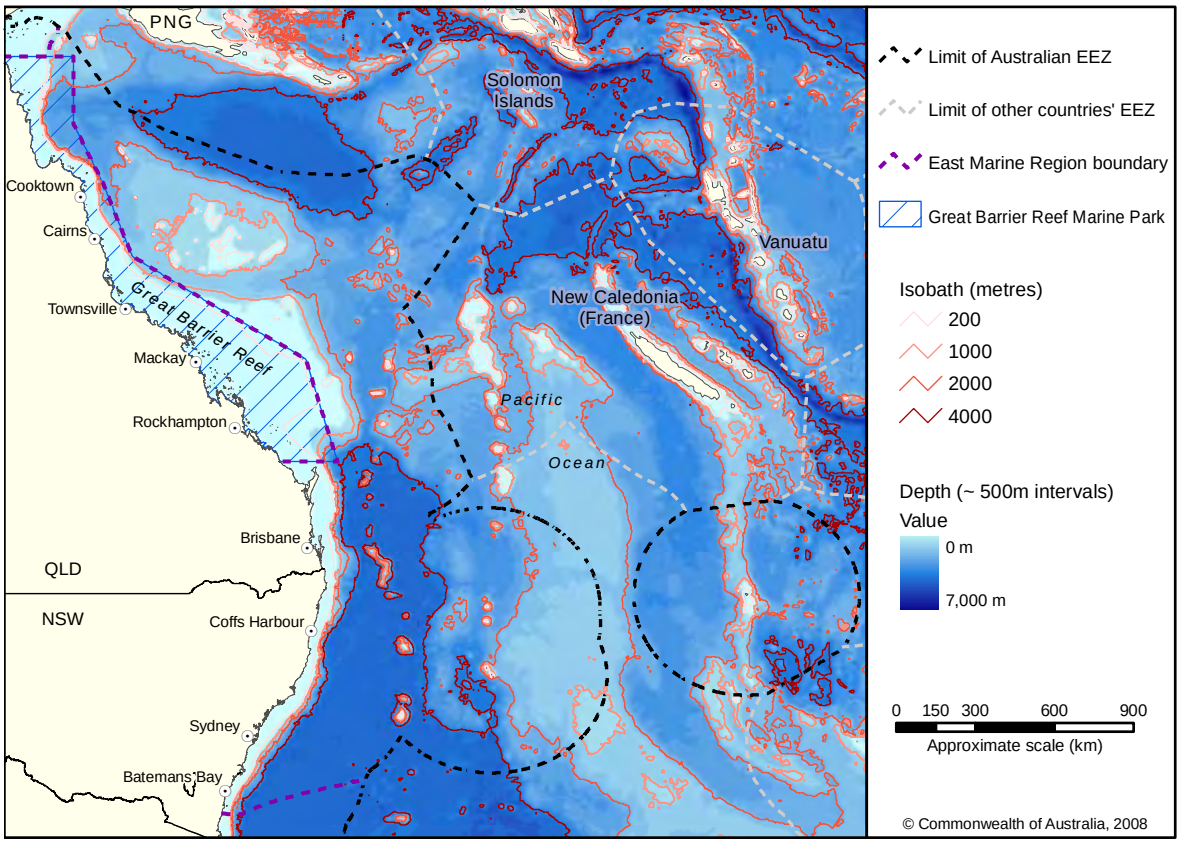
Some examples of the key ecological features that characterise the Region include: temperate (reef) corals and sponges; pelagic squid; large pelagic predators; the east coast humpback whale population; herbivorous fish of coral reefs; the offshore chains of seamounts and rises (including the Tasmantid Seamount Chain, Lord Howe Seamount Chain and Norfolk Ridge); the assemblages of scattered and diverse reefs and cays of the Coral Sea; and canyons of the eastern continental slope and shelf edge rocky reefs. More information about the key ecological features can be found in table 3.1.

The East Australian Current is an important oceanographic feature of the Region. It is characterised by a surface flow of warm nutrient-poor water running from the Coral Sea southwards along the full length of Australia's east coast.

