Marine Parks

Reserve today. Preserve forever.

Environmental, Economic and Social Values of the Neptune Islands Group Marine Park

PART 1

Government of South Australia

www.marineparks.sa.gov.au

For further information, please contact:
Coast and Marine Conservation Branch
Department of Environment and Natural Resources
GPO Box 1047
ADELAIDE SA 5001

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

Cite as:
Department of Environment and Natural Resources (2010), *Environmental, Economic and Social Values of the Neptune Islands Group Marine Park*, Department of Environment and Natural Resources, South Australia

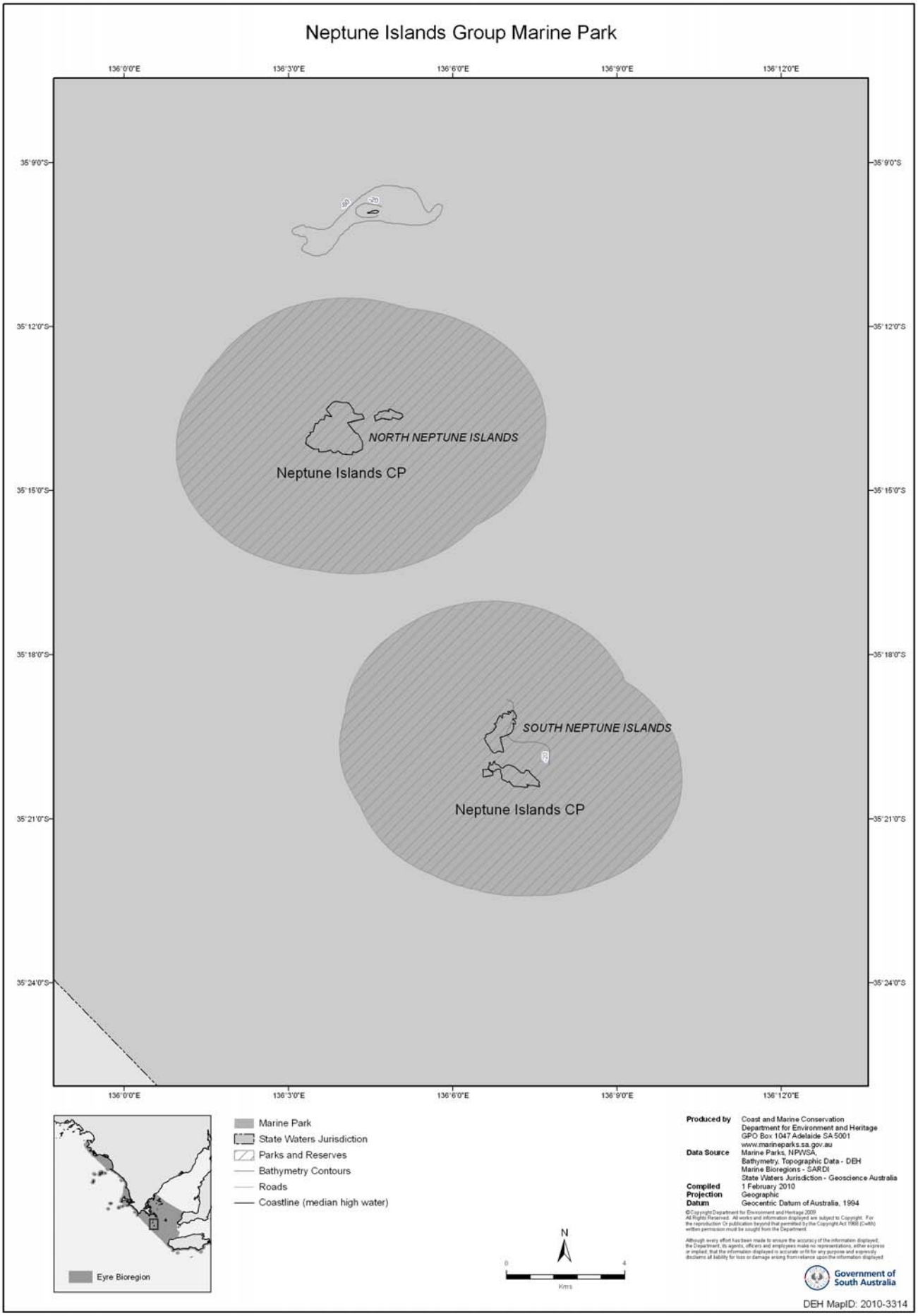
Mapping information:
All maps created by the Department of Environment and Natural Resources unless otherwise stated.

