

Appendix U Underwater Noise Assessment

Eyre Peninsula Desalination Plant

Underwater Noise Assessment

S8140C1

May 2024

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Document Title : Eyre Peninsula Desalination Plant
Underwater Noise Assessment

Client : SA Water

Document Reference : S8140C1

Date : May 2024

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1 INTRODUCTION

SA Water is proposing to build a desalination plant (the **Plant**) near Port Lincoln, South Australia, as part of the Eyre Peninsula Desalination Project (the **Project**). The Project is required to ensure water security for the Eyre Peninsula region.

The Project includes the installation of offshore seawater intakes and an outfall, via a tunnelled pipeline. Construction of this offshore infrastructure will generate underwater noise from activities such as dredging and piling. Operation of the plant is likely to generate underwater noise from operation of intake pumps within an onshore wet-well. Underwater noise from these activities has the potential to impact marine fauna, requiring assessment of impacts to be made.

The location of the Project is shown on an aerial photograph in Figure 1.

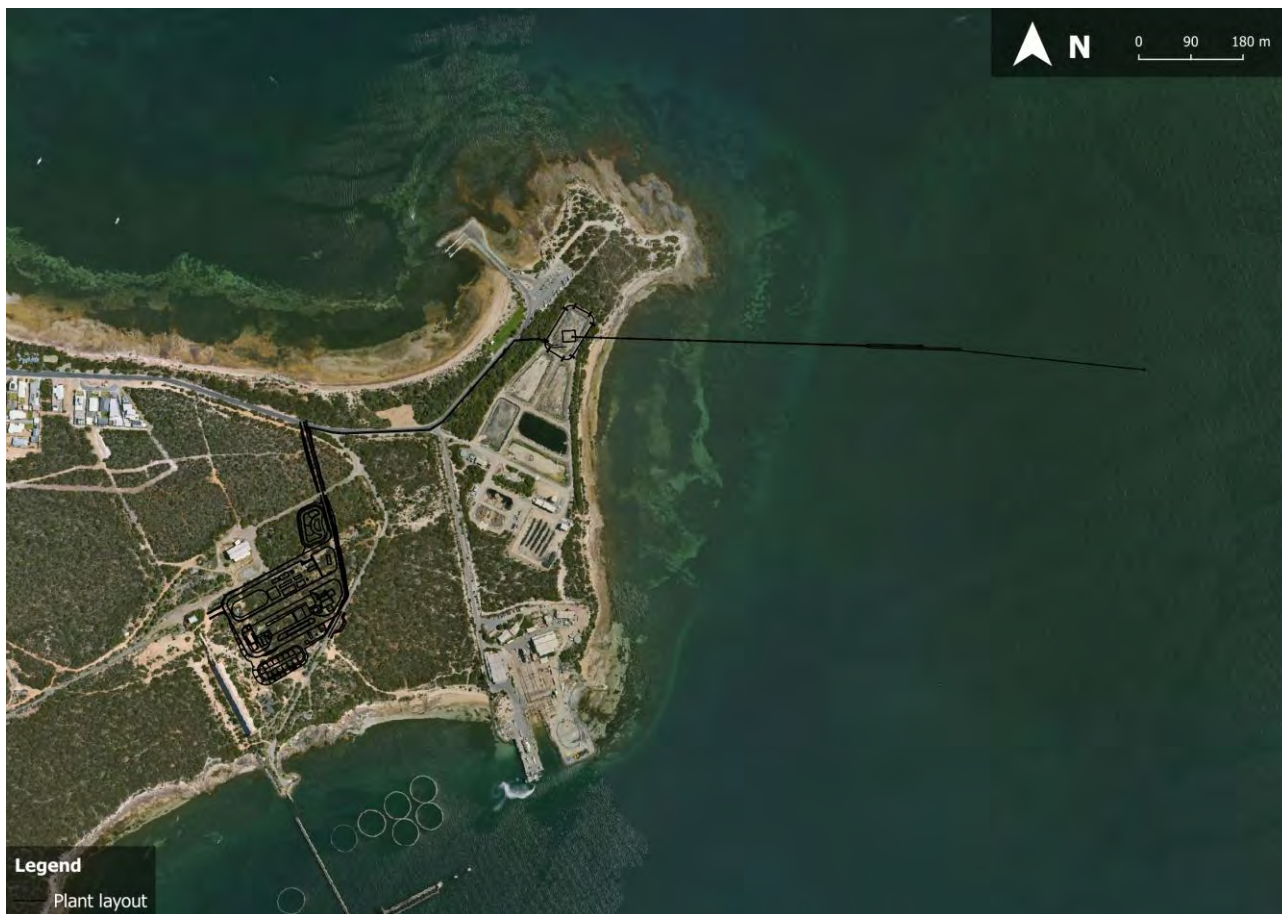


Figure 1: Project location

An assessment of underwater noise has been made for construction and operation of the Site, based upon the following inputs:

- SA Water Drawing EPDP-700-SMC-MEC-DRG-0005 'Eyre Peninsula Desalination Plant Ex BHP – Billy Lights Point' 'Mechanical Intake Pump Station Plan' dated 21 December 2023.
- SA Water Drawing EPDP-700-SMC-MEC-DRG-0006 'Eyre Peninsula Desalination Plant Ex BHP – Billy Lights Point' 'Mechanical Intake Pump Station Section' dated 21 December 2023.
- December 2023 Plant Layout shapefile by Acciona, provided by SA Water on 10 April 2024.
- Acciona report: *SA Water Eyre Peninsula Desalination Plant Draft Construction Strategy*, document number A0012-0025-GEN-GEN-0001_0.1, dated 21 December 2023.
- Advice from Acciona regarding proposed dredging methodology, received on 16 May 2024.
- Bathymetry data for waters surrounding the Plant, provided by SA Water on 10 April 2024.

2 EXISTING ENVIRONMENT

Underwater sounds are generated by a variety of natural sources (including wind, water turbulent-pressure fluctuations, breaking waves and marine life) and human sources (such as oceanic traffic). To contextualise the existing underwater noise environment, reference is made to curves developed by Wenz (1962)¹, which are shown in Figure 2. The Wenz curves are based on measurement data and provide spectral levels of ambient underwater noise considering natural and anthropogenic sources, including surface wind, oceanic traffic, thermal noise, and precipitation.

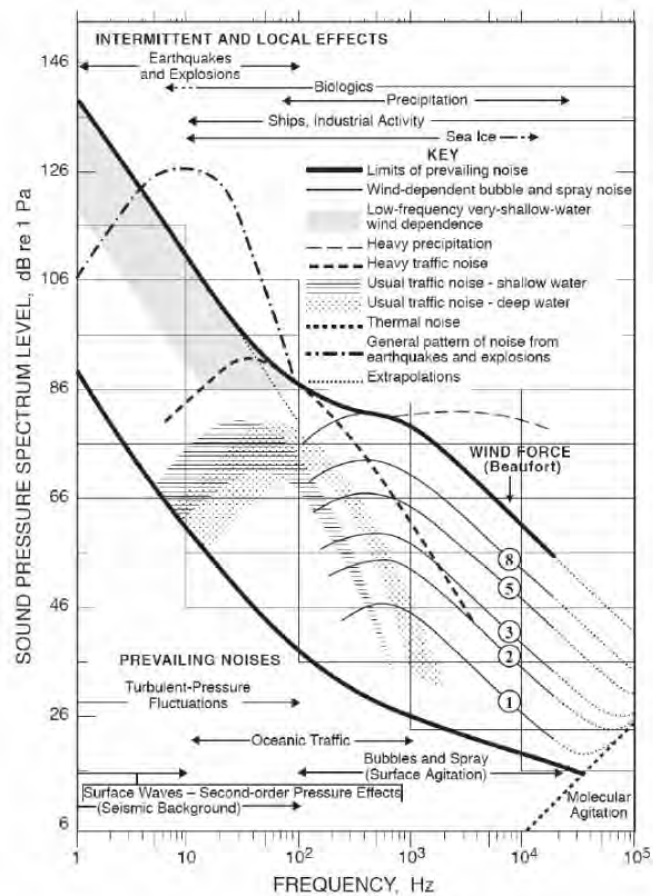


Figure 2: Ambient Noise Levels of Open Ocean Environments

Wind force (surface agitation) controls non-anthropological ambient noise limits in the spectral range of 1kHz – 100kHz in the absence of heavy precipitation. Thermal noise and oceanic traffic noise would typically control ambient noise in the spectral range of 10Hz to 1kHz.