Table 4.1 Provincial bioregion depth information

Provincial bioregion (National Marine Bioregionalisation number)	Total area (km²)	Percentage of bioregion occurring within the Region	Depth range within the Region (m)	Mean depth within the Region
Cape Province (20)	109 340	57.2	0–4200	2520
Northeast Transition (19)	148 700	89.1	0–4600	2270
Northeast Province (18)	442 870	95.4	0–4700	1750
Kenn Transition (16)	377 130	100	0–4800	3130
Kenn Province (17)	57 420	100	0–2500	1890
Central Eastern Transition (15)	67 150	66.8	180–4800	2100
Central Eastern Shelf Transition (39)	43 030	61.2	1–240	80
Central Eastern Province (12)	266 590	87.7	170–5100	4190
Central Eastern Shelf Province (38)	18 220	79.4	20–240	120
Norfolk Island Province (21)	430 790	100	0–4300	2770
Lord Howe Province (14)	485 350	99.9	0–4500	2340
Tasman Basin Province (13)	156 420	100	120–5100	4420
Southeast Shelf Transition (37)	59 610	7.2	20–240	120
Southeast Transition (11)	241 910	3.6	130–5200	3480

Figure 4.2 Range of water depths across the Region



Typically the current is 100 km wide and 500 m deep travelling at up to 5 knots, and it is the interactions between the East Australian Current, other currents and seafloor features that are largely responsible for the existence of identifiable areas of biological richness. Large scale warm-core eddies, current disruptions around seamounts and reefs, the interfaces between cooler and warmer waters and the action of the current running parallel to the steep continental slope in the southern part of the region are all features that exist at a provincial, or larger, scale.

The high variability in geomorphic features and depths of the Region strongly influence the biological communities that occur on or near the seafloor. There is relatively good biological information on the distribution and extent of communities on the narrow continental shelf, for example the marked transition between tropical and temperate benthic species between Fraser Island and Coffs Harbour. There is less information about the distribution and extent of communities in the deep water systems further offshore and the abyssal plain. The bioregional planning process will provide further opportunities to identify other key ecological features that may be suitable for inclusion within this representative system.

Specifying Goal 4 – seafloor features

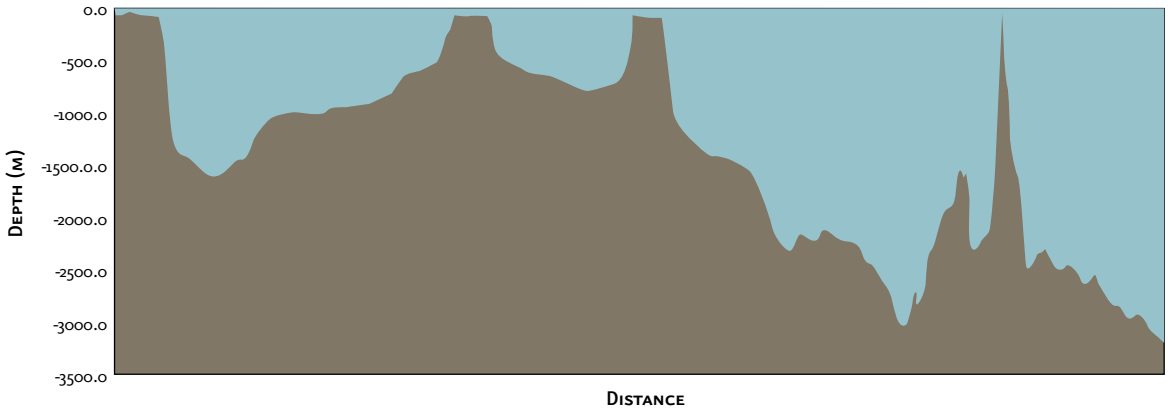
The Region is dominated by very deep expanses of abyssal plain and raised offshore blocks of continental crust. A number of regionally significant seafloor features (geomorphic features), including the offshore chains of seamounts and rises of the Tasman Sea, and the assemblages of scattered and diverse reefs and cays of the Coral Sea, are found in these areas. More information about the regionally significant geomorphic features can be found in table 3.1.

Different biological communities are often associated with different types of seafloor geomorphology. Ensuring that the characteristic features of each provincial bioregion are represented is important in achieving a comprehensive and representative sample of biodiversity within the Marine Protected Area network. 'Seafloor features' here refer specifically to the geomorphic features as defined by IMCRA v.4.0.