TABLE OF CONTENTS

PART 1 VALUES STATEMENT

PART 2 AN ATLAS OF MAPS

An atlas of maps containing environmental, economic and social/cultural information for this marine park has been produced as Part 2 of the Values Statement. The maps provide details specific to this park in a user-friendly visual format and may be viewed and downloaded from http://www.marineparks.sa.gov.au.


Neptune Islands Group Marine Park
136°0'0"E
136°3'0"E
136°6'0"E
136°9'0"E
136°12'0"E
35°9'0"S
35°12'0"S
35°15'0"S
35°18'0"S
35°21'0"S
35°24'0"S
NORTH NEPTUNE ISLANDS
Neptune Islands CP
SOUTH NEPTUNE ISLANDS
Neptune Islands CP
Eyre Bioregion
Marine Park
State Waters Jurisdiction
Parks and Reserves
Bathymetry Contours
Roads
Coastline (median high water)
N
0
4
Kms
Produced by
Coast and Marine Conservation
Department for Environment and Heritage
GPO Box 1047 Adelaide SA 5001
www.marineparks.sa.gov.au
Data Source
Marine Parks, NPWSA,
Bathymetry, Topographic Data - DEH
Marine Bioregions - SARDI
State Waters Jurisdiction - Geoscience Australia
Compiled
1 February 2010
Projection
Geographic
Datum
Geocentric Datum of Australia, 1994
Government of South Australia
DEH MapID: 2010-3314

Neptune Islands Group Marine Park

Located in the Eyre bioregion, the Neptune Islands Group Marine Park covers 146km^2 and is situated in offshore waters south of the Thorny Passage Marine Park. The marine park overlays the whole of the Neptune Islands Conservation Park

1 ENVIRONMENTAL VALUES

1.1 Ecosystem services

Ecosystems provide many critically important services that people benefit from, often at no direct cost to us. Examples of ecosystem services provided by coastal and marine habitats are shown in the following table. It is important to ensure that ecosystem health and integrity are maintained so that ecosystems continue to provide these services to us all.

Table adapted from McLeod, K and Leslie, H (2009).

	Life supporting services				Resources and products				Maintain earth's living space							Recreational and cultural services				
Coastal, estuarine and marine habitat types	Biogeochemical processes	Biophysical processes	Biodiversity	Nutrient cycling	Food	Fibre, fuel, shells etc	Non-biological materials (eg minerals)	Pharmaceuticals & nutriceuticals	Climate regulation	Waste processing	Flood/storm protection	Water flow/ circulation	Erosion control	Water quality	Sediment quality	Cultural and amenity	Recreation and tourism	Aesthetics	Spiritual, religious, lifestyle	Education and research
Reef (granite, limestone, calcarenite or low profile platform reef)	x	x	x	x	x	x	x	x	x	x		x	x	x		x	x	x	x	x
Water column	x	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x

The Neptune Islands Group Marine Park will be designed to conserve examples of habitats and species found in the Eyre bioregion. Habitats, species and natural processes found here are summarised below.

1.2 Physical influences

Physical influences shape the type of habitats and species found in an area. Physical influences typical of this area include:

- full exposure to high wind, wave and swell energy;
- transition from western warm waters to the cool temperate south eastern waters;
- the warm Leeuwin Current[1] from the west;
- the cool Flinders Current[2] from the southeast.

1.3 Habitat variety

Table 1 Benthic (subtidal) habitats found in the Neptune Islands Group Marine Park

Benthic Habitat**	Area (km²)*	% of park
Low profile platform reef	1	1%
Unmapped	142	99%

* habitat areas have been rounded to the nearest whole number
**habitats included are those found from mapping at a resolution of 1:100,000

No shoreline class data is available for the Neptune Islands Group Marine Park.

The islands group comprises granite mountains rising steeply from deep water, exposed to high wind, wave and swell energy. Habitats include the exposed island environments above the reach of the tides, while at the shoreline, intertidal reefs extend down into deep water and sandy seafloor habitats. The slightly larger North Neptune Island has an area of surveyed platform reef adjacent to it, in some areas extending to depths greater than 50m.

1.4 Marine species

The many habitats located within the Neptune Islands Group Marine Park support a variety of marine and coastal species including fish, sharks, mammals, birds and invertebrates, some of which have been identified as ecologically important. Refer to Appendix 1 for a more detailed list of species.

