



APPENDIX 03

Priority marine species

03 PRIORITY MARINE SPECIES

Priority marine flora and fauna species include those species recognised by state or national legislation. The search area to identify species relevant to the proposed Olympic Dam expansion encompassed Upper Spencer Gulf, and utilised data sources listed in Appendix O2. Table O3.1 lists the marine species identified from the database and literature searches, with the exception of birds, which are listed and discussed in the Terrestrial Ecology chapter and Terrestrial Ecology Appendix (Appendix N6). Note that the Australian Giant Cuttlefish *Sepia apama* does not appear in Table O3.1 as the species is not listed in state or national legislation, but is covered in Appendix O5.

TABLE O3.1 PRIORITY MARINE SPECIES THAT OCCUR OR ARE LIKELY TO OCCUR IN UPPER SPENCER GULF

Status

Letters under column AUS = the category of threat listed under the *Environment Protection and Biodiversity Conservation Act 1999* (E = Endangered, V = Vulnerable, Mi = listed migratory species, Ma = listed marine species, W = whales and other cetaceans) and under column SA = the category of threat listed under the *South Australian National Parks and Wildlife Act 1972* (E = Endangered, V = Vulnerable, R = Rare) or *Fisheries Management Act 2007* (P = Protected).

Mobility

Letters under column Mobility: a = species with limited alternative habitat in the area, b = sedentary or not particularly mobile species, c = highly mobile with extensive alternative habitat in the area.

Distribution

Numbers under column Distribution: 1 = regularly recorded in the study area, 2 = occasional records in or near the study area (i.e. in Upper Spencer Gulf), 3 = never recorded in Upper Spencer Gulf.

Credible Risk

The potential risk to species was considered in terms of the following criteria:

- their occurrence in Upper Spencer Gulf
- their mobility
- the availability of suitable habitat in Upper Spencer Gulf
- the potential for return water from the desalination plant and construction activities to affect the habitat of these species
- the likely sensitivity of these species and their food resources to return water and construction impacts.

See Chapter 16, Marine Environment, for the related assessment (Section 16.6.6).

Table O3.1 Priority marine species that occur or are likely to occur in Upper Spencer Gulf