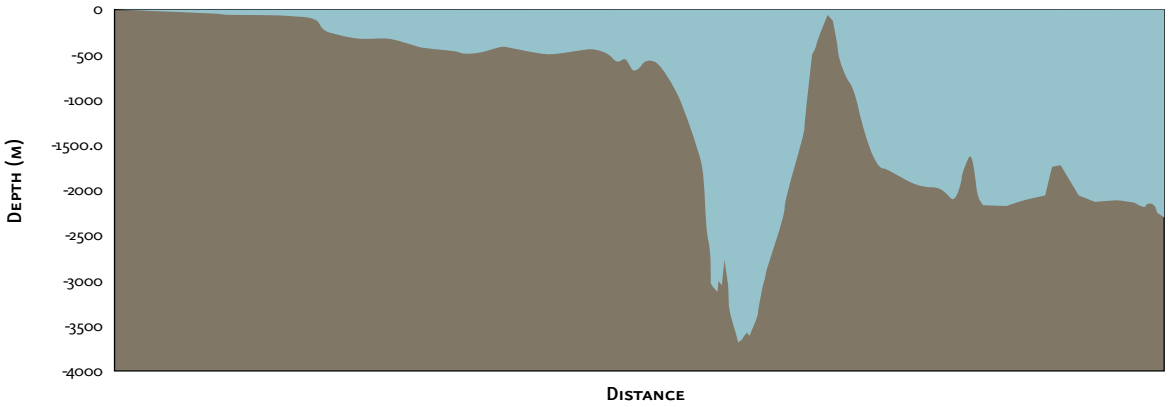
The network of Marine Protected Areas in the Region will include representative examples of the 18 seafloor features identified in the Region. Table 4.2 provides detail on those seafloor features that only occur in one provincial bioregion or at one site within the Region. Table 4.3 provides information on the occurrence and extent of all 18 seafloor features within each provincial bioregion.

Figure 4.3 Depth and elevation transects in the Region

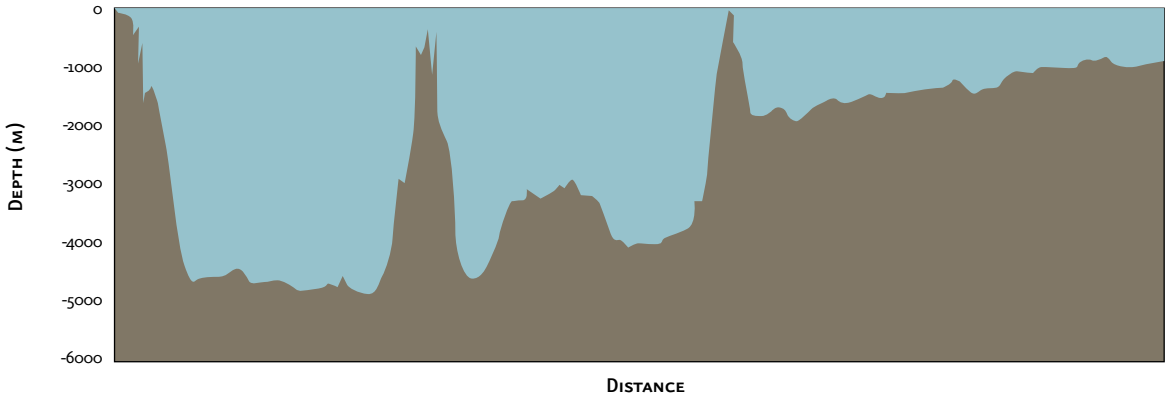
Depth Profile – Cairns through Melish Reef to EEZ boundary



Depth Profile – Coast off Rockhampton through Cato Island to EEZ boundary



Depth Profile – North Solitary Island through Derwent Hunter Seamount and Lord Howe Island to EEZ



Elevation Profile from Bendigo through Mt Kosciusko, through (just south of) Narooma to 100km offshore