- Largest breeding colony of New Zealand fur seals in South Australia
- Important feeding area for great white sharks

1.4.1 Bony fish, sharks and rays

A range of fish species, including many of commercial importance, inhabit areas around these islands including snapper, trevally, wrasse, Western Australian salmon, gummy shark, whaler shark and Australian herring (tommy ruff). Many of these fish species are believed to use the island habitats at several stages of their life cycle.

The Neptune Islands have been identified by CSIRO as an important area for the nationally *vulnerable* white shark, particularly for feeding. The large New Zealand fur seal population on the islands provides a major food source.

The shortfin mako and porbeagle are also known from this area and have recently been listed for protection under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act). Other shark or ray species of conservation concern recorded in the area include the coastal stingaree, whitespotted spurdog, spotted wobbygong, bronze whaler, blue shark, smooth

[1] The Leeuwin Current originates in the tropical Indian Ocean, flows south along the Western Australian coast, and turns east along the shelf break to the Great Australian Bight, bringing warm, relatively low nutrient waters (Middleton & Bye 2007).

[2] The Flinders Current is a deep south-east to west current which is thought to flow from the west Tasmanian shelf to Cape Leeuwin and increases in flow speed from south-east (5cm / second) to west (20cm / second). (Middleton & Bye 2007)

hammerhead, school shark and dusky whaler, which has been nominated for protection under the EPBC Act.

The western blue groper, identified as being of conservation concern, inhabits reefs of the Neptune Islands. These fish species have been identified as a long-living, site attached species, which are particularly vulnerable to fishing pressure.

Various reef fishes which are of conservation concern, including several wrasse species, harlequin fish and western blue devil are found in the area.

1.4.2 Marine mammals

A breeding population of the nationally and state listed *vulnerable* Australian sea lion lives within the Neptune Islands, while about half the Australian population of New Zealand fur seals are known to inhabit the South and North Neptune Islands. It is believed to be the State's most important pup production site for the Australian sea lion, whose population is recovering from decimation by the early sealing industry.

1.4.3 Seabirds and local and migratory shorebirds

Seabirds protected under international treaties, such as the Caspian tern, crested tern and short-tailed shearwater roost and nest on the Neptune Islands. The Cape Barren goose and peregrine falcon breed and nest on the islands. In addition the state *endangered* fairy tern is known to breed on South Neptune Island and the state *rare* rock parrot also occurs on the islands.

1.4.4 Marine invertebrates

The turrid shell and the typhine shell have been recorded from waters around the Neptune Islands. Both are believed to be uncommon and possibly endemic. Reefs around the island are used by one or more of the life stages of various commercially or recreationally important species such as southern rock lobster, southern calamari, greenlip and blacklip abalone and purple sea urchins.

For further environmental and social information refer to http://www.marineparks.sa.gov.au

2 ECONOMIC VALUES

The marine environment is an important source of wealth for South Australia and its coastal communities. Marine parks will be designed to accommodate existing economic activities wherever possible. The main economic activities in the Neptune Islands Group Marine Park are summarised below. Information in the Commercial fishing section has been provided by PIRSA.

2.1 Commercial fishing

The commercial fisheries that operate in the Neptune Islands Group Marine Park are:

- Northern Zone Rock Lobster Fishery;
- Sardine Fishery;
- Marine Scalefish Fishery; and
- Abalone Fishery.

The value of each of these fisheries, including the direct and flow-on values, as well as the number of employees and export values, where available, are listed below. Note that the values provided below are for the entire area of the fishery and are not specific to the Neptune Islands Group Marine Park.

Table 2 The 2008/09 economic value of fisheries operating in the marine park for relevant fishery areas (figures are not specific to the park area and include catches from outside the marine park boundary).

	Catch value($m)	Value of flow-on to other sectors ($m)	Fishing (FTE) employment	Flow-on (FTE) employment
Northern Zone Rock Lobster (Eyre)	19.3	14.5	155	77
Sardines (Eyre)	17.5	9.7	48	50
Marine Scalefish (Spencer Gulf/Coffin Bay)	10.9	10.0	249	51
Abalone (Eyre)	30	20.3	90	102
Abalone (Western Zone)	19.6			

EconSearch 2010 a, b, c and d.

These fisheries are important to regional economies of the area both directly, through employment in each fishery, and indirectly, through a range of additional services such as processing, local transport, marketing, local retail and food services. Each of these activities generates flow-on effects to other sectors, through purchases of inputs and employment of labour.

The park is part of the Northern Zone Rock Lobster Fishery, which operates from November to May. The northern zone contributes around 20% of the $105m state-wide catch of southern rock lobster.