Scientific name	Common name	Status		Notes	Mobility	Distribution	Credible risk?
		AUS	SA				
Seagrasses							
<i>Zostera muelleri</i> subspecies <i>mucronata</i>	Garweed		R	Found at depths less than 10 m. Dense on eastern Spencer Gulf, relatively sparse on western Spencer Gulf, where examples include SA Plant Biodiversity Centre (AD) specimen #AD99426217 from nearshore at Whyalla, and also survey results in Shepherd (1983).	a, b	1	No
Sharks and rays							
<i>Carcharodon carcharias</i>	Great White Shark	V, Mi	P	Recorded in the region, and occasionally in the expansion area (e.g. Point Lowly), but not resident in Upper Spencer Gulf. Visits are likely for feeding (e.g. snapper and kingfish). Known to frequent marine fish farming operations. Low reproductive potential.	c	1	No
Fish							
<i>Acentronura australe</i> / <i>Idiotropiscis australis</i>	Southern Pygmy Pipehorse	Ma	P	Unlikely in Upper Spencer Gulf. The few records to date in SA have mainly come from red algae in southern Gulf St Vincent and Investigator Strait. Also found in seagrass beds, in Western Australia (see Baker 2008 for summary of distribution and habitat, based on specimens recorded to date).	b	3	
<i>Campichthys galei</i>	Gales Pipefish	Ma	P	Recorded in seagrass beds in southern part of region (Baker 2006).	b	2	No
<i>Filicampus tigris</i>	Tiger Pipefish	Ma	P	Three specimens had been lodged at the South Australian Museum prior to 1982. No records found despite surveys of suitable habitat over the last three decades (Inshore Fish Group 2008) and 19 specimens have been found during Snapper trawl surveys across Upper Spencer Gulf in the last few years (SARDI, unpublished data, 2007).	b	2	No
<i>Heraldia</i> sp. 1 (or form of <i>H. nocturna</i>)	Upside-down Pipefish	Ma	P	Unlikely in Upper Spencer Gulf. All SA records to date are from southern part of gulfs and Kangaroo Island. Similar habit and habitat to <i>M. perserrata</i> (see Baker 2008 for summary of SA records).	b	3	No
<i>Hippocampus bleekeri</i>	Southern Pot-bellied Seahorse	Ma	P	Records from Upper Spencer Gulf (e.g. prawn trawl records from Plank Point, Western Shoal, housed by Museum of Victoria; also SARDI bycatch data from Fisherman Bay/Port Broughton and other areas) (see Baker 2008 for summary). It is also known to occur in the Blanche Harbor-Douglas Bank Aquatic Reserve (Pogonoski et al. 2002).	b	2	No
<i>Hippocampus breviceps</i>	Short-head Seahorse, Short-snouted Seahorse	Ma	P	Example records include a few from False Bay and Cowleds Landing (B McDonald, PhD student, pers. comm., 30 October 2007) and South Australian Museum records from Port Davis and Moonta Bay.	b	2	No
<i>Histiogamphelus cristatus</i>	Rhino Pipefish, Macleay's Crested Pipefish	Ma	P	Example records include a few from False Bay (B McDonald, PhD student, pers. comm., 30 October 2007) and Franklin Harbour, Shoalwater Point area, Plank Point area, Port Neill, Balgowan, and Cape Elizabeth (SA Museum data; data by Smith, K; data by SARDI, all cited by Baker 2008).	b	2	No
<i>Hypselognathus rostratus</i>	Knife-snouted Pipefish	Ma	P	Example records include one from False Bay (B McDonald, PhD student, pers. comm., 30 October 2007) and west of Fisherman Bay/ Port Broughton area (see Baker 2008 for summary).	b	2	No
<i>Kaupus costatus</i>	Deep-bodied Pipefish	Ma	P	Recorded in Upper Spencer Gulf (e.g. SA Museum records from near Port Pirie).	b	2	No
<i>Leptoichthys fistularius</i>	Brushtail Pipefish	Ma	P	Example records include several hundred from False Bay and Cowleds Landing (McDonald 2008) and other sources (see Baker 2008, for summary).	b	2	No
<i>Lissocampus caudalis</i>	Australian Smooth Pipefish	Ma	P	Example records include a few from False Bay and Cowleds Landing (B McDonald, PhD student, pers. comm., 30 October 2007).	b	2	No

Table O3.1 Priority marine species that occur or are likely to occur in Upper Spencer Gulf (cont'd)

