Design Principles

Guiding the development of South Australia's Marine Park Boundaries

June 2012

Marine Parks
Reserve today. Preserve forever.

Government of South Australia

FIS 91559

www.marineparks.sa.gov.au

For further information, please contact:
Conservation Policy and Programs Directorate
Department for Environment and Heritage
GPO Box 1047
Adelaide SA 5001

Telephone: (08) 8124 4900
Facsimile: (08) 8124 4920

Cite as:
Department for Environment and Heritage. (2008). *Design principles guiding the development of South Australia's marine park boundaries.* Coast and Marine Conservation Branch, Department for Environment and Heritage, South Australia.

Permissive Licence

Disclaimer

Contents:

1. Introduction

The Government of South Australia is committed to the development of a South Australian Representative System of Marine Protected Areas (SARSMPA). The SARSMPA will contribute to the National Representative System of Marine Protected Areas (NRSMPA), a commitment made by the Australian, State and Territory Governments through the *Intergovernmental Agreement on the Environment*[1]. The NRSMPA in turn meets the Australian Government's international obligations through the *International Convention on Biological Diversity*[2] to contribute to a global representative system of marine protected areas.

The Government of South Australia's commitment to develop the SARSMPA is outlined in its policy documents: *South Australia's Strategic Plan*, *The Living Coast Strategy* and the *Blueprint for the South Australian Representative System of Marine Protected* Areas. As a key contribution to the SARSMPA, the Government has set a target to develop 19 multiple-use marine parks by 2010.

The 19 marine park focus locations (Figure 1) were identified by the Government, with the aid of a scientific advisory group (SAG) established in 2000 to provide preliminary advice on the SARSMPA[3]. The locations span the breadth of State waters and include examples of the varied environments typical of South Australia's marine realm. The multiple-use marine parks will establish core biodiversity protection areas while also achieving practical zoning arrangements that allow many of the existing activities and uses to be continued.