¹ Wenz, G, 1962, Acoustic ambient noise in the ocean: Spectra and sources. Journal of the Acoustical Society of America, 34(12), pp1936-1956.

3 CRITERIA

3.1 Legislative context

Construction and operation of a Desalination Plant will require approvals granted under the *Planning Development and Infrastructure Act 2016* (the **PDI Act**), likely under Section 131a of the PDI Act as a *Crown and Essential Infrastructure Development*. The Planning and Design Code (the **Code**) is the principal Policy for assessment of activities administered under the PDI Act. The Code contains provisions which call for assessment of airborne noise emissions from certain types of activity, however the Code does not contain any provisions specific to underwater noise.

Underwater noise assessment is likely to be invoked under the *Environment Protection Act* (the **EP Act**) which mandates a general duty of care to the environment, along with various other Federal and State legislation which protect either specific marine environments (such as Marine Parks or Commonwealth Marine areas) or specific marine fauna (such as species listed as a Matter of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (the **EPBC Act**)).

Underwater noise in South Australian waters can be assessed under the *DIT Underwater Piling and Dredging Noise Guidelines* (the **DIT UW Guidelines**). The DIT UW Guidelines are applicable to marine infrastructure works undertaken by DIT, but are also commonly applied for works undertaken by other government agencies or external contractors. In the absence of other relevant guidelines for underwater noise in South Australia, criteria from the DIT UW Guidelines have also been used to assess impacts from operational underwater noise.

The DIT UW Guidelines provide assessment criteria for marine fauna, including species listed under the EPBC Act which are present in South Australian waters, are within a Marine Park, or otherwise protected by State or Federal Legislation.

Criteria provided by the DIT UW Guidelines for underwater noise are specific to species of concern and the type of noise generated. Fauna is classified into Functional Hearing Groups (**FHGs**) to account for the widely varying sensitivity to underwater noise across the range of various marine fauna physiologies. FHGs have been defined from international research which has identified species which are deemed to have similar sensitivity to underwater sound. Criteria for some FHGs use frequency weighting functions to specifically adjust noise levels to match the frequency sensitivity of marine fauna in the group.

Criteria have been graded into four levels of severity by the DIT UW Guidelines. The levels of severity, in descending order, are:

- Organ Damage / Fatality
- Permanent Threshold Shift (**PTS**)
- Temporary Threshold Shift (**TTS**)
- Behavioural Response.

Organ Damage / Fatality criteria are indicative of a level of underwater noise which has been found to cause injury or death. PTS and TTS represent the thresholds of physiological damage to hearing caused by underwater noise. Behavioural Response represents the level of noise at which the behaviour of marine fauna is potentially adversely affected, however there is debate in the literature about the merits of Behavioural Response criteria, and threshold distances are generally not calculated for this severity level. Note that some Functional Hearing Groups do not have criteria assigned for all severity levels.

For activities generating underwater noise which is impulsive, such as impact piling, criteria for physiological impacts are provided for two noise descriptors: Peak noise levels (L_{peak}) and cumulative sound exposure level over a 24-hour period (SEL_{24hr}). The DIT UW Guidelines require assessment against both descriptors. The descriptor which controls the outcome is dependent on the piling strike rate and hours of operation each day. For behavioural impacts, criteria using the instantaneous Sound Pressure Level descriptor (**SPL**) are provided.

Table 1 summarises the DIT UW Guidelines criteria relevant for impulsive sources.

Table 1: Marine mammal species and relevant criteria for impulsive noise, from DIT UW Guidelines

Type of fauna or functional hearing group	Listed species known to occur in South Australian Waters	Applicable criteria	
		L_{peak}	SEL
Low-frequency cetaceans	Southern Right Whale Minke Whale Bryde’s Whale Blue Whale Pygmy Right Whale Humpback Whale	PTS: L_{peak} 219 dB TTS: L_{peak} 213 dB	PTS: SEL_{24hr} 183 dB(LF) TTS: SEL_{24hr} 168 dB(LF) Behavioural Response: SPL 160 dB RMS
High-frequency cetaceans	Bottlenose Dolphin Common Dolphin Dusky Dolphin Killer Whale Spotted Bottlenose Dolphin	PTS: L_{peak} 230 dB TTS: L_{peak} 224 dB	PTS: SEL_{24hr} 185 dB(HF) TTS: SEL_{24hr} 178 dB(HF) Behavioural Response: SPL 160 dB RMS

Type of fauna or functional hearing group	Listed species known to occur in South Australian Waters	Applicable criteria	
		L _{peak}	SEL
Pinnipeds – Phocid carnivores	Leopard Seal	PTS: L _{peak} 218 dB TTS: L _{peak} 212 dB	PTS: SEL _{24hr} 185 dB(PCW) TTS: SEL _{24hr} 170 dB(PCW) Behavioural Response: SPL 160 dB RMS
Pinnipeds – Other carnivores	Australian Sea Lion Australian Fur Seal New Zealand Fur Seal	PTS: L _{peak} 232 dB TTS: L _{peak} 226 dB	PTS: SEL _{24hr} 203 dB(OCW) TTS: SEL _{24hr} 188 dB(OCW) Behavioural Response: SPL 160 dB RMS
Marine Turtles	Loggerhead Turtle Green Sea Turtle Leatherback Turtle Pacific Ridley Turtle	Organ damage: L _{peak} 207 dB	Organ damage: SEL _{24hr} 210 dB No objective criteria for PTS/TTS/Behavioural Response. High risk of TTS within tens of metres from source. High risk of Behavioural Response within tens of metres of source. Moderate risk of Behavioural Response within hundreds of metres of source.
Fish – Without swim bladder	Great White Shark Mackeral Shark	Organ damage: L _{peak} 213 dB PTS: L _{peak} 213 dB No objective criteria for TTS.	Organ damage: SEL _{24hr} 219 dB PTS: SEL _{24hr} 216 dB TTS: SEL _{24hr} 186 dB No objective criteria for Behavioural Response. Moderate risk of Behavioural Response within hundreds of metres of source.
Fish – With swim bladder	Pipefish Seahorses Sea dragons	Organ damage: L _{peak} 207 dB PTS: L _{peak} 207 dB No objective criteria for TTS.	Organ damage: SEL _{24hr} 207 dB PTS: SPL 203 dB for 48hr TTS: SPL 186 dB for 12hr High risk of Behavioural Response within tens of metres of source.

For activities generating underwater noise which is not impulsive, such as dredging, tunnel boring or use of pumps, criteria for physiological impacts are provided as cumulative sound exposure levels over a 24-hour period (**SEL_{24hr}**), or using SPL for behavioural impacts. Table 2 summarises the DIT UW Guidelines criteria relevant for non-impulsive sources.

Table 2: Marine mammal species and relevant criteria for non-impulsive noise, from DIT UW Guidelines

Type of fauna or functional hearing group	Listed species known to occur in South Australian Waters	Applicable criteria
Low-frequency cetaceans	Southern Right Whale Minke Whale Bryde's Whale Blue Whale Pygmy Right Whale Humpback Whale	PTS: SEL _{24hr} 199 dB(LF) TTS: SEL _{24hr} 179 dB(LF) Behavioural Response: SPL 120 dB RMS
High-frequency cetaceans	Bottlenose Dolphin Common Dolphin Dusky Dolphin Killer Whale Spotted Bottlenose Dolphin	PTS: SEL _{24hr} 198 dB(HF) TTS: SEL _{24hr} 179 dB(HF) Behavioural Response: SPL 120 dB RMS
Pinnipeds – Phocid carnivores	+Leopard Seal	PTS: SEL _{24hr} 201 dB(PCW) TTS: SEL _{24hr} 181 dB(PCW) Behavioural Response: SPL 120 dB RMS
Pinnipeds – Other carnivores	Australian Sea Lion Australian Fur Seal New Zealand Fur Seal	PTS: SEL _{24hr} 219 dB(OCW) TTS: SEL _{24hr} 199 dB(OCW) Behavioural Response: SPL 120 dB RMS
Marine Turtles	Loggerhead Turtle Green Sea Turtle Leatherback Turtle Pacific Ridley Turtle	No specific criteria. Moderate risk of TTS within tens of metres from source. High risk of Behavioural Response within tens of metres of source.
Fish – Without swim bladder	Great White Shark Mackeral Shark	No specific criteria. Moderate risk of TTS within tens of metres from source. Moderate risk of Behavioural Response within hundreds of metres of source.
Fish – With swim bladder	Pipefish Seahorses Seadragons	PTS: SPL 170 dB for 48hr TTS: SPL 158 dB for 12hr High risk of Behavioural Response within tens of metres of source.