Scientific name	Common name	Status		Notes	Mobility	Distribution	Credible risk?
		AUS	SA				
<i>Lissocampus runa</i>	Javelin Pipefish	Ma	P	Possible, and there are verified records (SA Museum) at least as far north as Wallaroo (see Baker 2008).	b	3	No
<i>Maroubra perserrata</i>	Sawtooth Pipefish	Ma	P	Unlikely in Upper Spencer Gulf – all SA records to date are from southernmost part of gulfs and Kangaroo Island. It utilises rocks, ledges, fissures/crevices and caves, resting on sponges, or sheltering behind sea urchins (see Baker 2008, for summary of SA records).	b	3	No
<i>Notiocampus ruber</i>	Red Pipefish	Ma	P	No records from Upper Spencer Gulf to date, but might be found there, given general habitat requirements. The few records from SA have been from lower Gulf St Vincent, Kangaroo Island and south-east SA (Baker 2008). Associated with filamentous red macroalgae, sponges, and possibly seagrasses (latter as indicated by records in eastern part of the southern Australian range).	b	3	No
<i>Phycodurus eques</i>	Leafy Seadragon	Ma	P	Not a significant area for this species, but there are isolated records from Upper Spencer Gulf, from trawl bycatch, other bycatch surveys, and community observations (including one recent 2007 record from Port Augusta) (see Baker 2008, for summary of Leafy Seadragons in SA).	b	2	No
<i>Phyllopteryx taeniolatus</i>	Weedy Seadragon	Ma	P	Possible, but records not known from further north than Moonta Bay (Baker 2005).	b	3	No
<i>Pugnaso curtirostris</i>	Pug-nosed Pipefish	Ma	P	Example records include several dozen from False Bay and Cowleds Landing (B McDonald, PhD student, pers. comm., 30 October 2007).	b	2	No
<i>Solegnathus robustus</i>	Robust Pipehorse	Ma	P	Unlikely in Upper Spencer Gulf, given the depth and exposed habitat where it has been recorded to date (almost all records from trawl, in a limited area of eastern Great Australian Bight, but one record from bottom of Spencer Gulf – see Baker 2008).	b	3	No
<i>Stigmatopora argus</i>	Spotted Pipefish	Ma	P	Example records include more than eight hundred from False Bay and Cowleds Landing (McDonald 2008) and SA Museum records including Port Pirie, Point Jarrold and Port Davis.	b	2	No
<i>Stigmatopora nigra</i>	Wide-bodied Pipefish	Ma	P	Example records include several dozen from Cowleds Landing (McDonald 2008) and SA Museum records from Port Pirie.	b	2	No
<i>Stipecampus cristatus</i>	Ring-backed Pipefish	Ma	P	Uncertain how far north in Spencer Gulf this species exists. There are few museum records (SA Museum), some of these from south-central Spencer Gulf (see summary of SA distribution in Baker 2008).	b	3	No
<i>Urocampus carinirostris</i>	Hairy Pipefish	Ma	P	Possible in Upper Spencer Gulf, given habitat, but there are only two known records in SA to date, both from the eastern Great Australian Bight (1965 and 2004, SA Museum data). This is a very small and inconspicuous species, and possibly more widespread in SA than records suggest (see Baker 2008, for summary of this species in SA).	b	3	No
<i>Vanacampus margaritifer</i>	Mother-of-pearl Pipefish	Ma	P	Uncertain how far north in Spencer Gulf this species exists. There are few museum records (SA Museum and Museum of Victoria), at least one from southern Spencer Gulf (see summary of SA distribution in Baker 2008).	b	3	No
<i>Vanacampus phillipi</i>	Port Phillip Pipefish	Ma	P	Example records include a few from False Bay and Cowleds Landing (McDonald 2008) and SA Museum and Australian Museum records from Port Pirie and Port Davis area.	b	2	No
<i>Vanacampus poecilolaemus</i>	Long-snouted Pipefish	Ma	P	Example records include more than a hundred from False Bay and Cowleds Landing (McDonald 2008) and SA Museum records from Port Pirie.	b	2	No
<i>Vanacampus vercoi</i>	Verco's Pipefish	Ma	P	Example records include a few from Cowleds Landing (B McDonald, PhD student, pers. comm., 30 October 2007).	b	2	No

Table O3.1 Priority marine species that occur or are likely to occur in Upper Spencer Gulf (cont'd)

