
Marine Parks

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Environmental, Economic and Social Values of the Sir Joseph Banks Group Marine Park

PART 1



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

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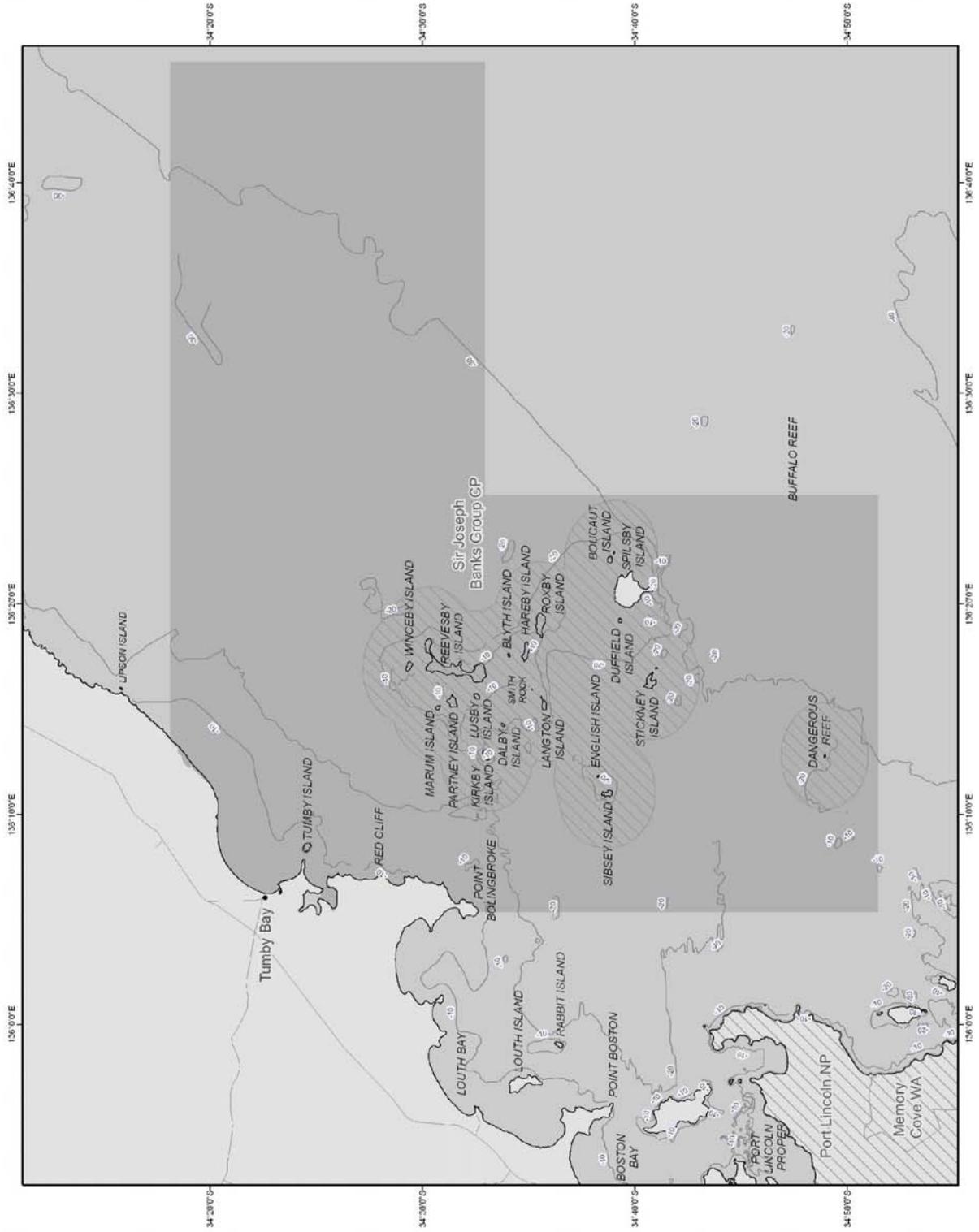
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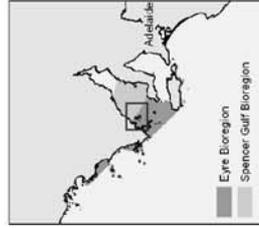
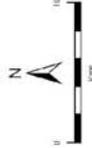
PART 2 AN ATLAS OF MAPS

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>.