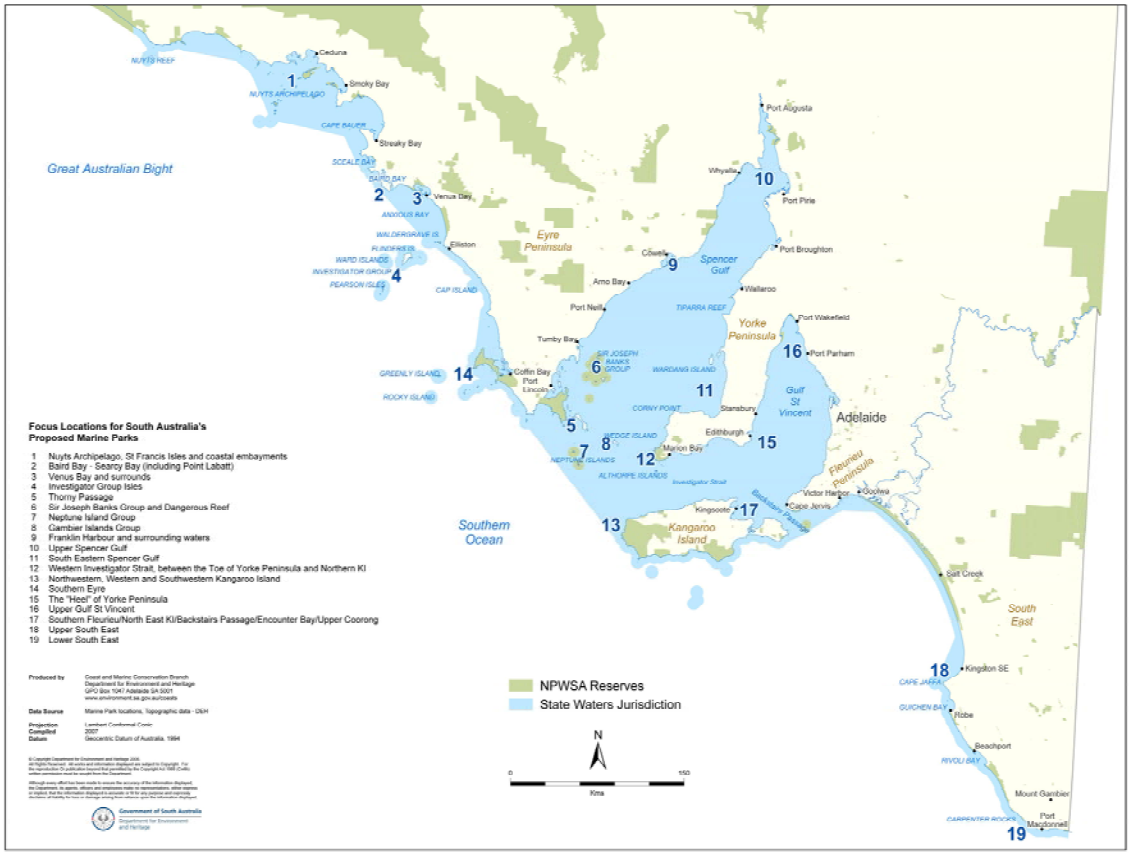

Figure 1: Focus locations for South Australia's proposed marine parks

[1] DEWR. (1992). Intergovernmental Agreement on the Environment. Department of the Environment and Water Resources. Australian Government. http://www.environment.gov.au/esd/national/igae/index.html

[2] International Convention on Biological Diversity, http://www.cbd.int/doc/legal/cbd-un-en.pdf

[3] The SAG was later superseded by the Scientific Working Group (SWG), formed in 2005 to provide independent advice to the Minister for Environment and Conservation on technical and scientific matters relating to the marine environment, including marine parks design.

The process to date has involved the development of a draft zoning plan for the Encounter Marine Park (located between the Fleurieu Peninsula and Kangaroo Island) and the development of the marine parks legislation, the *Marine Parks Act 2007*.

The Encounter Marine Park was drafted as a pilot process for the program and has been instrumental in developing and refining methods for the design of South Australia's system of marine parks. The pilot identified the community's need for greater clarity and certainty regarding: the process for establishing marine parks, community consultation and the management arrangements for any resultant displaced fishing or aquaculture effort. The key learnings from the Encounter Marine Park pilot were then used to inform the development of the *Marine Parks Act 2007*.

The *Marine Parks Act 2007*, introduced into and passed by Parliament on 20 November 2007, provides the framework for the dedication, zoning and management of the State's marine parks. The Act was proclaimed on 22 May 2008 and the Marine Parks Council of South Australia, a statutory advisory council under the *Act*, was established on the same date. The Marine Parks Council will provide advice to the Minister for Environment and Conservation on the network of outer boundaries of the 19 proposed marine parks, prior to their release for public comment. Once the public comment period has ended, the outer boundaries will be finalised and then the process for zoning the marine parks will commence in consultation with local communities across the State.

2. Marine park objectives

In order to develop a representative network of marine parks for South Australia, the South Australian Government requires a set of principles on which to base marine park design. The principles are based on national guidelines[4] and are designed to meet the objectives of the *Marine Parks Act 2007*:

> ***Primary objectives****: to protect and conserve biological diversity and marine habitats by declaring and providing for the management of a comprehensive, adequate and representative system of marine parks; and to assist in the maintenance of ecological processes in the marine environment; and the adaptation to the impacts of climate change in the marine environment.*
>
> ***Secondary objectives:*** *to protect and conserve features of natural or cultural heritage significance; and to allow for ecologically sustainable development and use of marine environments; and to provide for opportunities for public appreciation, education, understanding and enjoyment of marine environments.*

Whilst the primary objectives of the marine parks program are to protect and conserve our State's marine biological diversity, it is important to note that the South Australian Government will aim to minimise any necessary impact on existing marine users and will cater for ongoing use of the marine environment.

3. Frameworks for marine park design

South Australia's marine parks design will be underpinned by a bioregional framework and another framework for community engagement and participation.

[4] ANZECC / TFMPA. (1998). *Guidelines for establishing the national representative system of marine protected areas.* Australian and New Zealand Environment and Conservation, Task Force on Marine Protected Areas. Canberra. Environment Australia.

3.1. Bioregional framework

In June 1998, the Australian and New Zealand Environment and Conservation Council (ANZECC) endorsed the *Interim Marine and Coastal Regionalisation for Australia (IMCRA)* as a key element of the *Strategic Plan of Action for Establishing the NRSMPA*. The IMCRA was developed through the collaborative efforts of Commonwealth, State and Northern Territory marine conservation and research agencies and classifies Australia's coast and marine environments into 60 distinct marine biogeographical regions[5]. Each marine biogeographical region, or bioregion, contains biological and physical characteristics distinct from those elsewhere in Australia[6]. In order to maximise the conservation outcomes of the NRSMPA, the national guidelines recommend that one or more examples of ecosystems within each bioregion in Australia should be represented within a marine protected area (MPA).

The South Australian Government has determined that the SARSMPA will be developed within a marine bioregional framework, using habitats and/or ecosystems as a basis for determining representativeness. Eight bioregions have been identified within South Australia's marine waters (Figure 2). A description of the key physical characteristics of each bioregion is outlined in Table 1, which also lists the focus locations (see Figure 1) in each bioregion. It is intended that the SARSMPA will encompass the major ecosystems and habitat types within and between each bioregion[7].