4 ASSESSMENT

4.1 Receivers

The Australian Government Department of Climate Change, Energy, the Environment and Water (**DCCEEW**) maintains a Species Profile and Threats Database. This database provides information on species listed under the EPBC Act, including information regarding the known distribution within Australian waters. DCCEEW also has a Protected Matters Search Tool (**PMST**) which can be used to search for presence of listed species at a location.

The DIT UW Guidelines suggest the use of the PMST to search for listed marine species which are ‘threatened and/or migratory’ and likely to be present in the marine region where the works are located. Marine fauna identified by the PMST for waters surrounding Billy Lights Point are provided in Table 3, grouped by the Functional Hearing Group which they are assigned by the DIT UW Guidelines. The status of EPBC Act Listing for each species has also been provided.

Table 3: Species of concern

Name	Scientific Name	EBPC Act Listing status	Prevalence
Low frequency cetaceans			
<i>Eubalaena australis</i>	Southern Right Whale	Endangered	Migratory Known
<i>Balaenoptera edeni</i>	Bryde's Whale	-	Migratory May be present
<i>Balaenoptera acutorostrata</i>	Minke Whale	-	May be present
<i>Caperea marginata</i>	Pygmy Right Whale	-	Migratory May be present
<i>Megaptera novaeangliae</i>	Humpback Whale	Vulnerable	Migratory Likely present
High-frequency cetaceans			
<i>Lagenorhynchus obscurus</i>	Dusky Dolphin	-	Migratory May be present
<i>Tursiops truncatus s. str.</i>	Bottlenose Dolphin	-	May be present

Name	Scientific Name	EBPC Act Listing status	Prevalence
<i>Tursiops aduncus</i>	Indian Ocean Bottlenose Dolphin	-	Likely present
<i>Delphinus delphis</i>	Common Dolphin, Short-beaked Common Dolphin	-	May be present
<i>Grampus griseus</i>	Risso's Dolphin, Grampus	-	May be present
<i>Orcinus orca</i>	Killer Whale, Orca	-	Migratory May be present
Pinnipeds – Other Carnivores			
<i>Arctocephalus pusillus</i>	Australian Fur-seal, Australo-African Fur-seal	-	May be present
<i>Arctocephalus forsteri</i>	Long-nosed Fur-seal, New Zealand Fur-seal	-	May be present
<i>Neophoca cinerea</i>	Australian Sea lion	Endangered	Known
Turtles			
<i>Caretta caretta</i>	Loggerhead Turtle	Endangered	Migratory Known
<i>Chelonia mydas</i>	Green Turtle	Vulnerable	Migratory May be present
<i>Dermochelys coriacea</i>	Leatherback Turtle, Leathery Turtle	Endangered	Migratory Known
Fishes – Without swim bladder			
<i>Carcharodon carcharias</i>	White Shark, Great White Shark	Vulnerable	Known
<i>Lamna nasus</i>	Porbeagle, Mackerel Shark	-	Possible offshore
Fishes – With swim bladder			
<i>Thunnus maccoyii</i>	Southern Bluefin Tuna	Conservation dependent	Possible offshore
<i>Lissocampus caudalis</i>	Australian Smooth Pipefish, Smooth Pipefish	-	May be present

Name	Scientific Name	EBPC Act Listing status	Prevalence
<i>Hippocampus abdominalis</i>	Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse	-	May be present
<i>Leptoichthys fistularius</i>	Brushtail Pipefish	-	May be present
<i>Phyllopteryx taeniolatus</i>	Common Seadragon, Weedy Seadragon	-	May be present
<i>Kaupus costatus</i>	Deepbody Pipefish, Deep-bodied Pipefish	-	May be present
<i>Campichthys galei</i>	Gale's Pipefish	-	May be present
<i>Urocampus carinirostris</i>	Hairy Pipefish	-	May be present
<i>Lissocampus runa</i>	Javelin Pipefish	-	May be present
<i>Hypselognathus rostratus</i>	Knifesnout Pipefish, Knifesnouted Pipefish	-	May be present
<i>Phycodurus eques</i>	Leafy Seadragon	-	May be present
<i>Vanacampus poecilolaemus</i>	Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish	-	May be present
<i>Vanacampus margaritifer</i>	Mother-of-pearl Pipefish	-	May be present
<i>Vanacampus phillipi</i>	Port Phillip Pipefish	-	May be present
<i>Pugnaso curtirostris</i>	Pugnose Pipefish, Pugnosed Pipefish	-	May be present
<i>Notiocampus ruber</i>	Red Pipefish	-	May be present
<i>Histiogamphelus cristatus</i>	Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish	-	May be present
<i>Stipecampus cristatus</i>	Ringback Pipefish, Ring-backed Pipefish	-	May be present

Name	Scientific Name	EBPC Act Listing status	Prevalence
<i>Solegnathus robustus</i>	Robust Pipehorse, Robust Spiny Pipehorse	-	May be present
<i>Maroubra perserrata</i>	Sawtooth Pipefish	-	May be present
<i>Hypselognathus horridus</i>	Shaggy Pipefish, Prickly Pipefish	-	May be present
<i>Hippocampus breviceps</i>	Short-head Seahorse, Short-snouted Seahorse	-	May be present
<i>Acentronura australe</i>	Southern Pygmy Pipehorse	-	May be present
<i>Stigmatopora argus</i>	Spotted Pipefish, Gulf Pipefish, Peacock Pipefish	-	May be present
<i>Filicampus tigris</i>	Tiger Pipefish	-	May be present
<i>Heraldia nocturna</i>	Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish	-	May be present
<i>Vanacampus vercoi</i>	Verco's Pipefish	-	May be present
<i>Stigmatopora nigra</i>	Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish	-	May be present

In order to provide an assessment of noise for these and other species relevant to the Port Lincoln locality, underwater noise predictions have been made for each FHG in the DIT UW Guidelines identified as including species which are present in South Australian waters.

4.2 Noise generating activities

Underwater noise associated with the proposed Plant can be grouped into construction and operational noise.

4.2.1 Construction

The following construction activities are likely to generate underwater noise:

- Piling
- Dredging
- Tunnelling (Tunnel Bore Machine)

A detailed piling construction methodology has not yet been determined, but it was advised that impact pile driving would be used for installation. It has been assumed that impact piling will be undertaken for one pile at a time. A maximum pile hammering rate of 0.5 impacts / second, and an 8-hour construction workday have also been assumed. This equates to a maximum of 14,400 pile drive impacts in a 24-hour period.

Motorised vessels may be used to support construction activities. However, support vessels are expected to be fewer in number than routine boat movements within the Port Lincoln area with similar noise character. As such, underwater noise levels from support vessels have not been assessed.

4.2.2 Operation

Underwater noise from Plant operation will be limited to noise from seawater pumps. The design of the Plant features a wet well, filled by tidal flow from the offshore pipeline. Water intake into the plant from the wet well occurs through four water intake pumps, with impellers submerged in the wet well. Noise from the intake pumps can propagate from the wet well through the pipeline and out of the offshore inlet. Flow of brine from the desalination plant is gravity-fed to the outfall diffuser and as such does not generate any noise during plant operation.

4.3 Modelling approach

Underwater noise predictions have been made using tools which utilise geometric spreading calculations. This is a range-independent approach which can provide high-level, conservative estimates of underwater sound propagation in relatively shallow coastal water environments.

For piling and dredging, calculations were made using the *DIT Marine Fauna Noise Threshold Calculator (DIT Threshold Calculator)* which is a tool developed by DIT for use with the DIT UW Guidelines. The DIT Threshold Calculator provides threshold distances for the Organ Damage / Fatality, PTS and TTS levels of severity.

Inputs to the DIT Threshold Calculator were:

- Piling
 - Impact piling used to drive piles.
 - Pile type: Sheet steel AZ piles (Impact driven).
 - Approx pile size: 0.61 metres.
 - Mean Higher High Water: 15 metres.
 - Strikes / 24 hours: 14,400.
- Dredging
 - Cutter Suction Dredge, ≤1000kW size.
 - 16-hours of dredging daily.