Sir Joseph Banks Group Marine Park



- Marine Park
- State Waters Jurisdiction
- Parks and Reserves
- Bathymetry Contours
- Roads
- Coastline (median high water)



Produced by
Coast and Marine Conservation
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Data Source
Marine Parks, NPWS/SA
Bathymetry, Topographic Data - DEH
Marine Bioregions - SACOI
National Hydrographic Office - Geoscience Australia
1 February 2010

Compiled
Geographic
Datum
Geocentric Datum of Australia, 1994

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DEH MapID: 2010-3230

Sir Joseph Banks Group Marine Park

Located in lower western Spencer Gulf and covering 2,627km², the Sir Joseph Banks Group Marine Park includes parts of the Eyre and Spencer Gulf Bioregions. The park is adjacent to Tumby Bay, and includes the islands of the Sir Joseph Banks Group and Dangerous Reef. This marine park overlays two other protected areas, including the Tumby Island Conservation Park and the Sir Joseph Banks Group 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					
	Biogeochemical processes	Biophysical processes	Biodiversity	Nutrient cycling	Food	Fibre, fuel, shells etc	Non-biological materials (eg minerals)	Pharmaceuticals & nutraceuticals	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
Coastal, estuarine and marine habitat types																				
Bare sand	x	x	x	x	x	x	x			x		x		x	x	x	x	x	x	x
Seagrass	x	x	x	x	x	x		x	x	x		x	x	x	x	x	x	x	x	x
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
Bedrock platform	x	x	x	x	x	x	x	x	x	x			x			x	x	x	x	x
Sandy beaches (dunes, coarse sand, fine sand)	x	x	x	x	x	x	x			x		x	x		x	x	x	x	x	x
Saltmarsh	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Mangrove	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

The Sir Joseph Banks Group Marine Park will be designed to conserve examples of habitats and species found in the Spencer Gulf and Eyre Bioregions. 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 region include:

- a transition from the cooler, oceanic waters of the Lower Eyre Peninsula to the warmer, semi-sheltered waters of Spencer Gulf;
- northward flowing current entering the Gulf through the marine park, which is deflected at the head of the Gulf, creating a southward, saline counter current on the opposing shore;
- dodge tides, which have a major effect on water movement in the area.

1.3 Habitat variety

Table 1 Benthic (subtidal) habitats found in the Sir Joseph Banks Group Marine Park

Benthic Habitat**	Area (km ²)*	% of park
Bare sand	145	5%
Dense seagrass	102	4%
Medium seagrass	26	1%
Sparse seagrass	282	11%
Granite reef	57	2%
Heavy limestone reef	1	<1%
Low profile platform reef	25	1%
Unmapped	1979	76%

* habitat areas have been rounded to the nearest whole number

**habitats included are those found from mapping at a resolution of 1:100,000

Table 2 Shoreline (intertidal) habitats found in the Sir Joseph Banks Group Marine Park

Shoreline Habitat	Length in park (km)*	% of park length
Bedrock platform	5	11%
Coarse sandy beach	37	79%
Mangrove	5	10%
Saltmarsh	<1	0%

* habitat lengths have been rounded to the nearest whole number

Tumby Bay is a Wetland of National Importance and includes important habitats for various fish, crustacean and bird species. The intertidal wetland area of Tumby Bay contains two main tidal inlet channels, forming three creeks. Salt Creek, at the northern end of the bay, is the main estuary. First Creek and Second Creek lie further south in the bay. The intertidal areas of Tumby Bay have sandy or muddy flats or beaches.