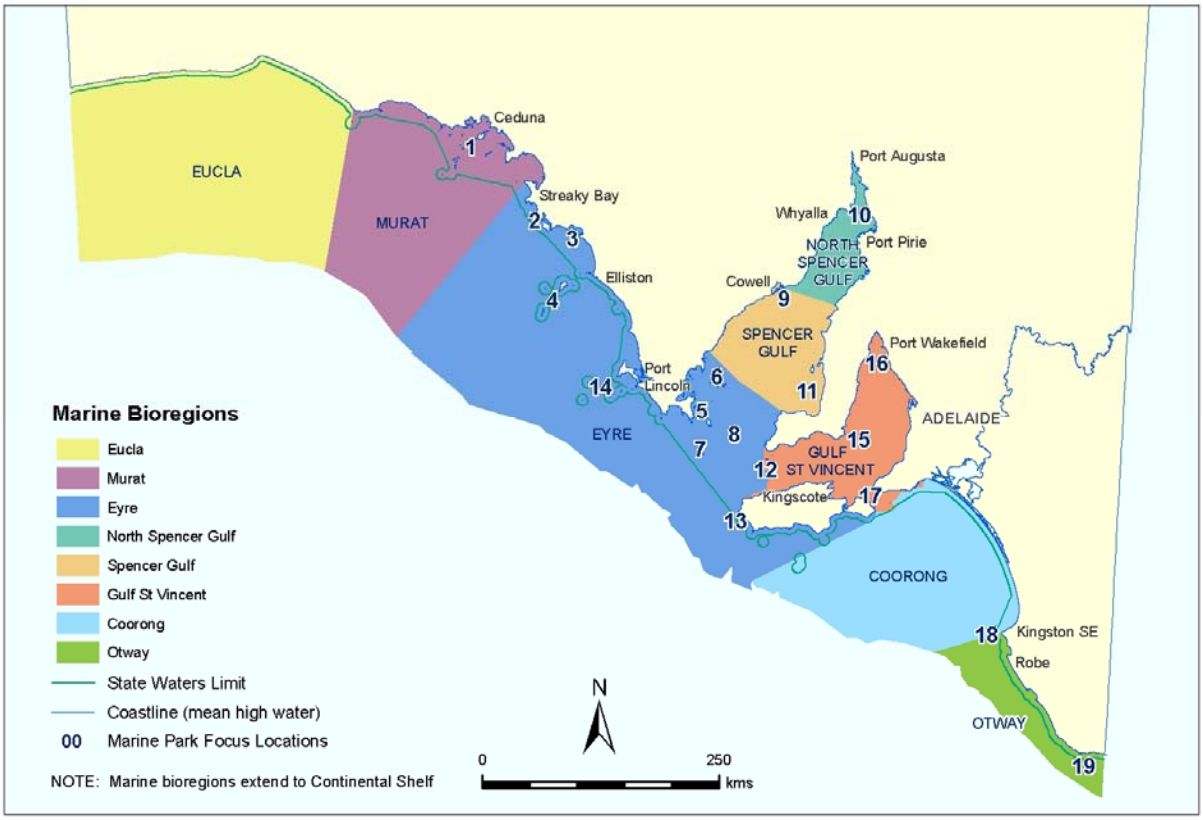

Figure 2: South Australia's marine bioregions

[5] Australian and New Zealand Environment and Conservation Council Task Force on Marine Protected Areas. 1998. *Strategic Plan of Action for the National Representative System of Marine Protected Areas*: public comment draft, Environment Australia, Canberra.

[6] Baker, J. L. (2004). *Towards a System of Ecologically Representative Marine Protected Areas in South Australian Marine Bioregions - Technical Report*. Prepared for Coast and Marine Conservation Branch, Department for Environment and Heritage, South Australia.

[7] DEH (2004). *Blueprint for the South Australian Representative System of Marine Protected Areas*. Department for Environment and Heritage.