The South Australian fishery for Australian sardine is the largest fishery by volume in Australia and is based out of Port Lincoln. Important waters include lower Eyre Peninsula and lower Spencer Gulf. The fishery has expanded rapidly over the past decade, providing a key source of feed for the growing aquaculture industry based in Port Lincoln.

The Marine Scalefish Fishery is a diverse multi-species, multi-gear fishery that operates across State waters. The key target species in this region are shark and leatherjacket.

The Abalone Fishery targets greenlip and blacklip abalone. The park lies within the Western Zone Abalone Fishery, which produced about 64% of the State's abalone harvest in 2008/09.

Fishing charters also operate in this region, based out of a variety of locations including Port Lincoln and Kangaroo Island.

For further information or to view maps of the fishing regions visit:
http://www.sardi.sa.gov.au/__data/assets/pdf_file/0010/99739/No_305_South_Australian_Wild_Fisheries_Information__and__Stats_report_200708_published.pdf

2.2 Transport and infrastructure

Transport and infrastructure provide an important economic contribution to the region, providing for maritime activities such as: shipping ports for import and export of goods; boat ramps for launching of recreational or commercial vessels; jetties for fishing; and breakwaters and groynes for coastal management.

2.3 Local tourism

The regular presence of great white sharks in the area has led to a world-renown shark viewing industry, with two operators conducting cage diving tours, one based in Port Lincoln and one in Adelaide. Charter fishing is also conducted around the islands.

3 SOCIAL VALUES

The marine environment is an important recreational asset for coastal communities. Marine parks will be designed to accommodate existing recreational activities wherever possible. This section

highlights the social values of the Neptune Islands Group Marine Park and is separated into two parts:

- Aboriginal and European cultural heritage; and
- recreational activities.

3.1 Aboriginal heritage

Aboriginal 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, Aboriginal cultural heritage, Indigenous Protected Areas (IPAs), Indigenous Land Use Agreements (ILUAs) and Native Title considerations will be taken into account in developing the management plan for the Neptune Islands Group Marine Park.

Little is known about the Aboriginal heritage for the Neptune Islands Group Marine Park. However the Government is aware that there may be confidential Aboriginal heritage sites in South Australia's coastal areas. Where possible, these sites will be considered in the planning process. Future management plans will ensure these heritage sites are appropriately respected. Aboriginal aspirations for this area are not known by the Department of Environment and Natural Resources.

3.2 European heritage

Where possible, the management plan for the Neptune Islands Group Marine Park will recognise and complement sites of cultural and maritime heritage.

The relatively intact lighthouse complex on South Neptune Island, which includes the keepers' cottages, fences, store buildings, water tanks, graves and the foundations of the original lighthouse, was established in 1901. The lighthouse has been returned to Port Adelaide, but the remaining structures illustrate the isolation and self sufficient lifestyle of one of the state's more isolated lightstations. It is listed on both the State Heritage Register and the Register of the National Estate.

A number of wrecks have occurred around the southern islands, including the *Frances* (1840) which is protected but not found, and the *Venus* (1946) and *Yandra* (1959) which are not protected.

The Conservation Park is registered on the Register of the National Estate.

3.3 Recreational activities in the marine parks

Due to the remoteness of this park, there are limited recreational activities undertaken here, other than white shark cage diving and charter fishing.

APPENDIX 1 SPECIES LIST

This list of some of the species identified in the Neptune Islands Group Marine Park indicates the diversity of species found there.

Bony fish, sharks and rays

Australian herring	*Arripis georgianus*
Australian sardine	*Sardinops neopilchardus*
blue shark	*Prionace glauca*
bronze whaler	*Carcharhinus brachyurus*
coastal stingaree	*Urolophus orarius*
crested pipefish	*Histiogamphelus cristatus*
dusky whaler	*Carcharhinus obscurus*
great white shark	*Carcharodon charcharias*
gummy shark	*Mustelus antarcticus*
harlequin fish	*Othos dentex*
leatherjacket	Monacanthidae
porbeagle	*Lamna nasus*
school shark	*Galeorhinus galeus*
shortfin mako	*Isurus oxyrinchus*
smooth hammerhead	*Sphyrna zygaena*
snapper	*Pagrus auratus*
spotted wobbygong	*Orectolobus maculatus*
trevally	*Pseudocaranx georgianus*
Western Australian salmon	*Arripis truttaceus*
western blue devil	*Paraplesiops meleagris*
western blue groper	*Achoerodus gouldii*
whaler shark	*Carcharhinus brachyurus*
white shark	*Carcharadon carcharias*
whitespotted spurdog	*Squalus acanthias*
wrasse	Labridae