Extensive seagrass meadows occur in the sheltered sandy embayment of Tumby Bay, dominated by *Posidonia australis* in shallow waters down to approximately 4m and deeper waters are dominated by *P. sinuosa* and *P. angustifolia*. Saltmarsh communities also occur within the area.

The south-facing coastline occurs north of Tumby Bay, with higher wave energy. In this area sparse seagrass beds and sheltered sandy beaches occur with small pockets of rocky shores. Sparse meadows of *Halophila australis* occur as deep as 23m in the offshore gulf areas.

The Sir Joseph Banks Group is a cluster of 20 islands, islets and reefs. The islands are all relatively low lying and composed of eroded granite or gneiss and are distinct from the Neptune and Gambier Islands due to their height above sea level and protection from the open ocean. The islands are largely surrounded by reef or bedrock platform, however seagrass meadows and sandy seafloor habitats occur in the lee of the islands, generally within deeper water (>10m).

Dangerous Reef is comprised of a chain of four large granite rocks. Seagrass meadows occur between Dangerous Reef and the mainland, interspersed with reef dominated by macroalgae and sandy seafloor.

1.4 Marine Species

The many habitats located within the Sir Joseph Banks 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.

1.4.1 Plants and algae

The Sir Joseph Banks Group is rich in large brown macroalgae. On moderately exposed rocky coastlands in this region (such as Stickney Island), subtidal communities are dominated by the brown algae *Ecklonia radiata* and species of *Sargassum*, with species of *Cystophora* as subdominants. The understory is dominated by the red algae *Osmundaria prolifera*, encrusting and articulated coralline algae and the prostate brown algae *Lobophora variegata*.

1.4.2 Bony fish, sharks and rays

Tumby Bay includes mangroves, algae and seagrass that are important feeding, spawning and nursery habitats for a wide variety of fish species such as King George whiting. These species move offshore to the deeper waters around the islands as adults. As well as King George whiting, Australian salmon, sweep, snook, snapper, Australian herring (tommy ruff) and mullet are found in the area, using the various habitat types for different stages of their lifecycles. For example juvenile mullet are mainly found in inlets, bays and shallow sheltered marine waters. As juvenile mullet get older they tend to move to deeper gulf and offshore waters in which they will remain until they reach 12 to 13 years of age and then return to inshore waters for the remainder of their lives.

The leafy seadragon can be found in Tumby Bay, as well as the spotted snake-blenny which may be endemic to South Australia. The eastern stargazer fish is regularly observed in the Tumby Bay area, but is only recorded in South Australian gulfs and is considered uncommon at a national level.

Over 70 species of fish have been recorded in the Sir Joseph Banks Group. Various wrasse species of conservation concern occur in the park such as the blue-throated wrasse, senator wrasse and the western blue groper, a long-living, site attached species, which is particularly vulnerable to fishing pressure.

The nationally *vulnerable* white shark is commonly found in the area, including pregnant females, perhaps due to the regular presence of sea lion pups on the offshore islands such as at Dangerous Reef. Other species of conservation concern in the area include coastal stingaree, whitespotted spurdog, spotted wobblygong, bronze whaler, smooth hammerhead, school shark and dusky whaler, which has been nominated for protection under the *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act).

1.4.3 Marine mammals

Dangerous Reef hosts one of the three largest breeding colonies of Australian sea lions in the world and is one of only six sites within South Australia that produces more than 100 pups per breeding cycle. Australian sea lions are nationally and state listed as *vulnerable*. It is also a haul-out site for the New Zealand fur seal. English, Langton and Reevesby Islands and Smith Rock are important breeding/haul-out sites for these species.

Nationally protected bottlenose and common dolphins are regularly observed in the area and there are frequent sightings of various whale species.

1.4.4 Seabirds and local and migratory shorebirds

About 38 seabird and coastal wading bird species have been recorded using the area, including 11 which breed on the islands in the Sir Joseph Banks Group. Many of the islands such as Kirkby, Stickney, Partney, Winceby and Langton support breeding populations of the state *endangered* fairy tern. A number of the islands also provide important nesting habitat for the state *rare* Cape

Barren goose. The state *rare* rock parrot has a large breeding and nesting population on Boucat Island.