Table 1: Descriptions of South Australia's marine bioregions[8]

Bioregion	Description	Focus location no.
Eucla	Shallow offshore gradient. Microtidal ~ 0.8 to 1.2 m tidal range. Open, moderate energy, west facing coastline. High Nullarbor tertiary limestone cliffs, Pleistocene dune rock headlands and reefs, Holocene beaches and dune barriers. Warm temperate water influenced by periodic intrusion of the Leeuwin current.	None (Great Australian Bight Marine Park already established)
Murat	Shallow offshore gradient. Moderate to low energy coastline. Microtidal ~ 0.8 to 1.2 m range. Crenulate bays due to Precambrian crystalline rock headlands usually with a dune rock capping. Pleistocene dune rock cliffs, reefs and headlands. Holocene beaches, dunes and estuarine deposits including intertidal and supratidal flats. Offshore islands and seamounts. Warm temperate waters. Leeuwin current.	1
Eyre	Shallow to moderate offshore gradients. Moderate to high energy coastline. Pleistocene dune rock cliffs, headlands and shore platforms. Microtidal ~ 0.8 to 1.2 m range. Holocene dune barriers, beaches and lagoon deposits. Precambrian metasediment cliffs. Cainozoic colluvial and fluvial sediments. Cool temperate water subject to nutrient rich upwellings.	2, 3, 4, 14, 5, 6, 7, 8, 12, 13
Spencer Gulf	Inverse estuary. Shallow offshore gradients. Low to moderate energy shorelines. Microtidal ~1.8 m range. Precambrian crystalline rock headlands forming embayments. Cainozoic outwash sediments forming low cliffs. Holocene beaches, dunes and estuarine deposits. Warm temperate waters.	6, 9, 11
North Spencer Gulf	Inverse estuary with minimal land water input. Shallow offshore gradients. Low energy shorelines. Micro to mesotidal ~1.8 to 3.6 m range. Precambrian metasediment shore platforms. Holocene sandflats, beach ridges, recurved spits, and extensive intertidal and supratidal flats. Warm temperate waters with a subtropical biotic element.	9, 10
Gulf St Vincent	Inverse estuary. Shallow offshore gradients. Low to moderate energy coastline. Micro to mesotidal ~1.2 to 3.3 m range. Precambrian metasediment and Tertiary cliffs. Holocene beaches, sandflats, dunes, beach ridges, estuarine deposits, extensive intertidal and supratidal flats. Warm temperate waters.	12, 15, 16, 17
Coorong	Offshore gradient decreases from steep to flat resulting in a gradational coastline change from high to low energy. Microtidal ~ 0.8 to 1.2 m range. Precambrian crystalline rock and metasediment headlands and cliffs. Pleistocene dune rock cliffs, headlands, shore platforms and reefs. Holocene pocket beaches and an extensive beach-dune barrier lagoon complex. Cool temperate waters.	17, 18
Otway	Very steep to moderate offshore gradients. High wave energy. Currents generally slow, but moderately strong through entrance to Bass Strait. Cold temperate waters subject to nutrient rich upwellings.	18, 19

3.2. Framework for community engagement and participation

The success of marine parks is ultimately dependent upon stewardship by the community. Therefore, an essential part of marine parks design is a commitment to public understanding, community engagement and consultation. The SA Government's commitment to community involvement is reflected in the *Marine Parks Act 2007*, which legislates the requirement for formal community consultation throughout the marine parks development process. In addition, the Marine Parks Council of SA, consisting of members of the public with skills and knowledge in areas relevant to the marine parks, will provide independent advice to the Minister for Environment and Conservation. It is also intended that Regional Consultative Committees will be established for each marine park to further facilitate community engagement and participation in the process.

4. Development of the design principles

The process for developing the design principles has involved a review of criteria adopted across Australia and internationally; as well as a review of over three decades of international and national discussion, published research and practical management experience in protected areas.

[8] Information adapted from: IMCRA Technical Group. (1998). *Interim marine and coastal regionalisation for Australia: An ecosystem based classification for marine and coastal environments V3.3.* Environment Australia. Commonwealth Department of Environment.

Two independent advisory groups reporting to the Minister for Environment and Conservation have reviewed and provided advice on the design principles to the South Australian Government. The Scientific Working Group (SWG) provided advice on the biophysical principles. The Marine Advisory Committee (MAC) provided advice on the socio-economic or community design principles.

The biophysical principles relate to the primary objectives of the *Marine Parks Act 2007* and will be used to help *identify* potential sites for the 19 marine parks across the State. The community design principles relate to the secondary objectives of the *Marine Parks Act 2007* and will be used to help *select* appropriate locations from the options identified. By applying the two sets of design principles consecutively, the Government will be able to meet both its conservation and sustainable use objectives for marine parks design.

Based on the review of literature and practices internationally, and supported by advice from the SWG and the MAC, the Department for Environment and Heritage (DEH) has adopted 14 design principles to guide the development of South Australia's marine park outer boundaries.

NB: the list of design principles is not meant to be exhaustive but represents a foundation for marine parks outer-boundary development. A range of other principles may be considered on a park-by-park basis depending on the characteristics of the local area of interest. The design principles may also be applied during the management-plan development process to inform the zoning design within each marine park.