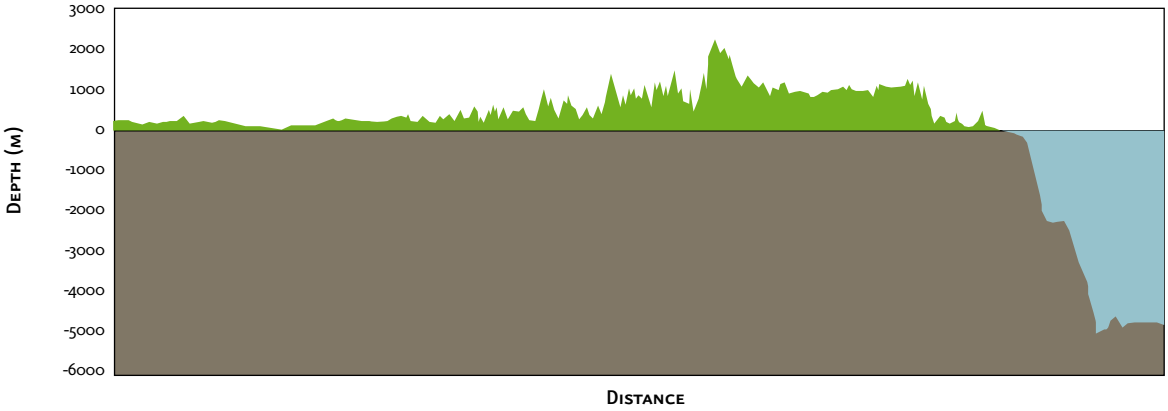


Table 4.2 Seafloor feature with a single occurrence within the Region

Seafloor feature	Provincial Bioregion
Slope, Deep, Escarpment	Cape Province
Trench, Saddle	Northeast Transition
Seamount, Deep, Escarpment	Northeast Province
Shelf, Abyssal Plain, Slope, Canyon, Apron	Kenn transition
Basin, Terrace, Plateau	Kenn Province
Continental Rise, Canyon	Central Eastern Transition
Shelf, Abyssal Plain	Central Eastern Shelf Transition
Shelf, Abyssal Plain, Basin, Terrace, Plateau	Central Eastern Province
Shelf, Abyssal Plain	Central Eastern Shelf Province
Shelf, Abyssal Plain, Ridge, Sill, Bank, Sandbank, Deep, Escarpment	Norfolk Island Province
Ridge, Sill, Trench, Saddle, Basin, Terrace, Plateau	Lord Howe Province
Shelf, Abyssal Plain	Tasman Basin Province
Ridge, Sill, Deep, Escarpment	Southeast Shelf Transition
Shelf, Abyssal Plain	Southeast Transition

Table 4.3 Provincial bioregion seafloor features

Provincial bioregion (National Marine Bioregionalisation number)	Seafloor features	Total area of seafloor feature in provincial bioregion (km²)	Per cent area of seafloor feature occurring in the Region
Cape Province (20)	slope	39 120	17.64
	basin	2090	0.57
	canyon	10	0.10
	deep/hole/valley	4890	26.31
	plateau	6450	0.63
	reef	950	5.14
	ridge	170	15.20
	saddle	580	0.61
	terrace	180	0.31
	trench/trough	7930	9.65
		62 370	
Northeast Transition (19)	slope	11 970	0.17
	rise	10 600	41.03
	trench/trough	15 580	18.96
	basin	19 680	5.37
	reef	570	2.87
	canyon	750	7.65
	ridge	440	39.67
	pinnacle	50	2.38
	plateau	82 260	8.00
	apron/fan	790	29.71
		142 690	

Table 4.3 Provincial bioregion seafloor features

Provincial bioregion (National Marine Bioregionalisation number)	Seafloor features	Total area of seafloor feature in provincial bioregion (km²)	Per cent area of seafloor feature occurring in the Region
Northeast Province (18)	slope	63 060	33.68
	rise	2200	7.52
	deep/hole/valley	480	2.53
	trench/trough	48 840	59.44
	basin	68 230	18.63
	reef	18 410	91.98
	canyon	2580	26.22
	knoll/abyssal hills/ mountains/peak	310	3.14
	seamount/guyot	1310	3.11
	pinnacle	370	14.76
	plateau	176 100	17.13
	saddle	8660	9.15
	apron/fan	1500	56.53
	terrace	39 110	67.04
		431 160	
Kenn Province (17)	basin	60	0.02
	pinnacle	20	0.67
	plateau	55 580	5.41
	seamount/guyot	1730	4.14
		57 390	
Kenn Transition (16)	slope	3320	1.49
	rise	5380	18.43
	abyssal plain/deep ocean floor	60 380	16.31
	deep/hole/valley	13 010	68.93
	basin	43 580	11.90
	canyon	110	1.08
	knoll/abyssal hills/hills/ mountains/peak	600	6.12
	seamount/guyot	10 570	25.08
	pinnacle	170	6.75
	plateau	169 110	13.62
	saddle	32 110	33.94
	apron/fan	370	13.76
	terrace	2730	4.69
	no data	64 740	
		406 180	
Central Eastern Transition (15)	slope	35 210	11.65
	rise	9630	33.01
	canyon	600	6.08
	terrace	8780	15.04
		54 220	
Central Eastern Shelf Transition (39)	shelf	18 960	<0.01
	slope	4090	0.35
	canyon	30	5.56
	terrace	3250	<0.01
		26 330	