Species protected under international treaties are located on some of the islands including greenshank, ruddy turnstone, sharp-tailed sandpiper, lesser golden plover and grey plover. Caspian terns (Kirkby, Blythe, Lusby, Roxby and Partney Island), crested terns (Kirkby and Winceby Island) and the white-faced storm petrel (Kirkby, Sibsey, Hareby, Langton, Blythe, Dalby, Reevesby, Lusby, Partney, Winceby and Spilsby Island) also breed on these offshore islands. Raptors such as the state *endangered* osprey and the state *endangered* white-bellied sea eagle also nest there. Colonies of little penguins are also found on the islands.

1.4.5 Marine invertebrates

Many different invertebrate animals can be found in the Sir Joseph Banks Group due to the variety of habitats and micro-habitats that the islands provide. Shells of conservation concern, such as extensive colonies of *Zolla friendii* *thersites*, occur in sandy reef and sponge habitats around islands.

Invertebrates such as molluscs, crustaceans and worms are abundant around the Tumby Bay coast. The small, golden-red spotted nudibranch is only found from Tumby Bay to Elliston. The velvet octopus has been found in only a few places in South Australia such as Tumby Bay and the Sir Joseph Banks Group. In the deeper waters of the bay, bryozoans are abundant.

Southern calamari and sand crabs live in the soft sandy bottoms whilst reefs support the southern rock lobster, Maori octopus, abalone, sea urchin and the giant Australian cuttlefish, which is currently nominated for protection under the *Environment Protection and Biodiversity Conservation Act 1999*. The seagrass meadows and unvegetated sandy plain habitats provide nursery areas for blue swimmer crabs, western king prawns, king and queen scallops and baitworms.

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 Sir Joseph Banks Group Marine Park are summarised below. Information in the Aquaculture and Commercial fishing sections have been provided by PIRSA.

2.1 Aquaculture

The South Australian aquaculture industry had a direct output value of \$324 million in 2008/2009 (EconSearch, 2010a). Marine species grown and harvested in South Australia include (but are not limited to) Pacific oysters and mussels (bivalve molluscs), southern bluefin tuna (prescribed wild caught tuna), abalone, yellow-tail kingfish and other species of finfish (aquatic animals – other than prescribed wild caught tuna) –which require regular feeding).

Table 3 The statewide economic value of aquaculture industries in South Australia, 2008/09 (excludes freshwater aquaculture)

	Gross value of on-farm production (\$m)	Value to downstream* sectors (\$m)	On-farm number of employees (FTE)	Number of employees in downstream* sectors (FTE)
Southern bluefin tuna (prescribed wild caught tuna)	\$157.8	\$16.0	348	58
Bivalve molluscs (oysters)	\$32.6	\$42.6	529	252
Finfish (other than prescribed wild caught tuna)	\$29.2	\$15.4	108	84
Bivalve molluscs (mussels)	\$2.5	\$2.8	114	16

Abalone	\$8.1	\$0	64	0
Other	\$10.9	\$0	44	0

EconSearch, 2010a

* Downstream activities include processing, transport, retail and food service.

The Lower Eyre Peninsula aquaculture zone policy exists in this marine park. All farming of southern bluefin tuna in South Australia currently occurs in this region. Farming of mussels, abalone and other finfish also occurs in the policy area. As at October 2010, the Lower Eyre Peninsula aquaculture zone policy is currently under review and a Statement of Intent for the proposed Tumbay Bay aquaculture zone policy is being prepared. A map showing current active sites, applications and aquaculture zone policies can be accessed online through the Aquaculture Public Register at: http://www.pir.sa.gov.au/aquaculture/public_register

2.2 Commercial fishing

The commercial fisheries that operate in the Sir Joseph Banks Group Marine Park are:

- Western Zone Abalone Fishery;
- Northern Zone Rock Lobster Fishery;
- Spencer Gulf Prawn Fishery;
- Sardine Fishery; and
- Marine Scalefish 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 may not be specific to the Sir Joseph Banks Group Marine Park.