5. The biophysical design principles

The biophysical design principles have been categorised into primary and secondary principles. The primary biophysical design principles are overarching principles that guide the boundary network as a whole. The secondary biophysical design principles may apply at a system-wide level, but more often serve to focus the program on key or irreplaceable areas within regions that should also be included within the system. The secondary principles may also help in the preferential nomination of areas where a number of similar locations all contribute effectively to a representative system.

5.1. Primary biophysical design principles

Principle Number One: The Precautionary or Anticipatory Approach

For the purposes of marine parks design, the precautionary approach should be applied to avert known risks of harm and/or potential harm to the marine environment. An additional component of the precautionary approach is that unknown risks may also exist and that reasonable scientific hypotheses should support decision making to anticipate, plan for and subsequently adapt to previously unforeseen risks to biodiversity conservation. An example of how the precautionary approach may be applied is the inclusion of unmapped areas within marine parks now, rather than waiting until habitat mapping programs can reveal more information about the areas of uncertainty.

Principle Number Two: Comprehensiveness

To achieve comprehensiveness, the network of marine parks should have comprehensive coverage of the full range of ecosystems and habitats that are characteristic of South Australia's marine environment. For comprehensiveness to be attained, each marine park should establish or improve the coverage of the full range of ecosystems and habitats occurring within each bioregion[9].

[9] ANZECC / TFMPA. 1998. *Guidelines for establishing the national representative system of marine protected areas*. Australian and New Zealand Environment and Conservation, Task Force on Marine Protected Areas. Canberra. Environment Australia.

Principle Number Three: Adequacy

For the marine parks network to be adequate, it should provide for the maintenance of the ecological viability and integrity of populations, species and communities[10]. To create an adequate network of marine parks, selected areas must ensure the continuance of natural processes that are characteristic of the bioregion they are representing. For a marine park to achieve adequacy, whole areas of representative habitats need to be encapsulated within marine park boundaries. One of the main factors contributing to adequacy for marine park design is the size of marine parks.

For an area to be seen to be of adequate size, it must ensure that natural processes will persist and that the populations, communities and species protected are ecologically viable[11]. Large protected areas are considered to be a more effective tool for biodiversity conservation than small areas, as more species will be protected in a larger area and individual species are more likely to have their critical life stages protected. Although some protected area managers specify a percent area target to guide marine parks size, the inherent variability in marine ecosystems in South Australia makes it difficult to specify minimum sizes with certainty. The South Australian Government's preferred approach is to determine marine park size on a park-by-park basis, allowing greater flexibility to create parks that are large enough to protect viable ecosystems but that minimise impacts on marine users where possible.

Principle Number Four: Representativeness

For a network of marine parks to be representative, the network must reflect the biodiversity and variability naturally present in our marine environment. As there is still much to learn about the biodiversity of the marine environment, the ecosystems and habitat types that characterise the marine environment are included as a substitute or 'surrogate' for biodiversity.

To achieve representativeness, marine parks design should include large, uniform areas of each of the ecosystem and habitat types that are typically found in each bioregion (and their borders). By incorporating multiple marine parks within each bioregion, altogether the marine parks should reflect and encapsulate the environmental variability within each bioregion. In turn, by developing marine parks within and across each bioregion the network of marine parks should represent the biodiversity and variability across the state.

5.2. Secondary biophysical design principles

Principle Number Five: Connectivity and Linkages

The twin concepts of connectivity and linkages in marine ecology refer to the process of sharing plants and/or animals (connectivity) between sites and the water-borne transport of materials (linkages) between sites. Therefore sites would be regarded as having important connections if juveniles and adults of a species use them during different live stages. Sites would be regarded as having important links if materials from one, eg leaves from mangroves, form the basis of a food-chain in the other, eg nearby mudflats where animals consume the leaves from the mangroves.

The connectivity and linkages between terrestrial and marine environments are also a consideration in marine parks design. Whilst there are many natural connections and linkages between the land and sea, the marine environment is also susceptible to the negative effects of land-based impacts such as nutrients, pollution and sediments[12]. In South Australia, the ability of marine parks to complement terrestrial protected areas requires careful consideration. Positioning marine parks adjacent to terrestrial protected areas provides a buffer from developed land where pollution is likely to be a

[10] Australian and New Zealand Environment and Conservation Council Task Force on Marine Protected Areas. 1998. *Strategic Plan of Action for the National Representative System of Marine Protected Areas: public comment draft,* Environment Australia, Canberra.

[11] ANZECC / TFMPA. 1998. *Guidelines for establishing the national representative system of marine protected areas.* Australian and New Zealand Environment and Conservation, Task Force on Marine Protected Areas. Canberra. Environment Australia.