Table 4.3 Provincial bioregion seafloor features

Provincial bioregion (National Marine Bioregionalisation number)	Seafloor features	Total area of seafloor feature in provincial bioregion (km²)	Per cent area of seafloor feature occurring in the Region
Central Eastern Shelf Province (38)	no data	11 250	
	terrace	2060	3.84
		13 310	
Central Eastern Province (12)	slope	60 260	25.87
	abyssal plain/deep ocean floor	169 540	45.81
	canyon	3820	0.43
	knoll/abyssal hills/ mountains/peak	60	39.41
	pinnacle	860	0.64
	terrace	1140	34.96
		235 680	3.52
Tasman Basin Province (13)	abyssal plain/deep ocean floor	136 610	36.91
	knoll/abyssal hills/hills/ mountains/peak	1120	11.53
	seamount/guyot	18 480	43.86
	pinnacle	210	8.41
		156 420	
Lord Howe Province (14)	deep/hole/valley	410	2.18
	basin	65 100	17.77
	knoll/abyssal hills/ mountains/peak	800	8.21
	ridge	220	20.25
	seamount/guyot	5450	12.95
	plateau	389 390	37.88
	saddle	23 470	24.80
		484 840	
Norfolk Island Province (21)	shelf	650	1.87
	slope	31 300	14.11
	banks/shoals	710	99.57
	deep/hole/valley	10	0.05
	trench/trough	9830	11.96
	basin	167 450	45.73
	canyon	630	6.34
	knoll/abyssal hills/hills/ mountains/peak	6790	70.04
	ridge	280	24.88
	seamount/guyot	4580	10.86
	pinnacle	790	32.05
	plateau	178 030	17.32
	saddle	29 800	31.49
		430 850	
Southeast Shelf Transition (37)	shelf	3930	
	slope	340	
		4270	
Southeast Transition (11)	slope	3910	1.76
	abyssal plain/deep ocean floor	3600	0.97
	canyon	1260	12.76
	knoll/abyssal hills/hills/ mountains/peak	30	0.31
		8800	

4.2.2 Applying the national principles in the East Marine Region

This section outlines considerations relevant to the regional application of the location, selection, design and zoning principles as listed in section 4.1. In any given Marine Region, there may be different options for Marine Protected Areas that meet the four goals for the establishment of a representative network.

Note that only Principles 1-9 that require a regional specification (or input of regionally specific data) are considered below.

Location of Marine Protected Areas
In developing options that meet the four goals, the following principles will be applied.

Principle 1 – existing spatial management measures
In any given Marine Region, there may be a number of areas that meet the four goals for the establishment of a representative network. Consistent with the goals, the first step in determining the approximate location of suitable Marine Protected Areas will be to identify the occurrence, extent and purpose of existing spatial management arrangements (existing protected areas, sectoral measures etc.) and assess their capacity to contribute to or compliment a representative network in the Region.

Spatial management arrangements in the Region and adjacent coastal areas include mechanisms that may contribute to the development of a Marine Protected Area network. Examples of these existing arrangements are provided in table 4.4.

Catchment processes have previously been identified as important ecosystem drivers within the Region. Land-based spatial management arrangements including National Parks, Indigenous Protected Areas, Ramsar-listed and nationally important wetlands may therefore also contribute to biodiversity conservation and need to be considered during the development of a Marine Protected Area network. These spatial management arrangements may seek to protect fish breeding habitat such as mangroves or marine turtle nesting beaches.

Some of the above arrangements have access restrictions, while others are multiple use areas with restrictions on take of wildlife, disturbance of habitat, or the type of fishing gear that can be used.

There are a number of spatial considerations which do not contribute to biodiversity conservation, but may also be taken into account when considering Marine Protected Areas. These include designated sea-dumping sites, shipping arrangements, oil and gas arrangements, and gas pipelines and cables. Some of these such as chemical dump sites may be inconsistent with Marine Protected Area placement; others may only be inconsistent with certain categories of Marine Protected Areas.

Principle 2 – small number of large marine parks
While small Marine Protected Areas can sometimes be justified to protect particular species, habitat or heritage sites, representative Marine Protected Areas are designed to include examples of multiple different environments and ecological processes. While no area of ocean, however large, can be said to be truly self-sustaining, larger areas have greater resilience to changes.