The DIT Threshold Calculator is designed for underwater noise prediction from commonly used piling and dredging sources within South Australian waters. It does not allow for predictions based on alternative noise source data. Consequently, underwater noise from the TBM and Intake Pumps has been predicted using the United States *National Oceanic and Atmospheric Administration (NOAA) User Spreadsheet Tool (NOAA Threshold Calculator)* which accompanies the *NOAA 2018 Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0)* (the **NOAA Guidance**). The NOAA Guidance is a precursor to the assessment criteria in the DIT UW Guidelines, and so the NOAA Threshold Calculator is compatible with the noise descriptors and general methodology of the DIT UW Guidelines.

Inputs to the NOAA Threshold Calculator are:

- TBM:
 - Source level: 151 dB (rms).
 - Frequency Weighting Factor adjustment: 0.13 kHz.
 - 24 hour operation.
 - TBM progression rate: 50 metres per day.
- Pumps:
 - Source level: 150 dB (rms) each.

- Two pumps run simultaneously.
- Frequency Weighting Factor adjustment: 0.05 kHz.
- Propagation loss coefficient: 12.
- 24-hour operation.
- Negligible transmission loss through the inlet pipeline.

The source levels for TBM use and intake pump operation have been adopted from the underwater noise assessment for the Adelaide Desalination Plant at Port Stanvac (**ADP**).

The ADP assessment used a seawater pump source level based on data for large pumps on-board ships. This approach has been retained in the absence of other data for desalination plant intake pumps. It is considered a conservative approach as ADP is much larger capacity than the Plant. Furthermore, underwater noise measurements have been taken near the ADP inlet riser and found that noise from pump operation was inaudible while ADP was operating. Based on the ambient noise data from these measurements, the true source level of the inlet riser at ADP would be at least 15 dB lower than the source level provided in the ADP assessment.

4.4 Result format

Underwater noise modelling results are presented as threshold distances. These are the minimum separation distance between the source and fauna specimen (receiver) at which the relevant criterion is achieved.

- For PTS/TTS criteria based on the L_{peak} descriptor, the threshold distance represents the distance an animal would need to be from a single pile strike event to not be at risk of PTS/TTS.
- For criteria based on the SEL_{24hr} descriptor, the threshold distance is considered over a 24-hour period for an individual specimen. It represents the minimum separation distance from the activity that an animal of the relevant species would need to maintain for 24 hours to not be at risk of PTS/TTS.
- For behavioural response criteria, the threshold distance is the minimum distance from the source to any animal of the relevant species, for which the animal would receive a level of sound which could cause a change in behaviour.

Plots of threshold distances relative to the source locations are provided in Appendix A.

4.5 Predicted threshold distances - construction

4.5.1 Piling

Threshold distances for installation of piles are presented in Table 4.

Table 4: Threshold distances for marine mammals –pile installation

Type of fauna or functional hearing group	Applicable criteria	Threshold distance	
Low-frequency cetaceans	PTS:	L _{peak} 219 dB	<10 m for a single pile impact
		SEL _{24hr} 183 dB(LF)	3100 m for 24 hours
	TTS:	L _{peak} 213 dB	<10 m for a single pile impact
		SEL _{24hr} 168 dB(LF)	5800 m for 24 hours
High-frequency cetaceans	PTS:	L _{peak} 230 dB	<10 m for a single pile impact
		SEL _{24hr} 185 dB(HF)	340 m for 24 hours
	TTS:	L _{peak} 224 dB	<10 m for a single pile impact
		SEL _{24hr} 178 dB(HF)	930 m for 24 hours
Pinnipeds – Phocid carnivores	PTS:	L _{peak} 218 dB	<10 m for a single pile impact
		SEL _{24hr} 185 dB(PCW)	2400 m for 24 hours
	TTS:	L _{peak} 212 dB	<10 m for a single pile impact
		SEL _{24hr} 170 dB(PCW)	5000 m for 24 hours
Pinnipeds – Other carnivores	PTS:	L _{peak} 232 dB	<10 m for a single pile impact
		SEL _{24hr} 203 dB(OCW)	380 m for 24 hours
	TTS:	L _{peak} 226 dB	<10 m for a single pile impact
		SEL _{24hr} 188 dB(OCW)	2100 m for 24 hours
Marine Turtles	Organ damage:	L _{peak} 207 dB	<10 m for a single pile impact
		SEL _{24hr} 210 dB	130 m for 24 hours ⁽¹⁾
Fish – Without swim bladder	Organ damage:	L _{peak} 213 dB	<10 m for a single pile impact
		SEL _{24hr} 219 dB	18 m for 24 hours
	PTS:	L _{peak} 213 dB	<10 m for a single pile impact
		SEL _{24hr} 216 dB	35 m for 24 hours
	TTS:	SEL _{24hr} 186 dB	2600 m for 24 hours
Fish – With swim bladder	Organ damage:	L _{peak} 207 dB	<10 m for a single pile impact
		SEL _{24hr} 207 dB	230 m for 24 hours
	PTS:	L _{peak} 207 dB	<10 m for a single pile impact
		SEL _{24hr} 203 dB	460 m for 24 hours
	TTS:	SEL _{24hr} 186 dB	2600 m for 24 hours

Notes:

- (1) In addition to this threshold distance, the DIT UW Guidelines also state that there is a high risk of PTS and TTS for turtles within tens of metres from an impulsive source such as impact piling.

4.5.2 Dredging

Threshold distances for dredging are presented in Table 5

Table 5: Threshold distances for marine mammals – dredging

Type of fauna or functional hearing group	Applicable criteria		Threshold distance
Low-frequency cetaceans	PTS:	SEL _{24hr} 199 dB(LF)	3 m for 24 hours
	TTS:	SEL _{24hr} 179 dB(LF)	55 m for 24 hours
High-frequency cetaceans	PTS:	SEL _{24hr} 198 dB(HF)	<1 m for 24 hours
	TTS:	SEL _{24hr} 179 dB(HF)	3 m for 24 hours
Pinnipeds – Phocid carnivores	PTS:	SEL _{24hr} 201 dB(PCW)	2 m for 24 hours
	TTS:	SEL _{24hr} 181 dB(PCW)	28 m for 24 hours
Pinnipeds – Other carnivores	PTS:	SEL _{24hr} 219 dB(OCW)	<1 m for 24 hours
	TTS:	SEL _{24hr} 181 dB(OCW)	2 m for 24 hours
Fish – With swim bladder	PTS:	SPL 170 dB	<1 m for 24 hours
	TTS:	SPL 158 dB	<1 m for 24 hours

4.5.3 TBM

Threshold distances for TBM use are presented in Table 6

Table 6: Threshold distances for marine mammals – TBM

Type of fauna or functional hearing group	Applicable criteria		Threshold distance
Low-frequency cetaceans	PTS:	SEL _{24hr} 199 dB(LF)	<10 m for 24 hours
	TTS:	SEL _{24hr} 179 dB(LF)	<10 m for 24 hours
High-frequency cetaceans	PTS:	SEL _{24hr} 198 dB(HF)	<10 m for 24 hours
	TTS:	SEL _{24hr} 179 dB(HF)	<10 m for 24 hours
Pinnipeds – Phocid carnivores	PTS:	SEL _{24hr} 201 dB(PCW)	<10 m for 24 hours
	TTS:	SEL _{24hr} 181 dB(PCW)	<10 m for 24 hours
Pinnipeds – Other carnivores	PTS:	SEL _{24hr} 219 dB(OCW)	<10 m for 24 hours
	TTS:	SEL _{24hr} 181 dB(OCW)	<10 m for 24 hours
Fish – With swim bladder	PTS:	SPL 170 dB	<10 m for 24 hours
	TTS:	SPL 158 dB	<10 m for 24 hours

4.6 Predicted threshold distances – operation

4.6.1 Pumps

Threshold distances for pumps in the Wet Well are presented in Table 7.