[12] Salm, R.V., Clark J. & Siirila E. 2000. *Marine and Coastal Protected Areas: A Guide for planners and managers.* IUCN. Washington DC.

greater issue, and maximises the potential to maintain processes that link the land and sea ecologically.

The ways in which tides, currents and the behaviour of plants and animals combine to connect neighbouring and more widely separated ecosystems in the marine environment are complicated. The inclusion of habitats within marine parks across a local, regional and provincial scale will be used as a surrogate to achieving measurable connectivity and linkages within and between marine parks.

Principle Number Six: Resilience and Vulnerability

Networks of marine parks should be designed to maintain the natural state of ecosystems and to absorb shocks, particularly in the face of large-scale and long-term changes such as climate change[13]. Resilience and vulnerability as a principle for marine parks design, can be supported by protecting replicate examples of ecosystems within parks and by incorporating naturalness, vulnerable habitats and vulnerable life-stages within marine parks. Areas that are vulnerable or potentially less resilient to shocks should be included in the network to offer them an increased level of protection. Areas with a high degree of integrity, ie having the full range of expected ecological processes occurring within them, should also be considered for inclusion into the network to ensure greater resilience against future changes or threats[14].

To incorporate resilience to climate change, a precautionary approach will be necessary, utilising all reasonable scientific hypotheses and modeling into future impacts. Marine parks design should take into consideration potential climate change impacts and build resilience into marine parks to minimise possible future effects. Relevant concepts include:

<u>Replication</u>

An adequate network is resilient to impact and change. One of the most effective ways to manage for impacts is to "spread the risk" by including replicated examples of ecosystems within a network of marine parks (both within and between bioregions). If only a single area is preserved, impacts from pollution (eg oil spills) physical disturbance (eg storms) and loss of ecological integrity (eg pests), pose significant threats. If multiple examples are preserved, the loss of one doesn't mean its extinction within the network of marine parks. An example of replication would be the inclusion of mangrove communities within marine parks in both Spencer Gulf and Gulf St Vincent.

<u>Naturalness</u>

An area can be considered as natural if it has been subjected to lower levels of human induced change than other more heavily utilised areas[15]. A delicate environment can be used once and lose naturalness but some environments are so dynamic that naturalness will persist despite relentless use. Natural areas should be protected and managed so as to preserve their natural condition[16], this will help to maintain the essential attributes and qualities of the marine environment in the long term and to ensure that future generations have the opportunity to experience understanding and enjoyment of areas that have been largely undisturbed by human action[17]. Adopting a principle that targets the selection of natural areas into marine parks reinforces the need to maintain a balance between conservation and use of the marine environment. If there are areas of similar biodiversity conservation value and one is more heavily used than the other, then most benefit can be drawn from protecting

[13] WPCA/IUCN. (2007). *Establishing networks of marine protected areas: A guide for developing national and regional capacity for building MPA networks*. Non-technical summary report.
[14] EPA/QPWS. (2007). *Moreton Bay Marine Park Zoning Plan Review: Scientific Guiding Principles*. Recommended by the Expert Advisory Panel. Environmental Protection Agency and Queensland Parks and Wildlife Service
[15] ANZECC / TFMPA. 1998. *Guidelines for establishing the national representative system of marine protected areas*. Australian and New Zealand Environment and Conservation, Task Force on Marine Protected Areas. Canberra. Environment Australia.
[16] Australian and New Zealand Environment and Conservation Council Task Force on Marine Protected Areas. 1998. *Strategic Plan of Action for the National Representative System of Marine Protected Areas: public comment draft,* Environment Australia, Canberra.
[17] Australian and New Zealand Environment and Conservation Council Task Force on Marine Protected Areas. 1998. *Strategic Plan of Action for the National Representative System of Marine Protected Areas: public comment draft,* Environment Australia, Canberra.

the second area, whilst sustainable management of the first area can help to conserve or recover its environmental, social and economic values.

Vulnerability

To incorporate habitat vulnerability into marine parks design, areas that contain habitats or ecosystems that are vulnerable to impacts should be considered for inclusion within marine parks. For the purposes of marine parks design, vulnerability is defined by rarity and/or likely resilience to impacts and/or a lengthy recovery time following disturbance. Vulnerable habitats are easily disturbed or transformed by impacts and their recovery period can be slow[18].

Areas that contain vulnerable life stages for certain species, populations or communities should also be included within marine parks. Areas to be considered in marine parks design should include critical nursery areas, spawning and nesting grounds[19].