Scientific name	Common name	Status		Notes	Mobility	Distribution	Credible risk?
		AUS	SA				
Mammals							
<i>Arctocephalus forsteri</i>	New Zealand Fur Seal	Ma	P	Isolated records of stray individuals (e.g. museum records from Port Augusta power station outlet, and a couple from Whyalla area). Not a significant habitat for this species, compared with other parts of SA.	c	2	No
<i>Arctocephalus pusillus</i>	Australian Fur Seal, Australo-African Fur Seal	Ma	R, P	Unlikely in Upper Spencer Gulf. This is a cool water species, and rarely recorded in the gulfs. There are no museum records from Upper Spencer Gulf. Most Australian fur seals found in SA occur off Kangaroo Island and the south-east of SA, with occasional records from other locations (e.g. Encounter Bay, and southern Eyre Peninsula).	c	3	No
<i>Balaenoptera edeni</i>	Bryde's Whale	W, Mi	P	Isolated records (e.g. two SA Museum records from Curlew Point and Port Augusta area) of stray individuals that travelled into Upper Spencer Gulf. <i>B. edeni</i> is normally found in offshore waters, and Upper Spencer Gulf is not a significant habitat for this species.	c	2	No
<i>Caperea marginata</i>	Pygmy Right Whale	W, Mi	R, P	Most strandings in SA are from the South-East; Kangaroo Island and southern Eyre Peninsula. No records from Upper Spencer Gulf.	c	3	No
<i>Delphinus delphis</i>	Common Dolphin	W	P	Throughout SA waters. Populations within Whyalla and Fitzgerald Bay. Not resident in proposed expansion area, but there are records from Whyalla/Point Lowly area (e.g. SA Museum data). Groups occupy home ranges, feeding on small fish and cephalopods.	c	1	No
<i>Eubalaena australis</i>	Southern Right Whale	E, W, Mi	V, P	Sub-Antarctic waters during spring and summer, migrate north in winter for calving, mating and nursing their young to Victor Harbor, the Great Australian Bight and Upper Spencer Gulf (Reeves et al. 2003). Sightings of individuals and small fish and cephalopods.	c	2	No
<i>Kogia breviceps</i>	Pygmy Sperm Whale	W	R, P	Isolated records (e.g. three SA Museum records from 500 m north of Point Lowly, and one from Port Pirie area) of stray individuals that travelled into Upper Spencer Gulf. Pygmy Sperm Whales are normally found in offshore waters, and Upper Spencer Gulf is not a significant habitat for this species.	c	2	No
<i>Lagenorhynchus obscurus</i>	Dusky Dolphin	W, Mi	R, P	Very unlikely in Upper Spencer Gulf. In Australian waters the very limited data suggest that presence of Dusky Dolphin may be linked to Southern Oscillation events (Gill et al. 2000). Most of the sightings to date come from around Tasmania (e.g. Gill et al. 2000). However, there are confirmed sightings from Backstairs Passage area near Kangaroo Island.	c	3	No
<i>Megaptera novaengliae</i>	Humpback Whale	V, W, Mi	V, P	Worldwide distribution, following annual migration patterns. Spend summer feeding in temperate and polar waters, and winter calving and mating in warmer tropical waters. There have been sightings at Whyalla (Kemper 2005) and Port Augusta in (ABC 2006). However this species is an infrequent visitor to SA coastal waters and records from Upper Spencer Gulf are incidental. Humpback Whale populations are recovering from near extinction to populations numbering thousands of animals (Clapham et al. 1999).	c	2	No
<i>Mesoplodon layardii</i>	Strap-toothed Whale	W	R, P	Isolated records (e.g. SA Museum data, 1983; also cited by DEH 2000) of stray individuals that travelled into Upper Spencer Gulf. There are at least nine other records from central and southern Spencer Gulf (SA Museum data). Strap-toothed Whales are normally found in offshore waters, and Upper Spencer Gulf is not a significant habitat for this species.	c	2	No

Table O3.1 Priority marine species that occur or are likely to occur in Upper Spencer Gulf (cont'd)

Scientific name	Common name	Status		Notes	Mobility	Distribution	Credible risk?
		AUS	SA				
<i>Neophoca cinerea</i>	Australian Sea-lion	V	V, P	According to Morelli and de Jong (1996) Australian Sea-lions seasonally visit Upper Spencer Gulf to feed on cephalopods and fish, and are regularly observed (particularly during winter and spring). Breed on at least 50 islands off the coast of Western and South Australia.	c	2	No
<i>Tursiops aduncus</i>	Indo-Pacific Bottlenose Dolphin	W	P	Throughout SA waters, with populations within Whyalla and Fitzgerald Bay. Numerous records (SA Museum) from Upper Spencer Gulf, including some from areas adjacent to Whyalla and Port Augusta.	c	1	No
<i>Tursiops truncatus</i>	Common Bottlenose Dolphin	W	P	Likely to occur in region occasionally, but most records are from further south, and out of the gulfs (it is more of an oceanic species than <i>T. aduncus</i>).	c	3	No
Reptiles							
<i>Caretta caretta</i>	Loggerhead Turtle	E	E	May potentially visit the region, as stray individuals. Upper Spencer Gulf is an incidental part of the range, and not significant.	c	3	No
<i>Chelonia mydas</i>	Green Turtle	V	V	Records from the area (e.g. SA Museum records from 5 km off Lucky Bay, and also Port Pirie), but recorded uncommonly, as stray individuals. Upper Spencer Gulf is an incidental part of the range, and not significant.	c	2	No
<i>Dermochelys coriacea</i>	Leatherback Turtle	V	V	Sightings in southern Spencer Gulf, but unlikely in Upper Spencer Gulf. Recently nominated for transfer to Critically Endangered category under the EPBC Act 1999.	c	3	No
<i>Eretmochelys imbricata</i>	Hawksbill Turtle	V		Recorded uncommonly, as stray individuals (e.g. according to DEH 2000, has been recorded near Winninowie Conservation Park). Upper Spencer Gulf is an incidental part of the range, and not significant.	c	2	No