Table 7: Threshold distances for marine mammals – Pumps

Type of fauna or functional hearing group	Applicable criteria		Threshold distance
Low-frequency cetaceans	PTS:	SEL _{24hr} 199 dB(LF)	<10 m for 24 hours
	TTS:	SEL _{24hr} 179 dB(LF)	<10 m for 24 hours
High-frequency cetaceans	PTS:	SEL _{24hr} 198 dB(HF)	<10 m for 24 hours
	TTS:	SEL _{24hr} 179 dB(HF)	<10 m for 24 hours
Pinnipeds – Phocid carnivores	PTS:	SEL _{24hr} 201 dB(PCW)	<10 m for 24 hours
	TTS:	SEL _{24hr} 181 dB(PCW)	<10 m for 24 hours
Pinnipeds – Other carnivores	PTS:	SEL _{24hr} 219 dB(OCW)	<10 m for 24 hours
	TTS:	SEL _{24hr} 181 dB(OCW)	<10 m for 24 hours
Fish – With swim bladder	PTS:	SPL 170 dB	<10 m for 24 hours
	TTS:	SPL 158 dB	<10 m for 24 hours

4.7 Management and mitigation of underwater noise impacts

4.7.1 Overview

The extent of management and mitigation strategies for underwater noise from piling and dredging will be relative to the prevalence of species of sensitive marine fauna for the time of year during which these activities are undertaken. Guidance should be sought from a marine ecologist on the prevalence and movement patterns of these species relative to the relevant TTS threshold distances. If the timing of proposed noise-generating offshore construction coincides with migratory periods for listed marine fauna, and there is risk of animals encroaching the threshold distances identified, reasonable and practicable mitigation measures will be required to be implemented.

The DIT UW Guidelines provide guidance on the following management and mitigation measures for underwater noise from piling:

- Safety zones
- Potential Effects Zones
- Standard Operating Procedures
- Additional mitigation and management measures.

4.7.2 Management Measures – Safety Zones and Potential Effects Zones

The DIT UW Guidelines define two Safety Zones for marine mammals. These are:

- Shutdown Zones, where if a marine mammal is observed to enter, piling or dredging activities must stop immediately.
- Observation Zones, where if a marine mammal is observed to enter, the piling or dredging operator must be placed on stand-by to shut down equipment, and marine fauna observers should continuously monitor the movement of the marine mammal.

The Shutdown Zones and Observation Zones have been determined for Piling and Dredging in accordance with the DIT UW Guidelines. They are based upon the TTS threshold distance for Low Frequency Cetaceans, which is the largest threshold distance calculated for marine mammals in this assessment. If it is determined that species from the Low Frequency Cetacean group would not occur in waters off Billy Lights Point during piling (i.e. piling is timed to occur outside of the migratory season for all species in the FHG), revised Safety Zones would be applicable, which may be smaller in size. For example, the next largest safety zone is based upon exposure for Phocid Pinnipeds.

The Safety Zone distances determined for piling and dredging are provided in Table 8. Maps showing the extent of these safety zones relative to waters around the site are provided in Figure 3 and Figure 4.

Table 8: Safety Zones

	Low Frequency Cetaceans (Safety Zones adopted for Project)	Phocid Pinnipeds (Next-largest Safety Zones)
Observation Zone –Piles	6050	5250
Shut-down Zone –Piles	5800	5000
Observation Zone – Dredging	305	278
Shut-down Zone – Dredging	55	28

The DIT UW Guidelines also define Potential Effects Zones for Turtles and Fishes which are used to inform the Project’s risk evaluation process. Mitigation and management measures are required when the presence of these species is identified within the relevant Potential Effects Zone. The Potential Effects Zones for each pile type and relevant species are provided in Figure 5.

4.7.3 Management measures – Piling Standard Operating Procedures

Standard Operational Procedures for Piling are outlined within the DIT UW Guidelines. Accordingly, the following are required for any offshore piling activity within the jurisdiction of the DIT UW Guidelines.

- Pre-start procedure
 - The presence of marine fauna shall be visually monitored by a Marine Fauna Observer (MFO) (Level 2) for at least 30 minutes prior to the commencement of piling using a Soft Start Procedure.
 - The Shutdown Zone (and Observation Zone where visibility allows) shall be inspected by the MFO, ideally from a location greater than 6m above sea level.
 - If marine mammals have not been sighted in the Shutdown zone (and are not likely to enter the Shutdown Zone) the Soft Start Procedure may commence.
 - If it can be confirmed that marine mammals have not been sighted in the Observation Zone (and are not likely to enter the Observation Zone) than piling may commence under the Normal Operating Procedure (i.e. without the Soft Start Procedure).

- Soft Start Procedure
 - Piling may commence after the Pre-start procedure is completed.
 - Piling should start with the minimal possible impact energy, and gradually increasing over at least a 10-minute period up to regular impact energy.
 - The MFO shall maintain visual observations of the Safety Zones throughout the Soft Start Procedure.
 - The Soft Start Procedure should be used after any breaks in piling of longer than 30 minutes.
- Normal Operating Procedure
 - The MFO shall maintain visual observations of the Safety Zones.
 - If there are long breaks in piling activity, or visual observations are ceased due to poor visibility, the Pre-start Procedure should be re-initiated
- Stand-by Operations Procedure
 - If marine fauna is sighted within the Observation Zone during the Soft Start Procedure or Normal Operating Procedure the piling rig operator should be placed on stand-by to shut down the piling rig, should the animal enter the shutdown zone
 - The MFO should continuously monitor the animal within the Observation Zone
- Shut-down procedure
 - Piling should be stopped immediately if marine fauna is sighted within the Shut-down Zone.
 - Piling may recommence (using the Soft Start Procedure) if marine fauna is observed to leave the shutdown zone, or if 30 minutes has lapsed since the last sighting.
 - If marina fauna is spotted in the Shut-down Zone during poor visibility, piling may not recommence until visibility improves.
- Compliance and sighting report
 - The piling contractor shall maintain a Compliance and Sighting Report which documents the timing and duration of all activities under the Standard Operating Procedures.
 - The Compliance and Sighting Report should also document details of the piling rig and activities, MFOs used, and information on all marine fauna sightings (including time, location and duration).

It should be noted that specific regulatory conditions may be applicable to piling. Such conditions would be applied in addition to the Standard Operational Procedures.

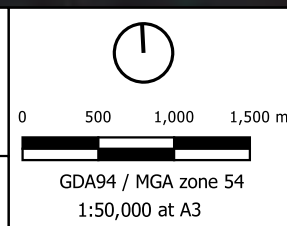


Eyre Peninsula Desalination Plant
Underwater Noise Assessment
 Impact piling
 Safety Zones

Figure: 3
 Page: 1/1

Date: 10/05/2024
 Refer report: S8140C1

Author: AC
 Reviewer: CT



Legend

- Plant design
- Source locations

Safety Zones

- Shutdown Zone
- Observation Zone

Imagery sources: SAPPA

sonus.

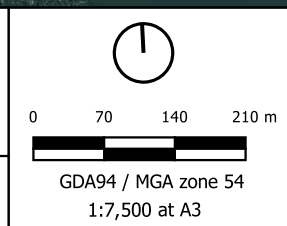


Eyre Peninsula Desalination Plant
Underwater Noise Assessment
 Dredging
 Safety Zones

Figure: 4
 Page: 1/1

Date: 20/05/2024
 Refer report: S8140C1

Author: AC
 Reviewer: CT



Legend

- Plant design
- Source locations

Safety Zones

- Shutdown Zone
- Observation Zone

Imagery sources: SAPPA



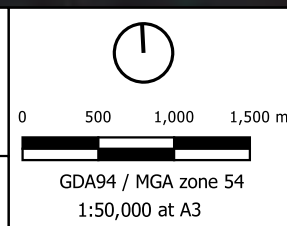


Eyre Peninsula Desalination Plant
Underwater Noise Assessment
 Piling
 Potential effects zones

Figure: 3
 Page: 1/1

Date: 10/05/2024
 Refer report: S8140C1

Author: AC
 Reviewer: CT



Legend

- Plant design
- Source locations
- Potential effects zone - Turtles - Fatality
- Potential effects zone - Fish (without swim bladder)- Fatality
- Potential effects zone - Fish - Hearing injury

4.7.4 Management measures – Dredging Standard Operating Procedures

Standard Operational Procedures for Dredging are outlined within the DIT UW Guidelines. Accordingly, the following are required for any offshore dredging activity within the jurisdiction of the DIT UW Guidelines.

- Pre-start procedure
 - The presence of marine fauna shall be visually monitored by a Marine Fauna Observer (**MFO**) (Level 2) for at least 30 minutes prior to the commencement of dredging using a Soft Start Procedure.
 - The Shutdown Zone (and Observation Zone where visibility allows) shall be inspected by the MFO, ideally from a location greater than 6m above sea level.
 - Dredging may commence if marine fauna has not been sighted within, or is not likely to enter, the shutdown zone or observation zone during the pre-start procedure.
- Normal operating procedure
 - The MFO shall maintain visual observations of the Safety Zones.
 - If there are long breaks in dredging activity, the Pre-start Procedure should be re-initiated.
 - If marine fauna is sighted within the Observation Zone, the dredge operator shall be placed on standby to stop dredging, and the marine fauna monitored continuously. Dredging may resume normal operation if the marine fauna is observed to leave the Observation Zone or is not sighted within the Observation Zone for a period of greater than 30 minutes after the previous sighting.
- Shut-down procedure
 - If marine fauna is sighted within the shutdown zone, dredging shall be stopped immediately.
 - If marine fauna is sighted within the shutdown zone, observation shall continue in order to determine if the animal moves away from the dredging activity in a timely manner (up to 30 minutes).