Marine mammals

Australian sea lion	*Neophoca cinerea*
New Zealand fur seal	*Arctocephalus forsteri*

Seabirds and local and migratory shorebirds

Cape Barren goose	*Cereopsis novaehollandiae*
Caspian tern	*Sterna caspia*
crested tern	*Sterna bergii*
fairy tern	*Sterna nereis*
peregrine falcon	*Falco peregrinus*
rock parrot	*Neophema petrophila*

Marine invertebrates

blacklip abalone	*Haliotis rubra*
greenlip abalone	*Haliotis laevigata*
purple sea urchin	*Heliocidaris erythrogramma*
southern calamari	*Sepioteuthis australis*
southern rock lobster	*Jasus edwardsii*
turrid shell	Turridae
typhine shell	*Siphonochelus syringianus; Typhina yatesi, Typhis philippensis Monstrotyphis bivaricata*

REFERENCES AND SUGGESTED FURTHER READING

A National Approach to Addressing Marine Biodiversity Decline Report to the Natural Resource Management Ministerial Council: http://www.environment.gov.au/coasts/publications/marine-diversity-decline/index.html

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. http://marineparkssa.ning.com/page/publications-reports#technical

Department for Environment and Heritage. (2009). *A technical report on the outer boundaries of South Australia's marine parks network*: 21-26. Department for Environment and Heritage, South Australia. http://marineparkssa.ning.com/page/publications-reports#technical

EconSearch. (2010a). *Economic Indicators for the South Australian Abalone Fishery, 2008/09.* Report prepared for Primary Industries and Resources South Australia, Adelaide.

EconSearch. (2010b). *Economic Indicators for the South Australian Sardine Fishery 2008/09*. Report prepared for Primary Industries and Resources South Australia, Adelaide.

EconSearch. (2010c). *Economic Indicators for the South Australian Marine Scalefish Fishery, 2008/09.* Report prepared for Primary Industries and Resources South Australia, Adelaide.

EconSearch. (2010d). *Economic Indicators for the South Australian Northern Zone Rock Lobster Fishery 2008/09.* Report prepared for Primary Industries and Resources South Australia, Adelaide.

For further information on fisheries economic indicators visit: http://www.pir.sa.gov.au/fisheries/commercial_fishing/abalone_fishery/economic_performance_indicators

Edyvane K.S. (1999). *Conserving Marine Biodiversity in South Australia – Part 2 – Identification of areas of high conservation value in South Australia*. South Australian Research and Development Institute, Aquatic Sciences, Adelaide. http://www.sardi.sa.gov.au/aquatic/marine_environment__and__ecology_program/environmental_assessment,_mitigation__and__rehabilitation_subprogram/marine_biodiversity

Goldsworthy S.D. and Page B. (2009) *A review of the distribution of seals in South Australia*. Report to the Department for the Environment, Water, Heritage and the Arts. SARDI Aquatic Sciences Publication Number: F2009/000368-1. SARDI Research report Series Number: 373.

McLeod K. and Leslie H. (ed) (2009). *Ecosystem-based Management for the oceans*. Island Press Washington.

Middleton J.F. and Bye A.T. (2007). A review of the shelf-slope circulation along Australia's southern shelves: Cape Leeuwin to Portland. *Progress in Oceanography*, 75: 1-41. http://www.flinders.edu.au/science_engineering/biology/our-school/staff-postgrads/research_pages/middleton/circ-sthrn.cfm

NatureMaps: an interactive online mapping tool http://www.naturemaps.sa.gov.au/

Policy commitments relating to activities such as fishing, aquaculture and mining can be found at: http://marineparkssa.ning.com/page/fact-sheets

Robinson, A.C., Canty, P., Mooney, P. & Rudduck, P. (1996). *South Australia's Offshore Islands*. Australian Heritage Commission and Department of Environment and Natural Resources, South Australia.

Shaughnessy, P.D. and Goldsworthy S.D. (2007). *Population assessment of fur seal and sea lions at some colonies in South Australia, 2006-2007*. Final report to the Department for Environment and Heritage, South Australia and the South Australian Wildlife Conservation Fund. SARDI Aquatic Sciences Publication Number: F2007/000750-1. SARDI Research report Series Number: 236, 43pp. http://www.sardi.sa.gov.au/__data/assets/pdf_file/0017/113480/No_236_Population_assessment_of_fur_seals_and_sea_lions_at_some_colonies_in_South_Australia,_2006-07.pdf

State of the Environment Report 2008: http://www.epa.sa.gov.au/soe