Table 4 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
Abalone (Eyre)	30	20.3	90	102
Abalone (Western Zone)	19.6			
Northern Zone Rock Lobster(Eyre)	19.3	14.5	155	77
Prawn (Spencer Gulf & West Coast)	30.8	71.2	185	342
Sardines (Eyre)	17.5	9.7	48	50
Marine Scalefish (Spencer Gulf/Coffin Bay)	10.9	10.0	249	51

EconSearch 2010 b, c, d, e and f.

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 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.

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 Spencer Gulf Prawn Fishery is the largest of the three prawn fisheries in South Australia. Over 80% of South Australia's king prawn harvest comes from Spencer Gulf, with 1,800 tonnes taken from that region in 2008/09.

The South Australian fishery for Australian sardine is the largest fishery by volume in Australia and is based out of Port Lincoln. Some vessels also utilise other ports such as Coffin Bay. 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, targeting four key species, snapper, King George whiting, southern garfish and southern calamari.

Blue swimmer crabs are fished commercially in Spencer Gulf. Fishing charters also operate from a number of locations throughout this region.

For further information visit:

http://www.sardi.sa.gov.au/_data/assets/pdf_file/0010/99739/No_305_South_Australian_Wild_Fishes_Information_and_Stats_report_200708_published.pdf

2.3 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.

2.4 Tourism

The coastal and marine environment is integral to the tourism experience throughout this region. Visitors are drawn to the white sandy beaches, rocky shores, sheltered bays and offshore islands. Other tourism drawcards include charter boat fishing, diving, recreational fishing and eco-tours, such as marine mammal and bird watching. The beaches of Spilsby Island are popular anchorage and camping locations for boat owners. Visitors can explore the Seafood and Aquaculture Trail and tours of aquaculture farm operations are very popular.

Tourism provides important employment opportunities for the Tumby Bay and Port Lincoln areas. In 2007 the District Council of Tumby Bay attracted an estimated 22,000 overnight visitors who stayed around 83,000 nights in the area. The average stay was 3.7 nights. Spilsby Island offers the ability to stay on the island with a host of leisure activities right throughout the year.

3 SOCIAL VALUES

The marine environment is an important recreational and cultural asset for coastal communities. Marine parks will be designed to accommodate existing activities wherever possible. This section highlights the social values of Sir Joseph Banks Group Marine Park and is separated into four parts:

- Aboriginal and European cultural heritage;
- scenic values;
- recreational activities and popular locations; and
- interpretive and educational facilities.

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 Sir Joseph Banks Group Marine Park.

3.1.1 Language groups

The Nauo-Barnjarla Aboriginal people have traditional associations with areas of the marine park including estuarine and coastal environments which provide food and resources for local Aboriginal people and still hold strong cultural significance today.

3.1.2 Agreements and claims

The Bargala Native Title Claim (lodged in 1996) includes parts of the Sir Joseph Banks Group Marine Park.

3.1.3 Protected areas

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.

3.2 European heritage

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

The islands of this group were explored by Matthew Flinders in March 1802, who landed on Kirkby Island and named many of them after parishes and villages in his home county Lincolnshire.

By the 1840s the value of the larger islands for grazing had been recognised and was being exploited and grazing and farming continued on the islands until they were declared a Conservation Park in the late 1960s. Farm houses, sheds and other structures remain on several of the islands as well as evidence of guano and mineral mining in some locations. The first lighthouses installed on Winceby Island and Dangerous Reef in 1911 have been replaced by modern structures.

One of the earliest wrecks in the park is the *Governor Gawler* (1847) which was wrecked on rocks near Reevesby Island. This vessel, one of the first built in South Australia, served as a passenger and cargo vessel between Adelaide and Port Lincoln and is protected. Other protected wrecks include the schooner *Eleanor* (1930), the cutter *Secret* (1873) and the ketch *Malcolm* (1928). Several fishing vessels were also wrecked in the waters of this park.