Principle Number Seven: Ecological Importance

Areas of particular ecological importance to South Australia's marine environment should be considered for inclusion into the network of marine parks. Ecologically important areas may include areas with high biological productivity, or areas where particular interactions sustain communities or provide for unique or unusual communities or aggregations to develop either permanently or for periods of time, eg upwelling environments that establish important food webs at certain times of the year. An example of a unique species is the Giant Cuttlefish (*Sepia apama)* spawning aggregation which occurs between May and August each year in the Northern Spencer Gulf between Black Point and Point Lowly[20]. This aggregation is the only known spawning aggregation of giant cuttlefish in the world[21].

A species or population may also be regarded as ecologically important if it is a keystone species without which systems would change or an ecosystem engineer. For example, rock lobster are a high level predator of grazing invertebrates on reefs and their removal can cause trophic cascades. An example of an ecosystem engineer is macroalgae (eg kelp) which creates a particular habitat and thus its removal creates a fundamentally different system. Therefore, areas chosen as ecologically important may: facilitate rapid growth and development of animals through the provision of ideal habitat conditions, eg water temperature, salinity, absence of predators; contribute to the maintenance of essential ecological processes or life support systems; cater for rare or endangered species; contain areas on which species or other systems are dependent, eg nursery grounds or resting areas for migratory species; contribute to marine biodiversity by providing for unique or unusual communities, or contain self-contained and self-reliant ecological units[22].

6. The community design principles

The community design principles recognise varied users of the marine environment and seek to align marine parks so that those uses continue and are sustainable in the future.

Principle Number Eight: Seek synergies with existing protected areas

Where possible, the representative network of marine parks should complement and augment South Australia's existing protected areas where appropriate. A network of marine parks designed to be

[18] EPA/QPWS. (2007). *Moreton Bay Marine Park Zoning Plan Review: Scientific Guiding Principles*. Recommended by the Expert Advisory Panel. Environmental Protection Agency and Queensland Parks and Wildlife Service.
[19] EPA/QPWS. (2007). *Moreton Bay Marine Park Zoning Plan Review: Scientific Guiding Principles*. Recommended by the Expert Advisory Panel. Environmental Protection Agency and Queensland Parks and Wildlife Service.
[20] Hall, K.C and Fowler, A.J (eds). (2003). The *fisheries biology of the cuttlefish Sepia apama Gray in South Australian Waters*. Final Report to the FRDC (project No. 98/151). SARDI Aquatic Sciences, Adelaide.
[21] Hall, K.C and Fowler, A.J (eds). (2003). The *fisheries biology of the cuttlefish Sepia apama Gray in South Australian Waters*. Final Report to the FRDC (project No. 98/151). SARDI Aquatic Sciences, Adelaide.
[22] ANZECC / TFMPA. 1998. *Guidelines for establishing the national representative system of marine protected areas*. Australian and New Zealand Environment and Conservation, Task Force on Marine Protected Areas. Canberra. Environment Australia.

comprehensive, adequate and representative needs to consider the contribution made by existing protected areas and seek to complement them to meet the objectives of the program. Consideration should be given to:

- a 'NatureLinks' outcome, which aims to conserve South Australia's species and habitats by establishing ecological links across the land and sea. Naturelinks can be achieved by locating marine parks adjacent to:
  - terrestrial parks and reserves under the *National Parks and Wildlife Act 1972*;
  - Commonwealth marine protected areas under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*;
  - private tenure under heritage agreements;
- existing marine protection including:
  - aquatic reserves, netting closures and other managed areas under the *Fisheries Management Act 2007*;
  - parks and reserves with a marine extent declared under the *National Parks and Wildlife Act 1972*;
  - historic shipwreck protection zones declared under the *Historic Shipwrecks Act 1981*; and
  - the Adelaide Dolphin Sanctuary under the *Adelaide Dolphin Sanctuary Act 2005*.

From a community design perspective, complementarity helps to avoid unnecessary duplication of protected areas and subsequently to minimise potential additional restrictions placed on the community to use and enjoy the marine environment. From a biophysical point of view, aligning marine parks with terrestrial protected areas can help to buffer the marine environment from land-based impacts and provide ecosystem linkages between the land and sea.

Principle Number Nine: Seek to complement existing terrestrial and marine management practices and conservation agreements

Marine parks should be designed to complement existing terrestrial and marine management practices and conservation agreements where appropriate. Consideration should be given to areas or species that are listed, or recognised as having the potential to be listed under the EPBC Act, or areas or species that are subject to an International or National Conservation Agreement, such as:

- the *Convention on Wetlands of International Importance especially as Waterfowl Habitat (*RAMSAR*);*
- the *Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (*JAMBA);
- the *Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment (CAMBA);*
- the *Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).*

Consideration should also be given to strategies, plans or policies developed to manage the terrestrial and marine environment under other operational Acts such as:

- *Natural Resources Management Act 2004;*
- *Development Act 2003;*
- *Fisheries Management Act 2007; and*
- *Aquaculture Act 2001.*

Complementing existing management arrangements and conservation agreements will provide greater operational clarity for marine managers, help coordinate and improve management, separate conflicting uses and ensure greater understanding of the arrangements by government, industry and the community[23].