Selection
Where different options that meet the goals exist, the following selection principles should be applied in selecting areas suitable for inclusion in the National Representative System of Marine Protected Areas.

Principle 3 – threats to the Region's conservation values
Current and future activities may pose a threat to the Region's marine environment and conservation values. A key function of Marine Bioregional Plans is the identification of potential threats, so that decision-makers are aware of long-term implications for management.

An analysis of the threats to the key ecological features and protected species identified for the Region (see chapters 2 and 3, and appendices C and D) will take place during the next stage of the planning process. Those key ecological features and places of particular importance to protected species that are subject to threats, and for which spatial protection is thought to provide the best option, will be considered for inclusion in the proposed network of Marine Protected Areas.

Principle 4 – habitat and aggregation areas for threatened/migratory species
While there are no habitats listed in the Register of Critical Habitats under the EPBC Act, the Region includes and abuts coastal breeding, feeding, nursery and aggregation sites of national and international significance for birds, marine turtles, sharks, seals and whales. Table 3.3 lists known areas in or adjacent to the Region that are of importance to threatened or migratory species. Further details on habitats and sites used by the protected species known to occur in the Region are included in the table of Nationally Protected Species of the Region (appendix C) and Protected Species Group Report Cards (appendix D).

Table 4.4 Existing spatial management arrangements in the Region and adjacent coastal areas

Description	Location	Management
Protected Areas		
Coringa-Herald National Nature Reserve, and Ramsar listed wetlands	Located within the Coral Sea Islands Territory, 400 km east of Cairns, covering an area 8852 km².	Managed by the Commonwealth Government to maintain the ecological processes and systems and to protect the habitats and biodiversity of the Reserves from the pressures associated with human use.
Lihou National Nature Reserve	Located within the Coral Sea Islands Territory, 400 km east of Cairns, covering an area 8428 km².	Managed by the Commonwealth Government to maintain the ecological processes and systems and to protect the habitats and biodiversity of the reserves from the pressures associated with human use.
Solitary Islands Marine Park and Reserve	Located 600 km north of Sydney between Coffs Harbour and Plover Island, covering an area 870 km².	Managed jointly by the NSW and Commonwealth Governments to maintain ecological processes and systems and to protect the habitats and biodiversity of the Solitary Islands region.
Elizabeth and Middleton Reefs Marine National Nature Reserve, and Ramsar listed wetlands	Located within the Coral Sea Islands Territory, 600 km east of Coffs Harbour, covering an area 1877 km².	Managed by the Commonwealth Government to maintain ecological processes and systems and to protect the habitats and biodiversity of the Reserve.
Lord Howe Island Marine Park, and World and National Heritage listed sites	Located in the Tasman Sea, 700 km north-east of Sydney, covering an area 3005 km².	Managed jointly by the NSW and Commonwealth Governments to protect the seamount system and its conservation values associated with marine biodiversity, habitats and ecological processes.
Cod Grounds Commonwealth Marine Reserve	Located 7 km off Laurieton in NSW, covering 3 km².	Managed by the Commonwealth Government to protect the grey nurse shark and its habitat.
Great Barrier Reef Marine Park, and World and National Heritage listed sites	Located along the QLD coastline from the tip of Cape York peninsula to near Bundaberg, covering almost 350 000 km².	Managed jointly by the Commonwealth and QLD Governments for the long-term protection, ecologically sustainable use, understanding and enjoyment of the Marine Park.
Norfolk Island National Heritage listed sites	Located in the Territory of Norfolk Island 1700 km east of Sydney in the South Pacific Ocean, covering 6.5 km².	Managed by the Commonwealth Government for the protection and conservation of the Reserve.
Great Sandy Marine Park, including the Fraser Island World and National Heritage listed sites (QLD)	Located in coastal waters of QLD from Baffle Creek in the north to Double Island Point in the south, including Fraser Island and covering 8400 km².	Managed by the QLD Government for the conservation and reasonable use of significant marine natural resources.
Moreton Bay Marine Park (QLD)	Located in coastal waters of QLD from Caloundra to the southern tip of South Stradbroke Island, covering 3400 km².	Managed by the QLD Government for the conservation and reasonable use of significant marine natural resources.
Batemans Marine Park (NSW)	Located in coastal waters of NSW from Brush Island in the north to Wallaga Lake in the south, covering 850 km².	Managed by the NSW Government to conserve marine biodiversity while allowing sustainable recreational and commercial activities in the Park.
Cape Byron Marine Park (NSW)	Located in coastal waters of NSW from Brunswick Heads in the north to Lennox Head in the south, covering 220 km².	Managed by the NSW Government to conserve marine biodiversity while allowing sustainable recreational and commercial activities in the Park.