4.7.5 Management Measures – Additional mitigation and management

The DIT UW Guidelines state that the need for additional mitigation and management measures is to be based upon the Project's risk assessment for the impacts on EPBC Act Matters of National Environmental Significance. Where this assessment identifies the likelihood of impact occurrence as 'unlikely' or 'likely', or if there is uncertainty about the potentially serious or irreversible impacts, the additional mitigation and management measures must be considered.

The additional management measures to be considered are:

- increased safety zones
- use of a Level 1 Marine Fauna Observer
- validation of noise model using measurements
- restricting operations during poor visibility
- use of a Spotter Vessel.

The additional mitigation measures to be considered are:

- substitution of piles with other types where installation produces less underwater noise
- use of a bubble curtain system
- alternative pile installation methods, such as vibratory piling, press-in piling or suction piling.
- use of cofferdams around impact piling
- substitution of alternative dredging methodologies which produce less underwater noise.

5 DISCUSSION

It is understood that the Southern Right Whale is the primary species of concern for noise impacts. The migratory period for Southern Right Whales in South Australian waters is understood to be from May through to October.

Threshold distances for the Low Frequency Cetacean FHG containing the Southern Right Whale indicate that:

- There is the potential for Permanent Threshold Shift to occur if:
 - Piling occurs continuously while an animal remains within 3,100m of the piling location for 24 hours or greater.
 - Dredging occurs continuously while an animal remains within 430m of the dredging location for 24 hours or greater.
- There is the potential for Temporary Threshold Shift to occur if:
 - Piling occurs continuously while an animal remains within 5,800m of the piling location for 24 hours or greater.
 - Dredging occurs continuously while an animal remains within 55m of the dredging location for 24 hours or greater.
 - TBM use occurs continuously while an animal remains in waters within 10m of the tunnel path for 24 hours or greater.
 - Noise from plant operation has the potential to cause TTS to an animal located within 10 metres of the inlet risers for a period of 24 hours or greater.

Given the above setback distances, and the 'Endangered' Status of the Southern Right Whale under the EPBC Act, investigation and risk assessment of the likelihood of impact occurrence should be undertaken.

The following species also have an EPBC Listing Status as Endangered, Vulnerable, or Conservation Dependent.

- Humpback Whale – Low Frequency Cetacean
- Australian Sea lion – Otarrid Pinniped
- Loggerhead Turtle – Marine Turtle
- Green Turtle – Marine Turtle
- Leatherback Turtle – Marine Turtle
- Great white shark – Fish, without swim bladder
- Southern bluefin tuna – Fish, with swim bladder

For these species, the proposed construction period should be compared to the species' prevalence and migratory season. Where there is potential for these species to be present during Project construction, the threshold distances of the associated FHG should be used to undertake a risk assessment for underwater noise exposure.

Other species listed in Table 3 with 'Migratory' and 'Possible' prevalence will need to be risk-assessed considering the likelihood of prevalence during the offshore works and within the threshold distances identified in the assessment.

Risk assessments will inform the need for consideration of the additional management and mitigation measures which are provided in the DIT UW Guidelines. An update of the risk assessment should be undertaken if there are any changes to the timing of offshore construction.

6 CONCLUSION

An assessment has been made of potential underwater noise impacts from construction and operation of the Eyre Peninsula Desalination Plant.

The assessment has considered underwater noise generation from construction activity such as piling, dredging, and tunnelling, and from operation of the plant.

The assessment has predicted underwater noise levels and assessed against criteria determined in accordance with the *DIT Underwater Piling and Dredging Noise Guidelines*.

The relevant Safety Zones and Potential Effects Zones have been determined from the highest predicted underwater noise threshold distances.

The Standard Operating Procedures defined by the *DIT Underwater Piling and Dredging Noise Guidelines* are required to be implemented by the piling and dredging contractors. The need for additional mitigation and management measures during offshore construction will need to be considered based upon the Project's risk assessment of the potential impacts on EPBC Act Matters of National Environmental Significance.

APPENDIX A: THRESHOLD DISTANCE MAPS

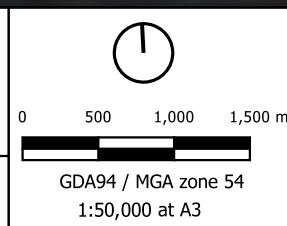


Eyre Peninsula Desalination Plant
Underwater Noise Assessment
 Piling
 Threshold distances - LFC

Figure: A1
 Page: 1/1

Date: 13/05/2024
 Refer report: S8140C1

Author: AC
 Reviewer: CT



- Legend**
- Plant design
 - Source locations
 - Threshold distances**
 - PTS
 - TTS

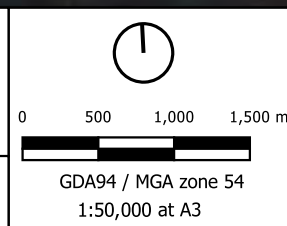


Eyre Peninsula Desalination Plant
Underwater Noise Assessment
 Piling
 Threshold distances - OP

Figure: A2
 Page: 1/1

Date: 13/05/2024
 Refer report: S8140C1

Author: AC
 Reviewer: CT



- Legend**
- Plant design
 - Source locations
- Threshold distances**
- PTS
 - TTS

Imagery sources: SAPPA

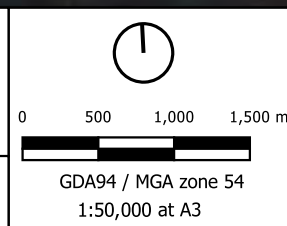


Eyre Peninsula Desalination Plant
Underwater Noise Assessment
 Piling
 Threshold distances - Fish (no swim bladder)

Figure: A3
 Page: 1/1

Date: 13/05/2024
 Refer report: S8140C1

Author: AC
 Reviewer: CT



Legend

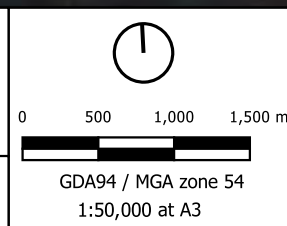
- Plant design
- Source locations

Threshold distances

- PTS
- TTS



Eyre Peninsula Desalination Plant
Underwater Noise Assessment
 Piling
 Threshold distances - Fish (with swim bladder)



- Legend**
- Plant design
 - Source locations
 - Threshold distances**
 - ▨ PTS
 - ▨ TTS

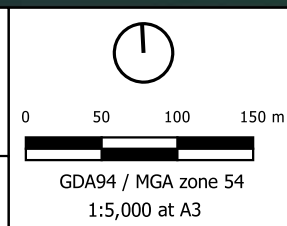


Eyre Peninsula Desalination Plant
Underwater Noise Assessment
 Dredging
 Threshold distances - LFC

Figure: A5
 Page: 1/1

Date: 20/05/2024
 Refer report: S8140C1

Author: AC
 Reviewer: CT



Legend

- Plant design
- Source locations

Threshold distances

- ▣ PTS
- ▣ TTS

Imagery sources: SAPPA

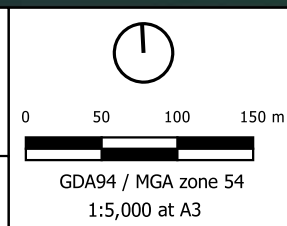


Eyre Peninsula Desalination Plant
Underwater Noise Assessment
 Dredging
 Threshold distances - PP

Figure: A6
 Page: 1/1

Date: 20/05/2024
 Refer report: S8140C1

Author: AC
 Reviewer: CT



Legend

- Plant design
- Source locations

Threshold distances

- ▨ PTS
- ▨ TTS

Imagery sources: SAPPA

Appendix V Social Impact Assessment

**Design
for a better
*future /***

SA Water Corporation

**Eyre Peninsula
Desalination Plant
Project**

Social Impact
Assessment



May 2024

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Eyre Peninsula Desalination Plant Project Social Impact Assessment

SA Water Corporation

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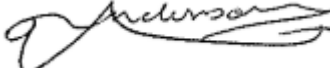
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Rev	Date	Details
0	22/05/2024	Draft
A	30/05/2024	Final
B	31/05/2024	Final - Revised

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1 Introduction

1.1 Purpose and objectives

The purpose of this Social Impact Assessment (SIA) is to identify, assess and mitigate the social implications of the proposed Eyre Peninsula Desalination Plant (the Project) proposed by South Australian Water Corporation (SA Water).