[23]EPA/QPWS. (2007). *Moreton Bay Marine Park Zoning Plan Review: Scientific Guiding Principles.* Recommended by the Expert Advisory Panel. Environmental Protection Agency and Queensland Parks and Wildlife Service.

Principle Number Ten: Give consideration to the full diversity of marine uses

Marine parks design should take into consideration the full diversity of uses of the marine environment, eg resource extraction, recreational activities and ecosystem services, and aim to provide for their ongoing sustainability. The consideration of uses of the marine environment should also take into account trends in use, such as seasonal fluctuations in populations during holiday periods. Marine park design should aim to minimise any unnecessary disruption to the lifestyles and livelihoods of South Australians without compromising the conservation objectives of the marine parks.

Principle Number Eleven: Respect Indigenous interests and culture

Indigenous people have interacted with the marine environment for thousands of years and their relationships with the sea remain strong through customs, laws and traditions. Traditional usage, Indigenous cultural heritage, Indigenous Protected Areas (IPAs), Indigenous Land Use Agreements (ILUAs) and Native Title considerations all need to be taken into account in marine parks design[24].

Principle Number Twelve: Give consideration to cultural heritage

Where possible, the system of marine parks should complement or seek to include sites of cultural and maritime heritage. Consideration should be given to areas that are listed, or recognised as having the potential to be listed:

- on the World Heritage List;
- on the National Heritage List;
- on the Commonwealth Heritage List;
- as historic shipwreck protection zones declared under the *Historic Shipwrecks Act 1981;*
- on the South Australian Heritage register;
- under the History Trust; and
- under the National Trust.

Principle Number Thirteen: Ensure ease of identification, compliance and enforcement

Marine parks design should ensure that the locations of marine parks, and their zones, are easy and simple for the user to identify. Tools should be available to educate users about the positioning of marine park boundaries and to assist with compliance and enforcement. Boundary shape (straight lines versus curves), methods for defining boundaries (GPS points or alignment with prominent coastal features) and management consistency with other marine parks in the system, ie with zoning, should aid community understanding.

Principle Number Fourteen: Provide for education, appreciation and recreation

Marine parks should be designed in a way to provide opportunities to improve the community's understanding, appreciation and enjoyment of the marine environment. Increased community understanding and appreciation can lead to a shift in community perception and improvement of lifestyles, potentially resulting in less impact on the marine environment.

7. Next steps

The next steps for the program are to apply the design principles to identify and select potential outer boundaries at each of the 19 focus locations, achieving both the biophysical and community based design objectives of the program. The Government is committed to facilitating community engagement and involvement throughout the marine parks development process. To date, this has included consultation on the Encounter Marine Park Zoning Plan and the Marine Parks Bill. Once the marine parks boundaries have been proclaimed they will be released for public consultation for at least six weeks. Once the marine parks boundaries are finalised, the Government will begin to develop marine parks zoning and management plans in consultation with local communities across the State.

[24] ANZECC / TFMPA. 1998. *Guidelines for establishing the national representative system of marine protected areas.* Australian and New Zealand Environment and Conservation, Task Force on Marine Protected Areas. Canberra. Environment Australia.

8. Using this document

The intent of this document is to outline the design principles used to develop South Australia's marine park boundaries. The design principles may be used by local communities as a guide when developing submissions during the boundary consultation process.

9. Conclusion

The process of designing marine parks for South Australia is a complex task involving careful consideration of each of the outer boundary design principles. It is important to recognise that the program will need to progress without certainty in all areas. Developing a system of marine parks within the limits of current knowledge invokes the importance of applying a cautionary approach to their design. Hence, the Precautionary Principle applies to all design elements of the system.

Ultimately, the design of a representative system of marine parks for South Australia must meet the objectives of the *Marine Parks Act 2007* and deliver outcomes that can conserve and protect the diversity and viability of our marine ecosystems. In order to achieve this, marine parks design needs to be guided by scientific knowledge that can identify and characterise ecosystem components that are responsible for biodiversity and that allow ecosystems to function. Wherever possible, however, the SARSMPA program should target areas that contain the ecosystem components that meet its needs without compromising the State's ability to gain social and economic benefit from the marine environment. The community's input to the development process, and ownership of the end result, will ultimately influence the success of marine parks in South Australia.