Table 4.4 Existing spatial management arrangements in the Region and adjacent coastal areas

Description	Location	Management
Jervis Bay Marine Park (NSW)	Located in coastal waters of NSW from Kinghorn Point in the north to the northern side of Sussex Inlet in the south, covering 214.5 km².	Managed by the NSW Government to conserve marine biodiversity while allowing sustainable recreational and commercial activities in the Park.
Port Stephens–Great Lakes Marine Park (NSW)	Located in coastal waters of NSW from near Forster in the north to the northern end of Stockton Beach in the south, covering 980 km².	Managed by the NSW Government to conserve marine biodiversity while allowing sustainable recreational and commercial activities in the Park.
Fisheries Management Areas		
Fish Habitat Areas (QLD) Various	There are 73 declared Fish Habitat Areas along the Queensland coast adjoining the Region, covering 8530 km².	The Queensland Department of Primary Industries and Fisheries manage Fish Habitat Areas. The areas are designated 'multiple use' and aim to protect fish habitat from disturbance, whilst allowing for fishing and boating.
Other Management Areas		
Aquatic Reserves (NSW) Various	There are 12 declared aquatic reserves along the NSW coast adjoining the Region.	Managed by the NSW Government to protect marine biodiversity.

Principle 5 – ecologically important pelagic features
Seven of the nine key ecological features of the Region (table 3.1) encompass pelagic environments (i.e. open waters) and have a consistent and definable spatial distribution. These include the East Australian Current; offshore chains of seamounts and rises (Tasmantid seamount chain, Lord Howe seamount chain, Norfolk ridge); canyons of the eastern continental slope and shelf edge rocky reefs; herbivorous fish of the coral reefs; pelagic squid; large pelagic predators (marlin, sharks, tuna, billfish); and the east coast humpback whale population. In accordance with Principle 5, these will be considered in selecting Marine Protected Areas in those instances where multiple options exist that meet the four national goals.

Principle 6 – small-scale (tens of kilometres) benthic/demersal ecosystems
Ecosystem structure and functioning have been considered and described in chapters 2 and 3 at broad regional and bioregional scales. Finer-scale data and information, such as information on meso-scale bioregions and the distribution and extent of biological communities and habitats, will be considered to explore options that meet the four national goals.

The distribution and extent of some common and important communities has been relatively well described, for example: coral reefs and cays in the Coral Sea; benthic communities on Elizabeth and Middleton seamounts, and Lord Howe and Norfolk Islands; and continental shelf communities throughout the Region.

Principle 7 – small-scale distribution of sediment types and sizes
Scientists have found that sediment type and size strongly influence the species and communities that are found on and near the seafloor within the Region. In the deeper parts of the Region, the marine organisms associated with different sediments are to a large extent unknown.

It is reasonable to expect that by including multiple and diverse sediment types within a Marine Protected Area, a larger variety of organisms will be protected. In those instances where different options to meet the four national goals exist, sedimentology maps and data will be used during the selection of candidate Marine Protected Areas, aiming to include areas that cover a broader range of sediment types.

Principle 8 – listed heritage sites
Sites of particularly high conservation or heritage value should be incorporated into, and managed as part of, the representative network to avoid complex and overlapping measures applying to particular places.

Table 4.5 Active native title determination claimant applications as per Schedule (Federal Court) as at 27 August 2008