The objectives of the SIA are to identify and assess the intended and unintended social consequences, both positive and negative, that may occur during the construction and operational phases of the Project and to identify any appropriate mitigation and management measures. This includes identifying impacts in relation to the community's and people's way of life; community cohesion, values and character both Aboriginal and non-Aboriginal; access and use of infrastructure; culture; health and wellbeing; property impacts, economic impacts such as employment and business and other key concerns and issues raised by stakeholders and the community during consultation (DPE, 2021).

1.2 Assessment methodology

This social impact assessment has been developed using a desktop assessment approach drawing on data sources including analysis of the stakeholder and community engagement carried out by SA Water to date, the analysis of statistical information from the Australian Bureau of Statistics, State and Local Government websites, and the Regional Development Australia Eyre Peninsula Inc. (RDAEP) website to inform a social baseline characteristics of the potentially affected communities or area of influence.

This assessment includes a baseline summary of the current socio-economic conditions of Port Lincoln and the Eyre Peninsula in South Australia prior to the construction of the proposed project. Qualitative and quantitative sources were used to evaluate the perceived and actual impacts that the Project may cause to the social and economic environment during construction and operation.

Potential impacts are identified, and considerations are made to determine if they may result in positive or negative impacts on the social community and the regional economy.

The SIA has considered relevant publicly available data from the following sources:

- Australian Bureau of Statistics (ABS) (Australian Bureau of Statistics, 2021)
- Other relevant statistical data such as SEIFA index and specialist demographer reports.
- Housing and rental market data
- Local, State and Federal Government Strategic Reports
- SA Tourism.

Findings from other technical reports and papers that contributed to the Development Application Report for the Project were reviewed, and potential impacts defined and assessed. These included marine, air quality, noise, non-Aboriginal heritage, traffic, visual and soils, drainage and erosion impact assessments.

A review of the ongoing community and stakeholder consultation for the Project has also informed the identification of potentially impacted key stakeholders and communities and the feedback has provided an understanding of the key issues and opportunities that has informed the SIA's potential impacts, mitigations, and management measures.

Social impacts were identified and assessed with consideration given to the effect of proposed Project activities and infrastructure during the project lifecycle. The impact assessment considers the impacts across the following impact categories:

- **Way of life:** how people live, work, play and interact with one another on a day-to-day basis.
- **Community values:** changes to community values and how the community functions.
- **Accessibility:** access to, and quality of infrastructure, services and facilities.
- **Community safety:** physical safety, exposure to hazards or risks and access to and control over resources.
- **Cultural heritage:** impacts to Indigenous and non- Indigenous cultural heritage, history and ability to access cultural resources.
- **Health and wellbeing:** physical and mental health and wellbeing and a community’s social, cultural and economic wellbeing.
- **Surroundings:** the quality of life including liveability and aesthetics, as well as the condition of their environment (for example, air quality, noise levels and access to water).
- **Livelihoods:** jobs, properties or businesses affected by the Project, or whether the community experiences advantage and/or disadvantage.

1.2.1 Evaluation of identified social impacts

The methodology to assess the significance of each identified social impact is adapted from the current industry best practice guidelines prepared by the New South Wales Department Planning Industry and Environment (2023), *Social Impact Assessment Guideline* and includes the following evaluation criteria:

- The four impact characteristics that demonstrate the material effect of the impact (extent, duration, severity, sensitivity) defined in Table 1.1.
- Who specifically may be affected, directly, indirectly or cumulatively and the level of concern they feel about the matter (high, medium, low), recognising that impacts may affect population groups or individuals differently.
- When the potential impact is expected to occur (pre-construction, construction, operation).
- Defining likelihood as per the SIA guideline (DPIE 2023) and outlined in Table 1.3.
- Identifying the magnitude scale of each impact as per Table 1.2.
- Determining the significance of the potential impact pre-mitigation, as per matrix in Table 1.4.

Table 1.1 Characteristics of social impact magnitude

Characteristic	Definition
Extent	Who specifically is expected to be affected (directly, indirectly, and/or cumulatively), including any potential vulnerable people? Which location(s) and people are affected (e.g. near neighbours, local, regional)? Regional: Eyre Peninsula Local: Port Lincoln, Billy Lights Point nearby local communities
Duration	When is the social impact expected to occur? Will it be time-limited (e.g. over particular Project phases) or permanent?
Severity or scale	What is the likely scale or degree of change (e.g. mild, moderate, severe)? High: Social functions are severely altered – large number of directly impacted people/households Medium: Social functions are notably altered – medium number of directly impacted people/households Low: Social functions are slightly altered – small number of directly impacted people/households

Characteristic	Definition
Sensitivity or importance	How sensitive, vulnerable (or how adaptable/resilient) are affected people to the impact, or (for positive impacts) how important is it to them? This might depend on the value they attach to the matter; whether it is rare/unique or replaceable; the extent to which it is tied to their identity; and their capacity to cope with or adapt to change.
Level of concern/interest	How concerned/interested are people? Sometimes, concerns may be disproportionate to findings from technical assessments of likelihood, duration and/or severity. Concern itself can lead to negative impacts, while interest can lead to expectations of positive impacts.

Source: Adapted from SIA Guideline (DPIE, 2023)

Table 1.2 Defining magnitude levels for social impacts

Magnitude criteria	
Transformational	Substantial change experienced in community wellbeing, livelihood, amenity, infrastructure, services, health, and/or heritage values; permanent displacement or additional of at least 20% of a community.
Major	Substantial deterioration/improvement to something that people value highly, either lasting for an indefinite time, or affecting many people in a widespread area.
Moderate	Noticeable deterioration/improvement to something that people value highly, either lasting for an extensive time, or affecting a group of people.
Minor	Mild deterioration/improvement, for a reasonably short time, for a small number of people who are generally adaptable and not vulnerable.
Minimal	Little noticeable change experienced by people in the locality.

Source: SIA Guideline (DPIE, 2023)

Table 1.3 Defining likelihood levels of social impacts

Likelihood level	Definition
Almost certain	Definite or almost definitely expected (e.g. has happened on similar projects)
Likely	High probability
Possible	Medium probability
Unlikely	Low probability
Very unlikely	Improbable or remote probability

Source: SIA Guideline (DPIE, 2023)

Table 1.4 Social impact significance matrix

Magnitude		1. Minimal	2. Minor	3. Moderate	4. Major	5. Transformational
Likelihood Level	A Almost certain	Low	Medium	High	Very high	Very high
	B Likely	Low	Medium	High	High	Very high
	C Possibly	Low	Medium	Medium	High	High
	D Unlikely	Low	Low	Medium	Medium	High
	E very unlikely	Low	Low	Low	Medium	Medium

Source: SIA Guideline (DPIE, 2023)

1.3 Limitations and assumptions

The social baseline has used the most recent census data available from the 2021 ABS Census. The SIA assessment is based on the most current Project design. While key project components are generally fixed, some refinements may be required following further investigations and design and consultation with the community and affected stakeholders. An Aboriginal Cultural Heritage Assessment was not available for review at the time of completing this assessment. Aboriginal cultural heritage matters for the Project will be managed under a Section 21/23 process under the *Aboriginal Heritage Act 1988*. Therefore, the SIA has excluded cultural heritage from this assessment.

Assessment of impacts related to the construction workforce is based on an estimated maximum of 150 workers during peak construction. The Project will seek to employ Port Lincoln residents for the construction workforce, where possible. It is assumed, however, that a portion of the workforce will need to comprise fly in/fly out (FIFO) or drive in/drive out (DIDO) personnel, given the size, nature and location of the project. The FIFO and DIDO workforce is assumed to utilise existing accommodation in Port Lincoln as a first preference.

It is assumed that many of the workers will travel to and from the site by bus that will be provided by the project, with some electing to travel by car to the site car park. Assuming 120 workers travel by bus and 30 travel by car (20 alone and 10 sharing a ride) there would be 3 buses and 25 cars travelling to the Site in the morning and from the Site in the afternoon. During periods of less intense activity at the Site the numbers could reduce to 1 bus and 10 cars. A minibus might be used to transport workers to the pipeline work zones because car parking would be very limited. These vehicle trips would all have origins within the residential areas of the Port Lincoln township – both north and south of the railway line.