03.1 REFERENCES

- Australian Broadcasting Commission 2006, *The Tale of the Whale (Or Was it the Whale's Tail?)*, ABC, viewed October 2007, <<http://www.abc.net.au/northandwest/stories/s1677592.htm>>.
- Baker, JL 2005, *Dragon Search: Summary of South Australian Sighting Data, to May 2005*, report to Marine and Coastal Community Network and Threatened Species Network, for Dragon Search Community-Based Monitoring Program, South Australia, viewed 23 September 2008, <http://www.reefwatch.asn.au/PDF/DragonSearch_SA_May2005.pdf>.
- Baker, JL 2006, 'Syngnathid Fish (seahorses, seadragons, pipehorses and pipefishes)', in *The South-west Marine Region: Ecosystems and Key Species Groups*, eds S McClatchie, J Middleton, C Pattiaratchi, D Currie & G Kendrick, Department of the Environment and Water Resources, Canberra, pp. 469–518.
- Baker, JL 2008, *Marine Species of Conservation Concern in South Australia: Volume 1 - Bony and Cartilaginous Fishes*, report for the South Australian Working Group for Marine Species of Conservation Concern, Adelaide (J Baker, consultant), web version published by Reef Watch, Conservation Council of South Australia, Adelaide, viewed 26 March 2008, <<http://www.reefwatch.asn.au/pages/bin/view/Publications/SamsccBonyFamilies>>.
- Clapham, PJ, Young, SB & Brownell, RL Jr 1999, 'Baleen whales: conservation issues and the status of the most endangered populations', *Mammal Review*, vol. 29, no. 1, pp. 35–60.
- Department for Environment and Heritage 2000, *Winninowie Conservation Park Management Plan: North Region, June 2000*, DEH, Adelaide, viewed 21 July 2008, <http://www.environment.sa.gov.au/parks/pdfs/PARKS_PDFS_WINNINOWIE_MP.PDF>.
- Gill, PC, Ross, GJB, Dawbin, WH & Wapstra, H 2000, 'Confirmed sightings of dusky dolphins (*Lagenorhynchus obscurus*) in southern Australian waters', *Marine Mammal Science*, vol. 16, pp. 452–459.
- Inshore Fish Group 2008, *Tiger Pipefish*, Inshore Fish Group, viewed 23 August 2008, <<http://www.ifg.bioteck.org/Fish%20species/Filicampus%20tigris.htm>>.
- Kemper, CM 2005, 'Records of humpback whales *Megaptera novaeangliae* in South Australia', *Transactions of the Royal Society of South Australia*, vol. 129, no. 1, pp. 53–58.
- McDonald, B 2008, 'The influence of seagrass habitat architecture and integrity on associated faunal assemblages', PhD thesis, School of Biological Sciences, Faculty of Science and Engineering, Flinders University, Adelaide.
- Morelli, J & De Jong, M 1996, 'South Australia', *A Directory of Important Wetlands in Australia 1996*, 2nd edn, Australian Nature Conservation Agency, Canberra.
- Pogonoski, J, Pollard, D & Paxton, J 2002, *Conservation overview and action plan for Australian threatened and potentially threatened marine and estuarine fishes*, Environment Australia, Canberra, viewed 21 July 2008, <<http://www.environment.gov.au/coasts/publications/marine-fish-action/pubs/marine-fish.pdf>>.
- Reeves, RR, Smith, BD, Crespo, EA & Di Sciara GN 2003, '*Dolphins, Whales and Porpoises: 2002–2010 Conservation Action Plan for the World's Cetaceans*', International Union for the Conservation of Nature – Species Survival Commission (IUCN/SSC) Cetacean Specialist Group, IUCN, Gland, Switzerland & Cambridge, UK.
- Shepherd, SA 1983b, 'Benthic communities of upper Spencer Gulf, South Australia', *Transactions of the Royal Society of South Australia*, vol. 107, pp. 69–85.