The jetty at Tumby Bay is listed as a local heritage place.

3.3 Scenic values

The scenic quality of South Australia's coast is a significant social, economic and environmental resource. The coastline has high amenity value and includes high quality landscapes, also known as viewsapes. The significance or quality of viewsapes is derived from a combination of landform (relative relief, variety and complexity of landscapes), land cover (nature, scale and variety of vegetation), land use (impact of human activity), water, diversity, naturalism and colour.

The coastline of the Sir Joseph Banks Group Marine Park comprises beaches, bays and low headlands and is considered to have moderate scenic values (Lothian 2005).

Scenic values of the offshore islands have not been measured.

Scenic values of coastline in the Sir Joseph Banks Group Marine Park (Lothian 2005).

Rating	Coastal landform type	Ranking
6.5 – 7.0	Headlands and bays	Moderate

For further information on coastal scenic values and viewsapes refer to <http://www.environment.sa.gov.au/coasts/management/coastal-viewsapes.html>

3.4 Recreational activities in the marine park

The coastal and marine environments of the Sir Joseph Banks Group Marine Park are very popular with recreational fishers, boat users, snorkellers, scuba divers, swimmers, and sightseers. Examples of these activities are provided below.

3.4.1 Recreational beach and boat fishing locations

Recreational fishing is a popular past time in South Australia. Recreational fishers collectively harvest significant proportions of the total catch for a number of key species. The total number of recreational fishers for the Southern Spencer Gulf (region 7) during 07/08 was 15,244 which amounted to 47,936 days of fishing. (Note figures relate to regions used for reporting fishing activities and include catches from outside the marine park boundary). King George whiting, snapper, southern garfish, southern calamari and blue swimmer crab were the most frequently caught species for this region.

Recreational shore fishing is popular at Point Bolingbroke, Red Point, Thuruna, Red Cliffs, Trinity Haven, Second Creek, Ski Beach, Tumby Bay jetty, Salt Creek Beach and Spilsby Island.

Recreational fishing from boats occurs at many sites throughout the region, including the islands of the Sir Joseph Banks Group, Ski beach, Tumby Island and Second Creek. Access is available via the Tumby Bay boat ramp or beach launch. Other formal boat ramps are located at Tumby Bay South, Trinity Haven and Second Creek. A marina is also located at Tumby Bay.

3.4.2 Popular swimming beaches

Swimming is popular along the Tumby Bay foreshore beach or at the Tumby Bay jetty.

3.4.3 Popular diving locations

Popular diving locations within the park include the waters around the islands of the Sir Joseph Banks Group and at the Tumby Bay jetty.

3.5 Interpretive and educational facilities within the marine park

Tumby Bay has a mangrove boardwalk and interpretive nature walk.

Marine invertebrates

baitworm	Annelida
blacklip abalone	<i>Haliotis rubra</i>
blue swimmer crab	<i>Portunus pelagicus</i>
bryozoans	Bryozoa
giant Australian cuttlefish	<i>Sepia apama</i>
golden-red spotted nudibranch	Nudibranchia
greenlip abalone	<i>Haliotis laevis</i>
king prawn	<i>Melicertus latisulcatus</i>
King scallop	<i>Pecten fumatus</i>
Maori octopus	<i>Octopus maorum</i>
mussel	Mytilidae
Pacific oysters	<i>Crassostrea gigas</i>
queen scallop	<i>Equichlamys bifrons</i>
sand crab	<i>Ovalipes australiensis</i>
sea urchin	Echinoidea
southern calamari	<i>Sepioteuthis australis</i>
southern rock lobster	<i>Jasus edwardsii</i>
sponge	Porifera
velvet octopus	<i>Grimpella thaumastocheir</i>
western king prawn	<i>Melicertus latisulcatus</i>

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Policy commitments relating to activities such as fishing, aquaculture and mining can be found at:

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