Native title determination claimant applications that intersect the East Marine Region		
Federal Court No	**NNTT No**	**Name**
QUD6040/01	QC01/42	Torres Strait Regional Sea Claim
QUD16/06	QC06/4	Butchulla Land and Sea Claim
NSD6034/98	NC96/16	Bandjalang People 1
Native title determination claimant applications that include the sea adjacent to the East Marine Region		
Federal Court No	**NNTT No**	**Name**
QUD6010/98	QC95/2	Quandamooka
QUD6131/98	QC97/21	Darumbal People
QUD6140/98	QC97/30	Butchulla People
QUD6155/98	QC97/48	Kalpowar Holdings
QUD6223/98	QC98/37	Yuibera People
QUD6023/99	QC99/24	Gia People
QUD6016/98	QC99/38	Kuuku Yau 1
QUD6011/01	QC01/13	Barada Barna Kabalbara and Yetimarla People 3
QUD6023/01	QC01/25	Barad Barna Kabalbara and Yetimarla People 4
QUD6026/01	QC01/29	Port Curtis Coral Coast
QUD6003/03	QC03/3	Djiru People 2
QUD6014/03	QC03/15	Jagera People 2
QUD97/05	QC05/9	Gurambilbarra People
QUD169/05	QC05/10	Wondunna Clan Badtjala People
QUD346/06	QC06/10	Gold Coast Native Title Group
NSD6010/98	NC95/1	Byron Bay Bundjalung People 1
NSD6013/98	NC95/4	Kattang People – Traditional Owners of Saltwater 1
NSD6014/98	NC95/5	Kattang People – Traditional Owners of Saltwater 2
NSD6034/98	NC96/16	Bandjalang People 1
NSD6052/98	NC96/38	The Yaegl People
NSD6054/98	NC96/41	Gumbaynggirr People
NSD6061/98	NC97/8	Darug Tribal Aboriginal Corporation
NSD6104/98	NC98/15	Gumbaynggirr People
NSD6107/98	NC98/19	Bandjalang People 2
NSD6020/01	NC01/8	Byron Bay Bundjalung People 3

The Lord Howe Island National Park and Norfolk Island are heritage listed sites that occurs in the Region, and the Great Barrier Reef Marine Park and Fraser Island National Park are heritage listed sites that occur adjacent to the Region.

Principle 9 – socio-economic factors

The Australian Government is seeking to minimise any socio-economic costs associated with the displacement of activities and resource access that might result from the establishment of Marine Protected Areas. The potential impacts on current users will be considered throughout the process, and particularly during the selection stage and at the design stage. This Bioregional Profile provides a snapshot of information about the key commercial and recreational activities that take place in the Region. Further detailed data on distribution, intensity and value of marine uses and resources will be gathered in consultation with State Government agencies and relevant stakeholders throughout the process.

Socio-economic aspects of establishing new Marine Protected Areas will need to include consideration of any native title rights and interests (see Section 227 of the *Native Title Act 1993*). Coastal Indigenous peoples of the Region consider their sea country to encompass waters from the coastline to the horizon and sometimes beyond

Gorgonian fan and diver, Coral Sea. Photo: Mike Ball.

(see appendix B for a description of the native title regime in Australia). There are 27 active native title determination claimant applications as per the Schedule (Federal Court), 24 of which have been entered onto the Register of Native Title Claims. Three of the registered native title determination claimant applications include Commonwealth waters of the East Marine Region, and the other registered and active native title determination claimant applications include sea[9] that is adjacent to the East Marine Region.

4.3 Process for establishing new Commonwealth Marine Reserves in the East Marine Region

The identification of new Marine Protected Areas in the Region will occur during the next stages of the marine bioregional planning process (see chapter 6).

Step 1 – A proposed Marine Protected Area network will be developed by the Department of the Environment, Water, Heritage and the Arts in accordance with the national goals and principles and regional specifications outlined in section 4.2. During development, stakeholders will be consulted by the Department in order to ensure the Department has accurate and comprehensive details of the current uses and to help ensure that the impact of proposed Marine Protected Areas on current users will be minimised. The Department will also seek expert scientific advice to ensure the proposed network is underpinned by all relevant data and best available knowledge.

Step 2 – The proposed Marine Protected Area network will be agreed by Government and released in a Draft Plan for a three-month period of statutory public consultation. During this time, the Department will make available all relevant data and will facilitate information sessions to assist members of the public who wish to make a representation to the Government in relation to the proposed Marine Protected Area network or other aspects of the Draft East Marine Bioregional Plan.

Step 3 – After consideration of public submissions, advice from the Department, and agreement by the Government, the Final Plan will be released. It will contain a network of candidate Marine Protected Areas to be declared as Commonwealth marine reserves in accordance with the relevant sections of Part 15 of the EPBC Act.

Chapter 6 provides further information about how the marine bioregional planning process (including identification of protected areas) will unfold in the Region following the release of this Bioregional Profile.

[9] Sea includes any waters beyond the Australian coastline (mean high water mark).

Key references and further reading

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Map data

Figures 4.1 and 4.2

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