1.4 Project description and area of influence

1.4.1 Overview of the development proposal

SA Water proposes the construction of a 5.3 gigalitre (GL, Stage 1, ultimate capacity 8 GL)/annum capacity reverse osmosis (RO) seawater desalination plant, a seawater intake pump station/ marine infrastructure with connecting pipelines, seven (7) kilometres (km) of pipeline to transfer the treated desalinated water to the existing North Side Hill tanks, and a 3.5 km overhead transmission line. The Project also proposes fencing, directional signage and temporary construction facilities including (but not limited to) laydown areas. The site of the proposed Project (the Site) is at Billy Lights Point, approximately 3 km southeast of Port Lincoln, South Australia. The Project location and layout are shown in Figure 1.1 and Figure 1.2. The marine works and infrastructure will be constructed for an 8 GL/ annum ultimate capacity including the marine intake and outfall pipes.

The proposed RO desalination plant and associated infrastructure is expected to reduce reliance on the Uley Borefields and provide sustainable access to potable water through the existing SA Water network.

The Project is designed and engineered for a 50-year operational lifespan.

Figure 1.1
Project Location



Legend

- Substation
- Local Government Area
- Desalination Plant Site Boundary
- Easement
- New Site Access
- SAPN Transmission Line
- Overhead Transmission Line
- Outgoing Treated Water Transfer Pipeline
- Seawater Transfer Pipeline
- Sewer Rising Main
- Saline Waste Transfer Pipeline

Marine Infrastructure

- Marine Outfall
- Raw Seawater Intake
- Marine Tunnel Portion



0 500 1,000
Metres

Coordinate system: GDA2020 MGA Zone 53



Scale ratio correct when printed at A3

1:24,000 Date: 22/05/2024



Data sources: WSP, DataSA, MetroMap WMS Services:

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Figure 1.2
Site Layout



Legend

- Cadastre
- Desalination Plant Site Boundary
- Security Fence
- New Site Access
- Design Desalination Plant
- Pump Intake Station
- Saline Waste Transfer Pipeline
- Sewer Rising Main
- Seawater Transfer Pipeline
- Marine Infrastructure**
- Marine Outfall
- Raw Seawater Intake
- Marine Tunnel Portion



0 100 200
Metres

Coordinate system: GDA2020 MGA Zone 53



Scale ratio correct when printed at A3

1:6,000

Date: 23/05/2024



Data sources: WSP, DataSA, MetroMap WMS Services:

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1.4.2 Area of influence

The Project site is in the outskirts of the regional city of Port Lincoln near the southern tip of the Eyre Peninsula in South Australia. Port Lincoln is approximately 250 km west of the State capital of Adelaide. The proposed Site is located at Billy Lights Point off St Andrews Drive, approximately 4 km southeast of the centre of Port Lincoln.

The identified area of socio-economic influence of the proposal includes the area surrounding the proposed RO desalination plant site in Port Lincoln and the wider regional area and communities of the Eyre Peninsula. The Project is seeking to maximise the number of Port Lincoln residents employed to undertake the construction, however, it is anticipated that the workforce may require augmentation with a FIFO or DIDO workforce.

1.4.3 Legislative and policy requirements

The following pieces of legislation are relevant to the socio-economic context of the proposed Project:

— *Planning, Development and Infrastructure Act 2016*

The Project site is covered by the PDI Act. Under this Act, all activities constituting development, including but not limited to building work or a change in land use, requires Development Approval under the Act, unless otherwise exempted.

— *Aboriginal Heritage Act 1988*

— *Environment Protection Act 1993* (including policies under this Act)

— *Environment Protection Biodiversity Conservation Act 1999*

— *Heritage Places Act 1993*.

1.5 Alternative sites considered

Through broad engagement with the Eyre Peninsula community in 2007, *SA Water's Long Term Plan for Eyre Region* (2008) identified seawater desalination as the preferred option to secure the region's drinking water supply for the long term. Two sites in Sleaford were thoroughly assessed prior to 2021, when SA Water announced a new preferred site of Billy Lights Point in Port Lincoln. Concern among the community and local aquaculture stakeholders regarding potential impacts to the marine environment adjacent to Billy Lights Point led to the then government announcing a 12-month pause on the project, to allow SA Water to conduct additional marine monitoring and data collection as well as greater engagement with key stakeholders and the local community.

Throughout 2022, SA Water undertook an independent site selection process with the Eyre Peninsula Desalination Project Site Selection Committee (SSC) consisting of representatives from key sectors including aquaculture, local business, and local government. The SSC was tasked with recommending a viable alternative site to SA Water and the South Australian Government for a desalination plant on the Eyre Peninsula. The SSC's process began with more than 20 sites grouped into five discrete precincts across the Eyre Peninsula: Western precinct (the west coast of the peninsula); Southern precinct (the southern tip of the peninsula); Port Lincoln precinct; North Shields precinct (near Port Lincoln Airport); and Northern precinct (between Tumby Bay and Port Neill).

Through a structured assessment process, the SSC eliminated the Western precinct and the Port Lincoln precinct from consideration – however, the Billy Lights Point site within the Port Lincoln precinct remained as SA Water's preferred site and as a base case site for comparison. Through further ranking and elimination of sites, the SSC determined a shortlist of sites which included Point Boston, Shoal Point, Sleaford West (the west coast of Sleaford Bay), and Sleaford North (to the west of Sleaford Mere at the top of Sleaford Bay). At its twelfth meeting on 8 August 2022, the SSC went through a multi-criteria analysis process to determine its final site rankings, with a variation of the Sleaford West site ultimately recommended to SA Water and the government for further assessment and consideration.

Following the recommendation, SA Water’s project team conducted site investigations at Sleaford West to develop a preliminary design and a cost estimate. These investigations found a number of challenges and issues, including complexity of marine construction, extremely hard granite, a rare geological formation, rare and protected flora, areas of significance to the Traditional Owners, and a significantly higher cost to construct than the Billy Lights Point site. An alternative site was identified at Sleaford West as possible, but with technical and constructability issues and timeline risks and a large cost differential when compared to the base case at Billy Lights Point. Further to the challenges at Sleaford West, SA Water has noted several factors that support Billy Lights Point being the preferred site for a desalination plant, such as its proximity to the existing water and electricity networks, the ability to expand the capacity of the desalination plant while minimising the visual and environmental footprint, and the location being industrial-zoned land that is relatively sheltered and flat.

2 Existing social conditions

2.1 Community sentiment and perception

SA Water began engaging with the Eyre Peninsula community about a desalination plant in 2007, although political discussions regarding the need for a desalination plant in the region began years earlier. Despite some years of adequate aquifer recharge in the years since 2007, the region's main source of drinking water, the Uley South Basin, is under stress, and key stakeholders and the community see water security as a priority issue for the region. Since 2007, SA Water has run several stakeholder and community consultation processes for this Project including workshops with the aquaculture industry and the formation of a Site Selection Committee in 2022 as part of an independent site selection process. There have also been several community information sessions held across the Eyre Peninsula region and many stakeholder and community group meetings and workshops. Consultation is ongoing for this Project and includes an established Project Reference Group and an information centre located in Port Lincoln. For a complete summary of the key activities and outcomes of SA Water's engagement to date, see Section 7 – Pre-lodgement Information Provision of the Development Application Report for the Project.

There is broad community support for a seawater desalination plant among communities across the Eyre Peninsula, with a small number of people advocating for alternative solutions such as mandatory and subsidised rainwater tanks, and sheeted catchments.

Community sentiment towards the 2022 Site Selection Committee process was largely positive with a site at Sleaford West being selected. However, SA Water could not proceed with the committee's recommended site following preliminary investigations which identified several design and environmental challenges resulting in a cost estimate significantly higher than the base case. Another site was identified at Sleaford West by SA Water following detailed investigations, but this site posed a number of technical, and construction related risks at a significantly higher cost than the base case at Billy Lights Point, including the potential for construction constraints as a consequence of whales migrating and congregating in Sleaford Bay. SA Water identified Billy Lights Point as a preferred location due to its proximity to existing water and electricity networks, the ability to build a large plant to accommodate future growth in an existing industrial zoned area and that the site is relatively sheltered and flat to help reduce construction risks and challenges. There is a community perception that the 12-month selection process was therefore a "waste of time".

There are ongoing stakeholder concerns in relation to the Billy Lights Point location which has resulted in differing levels of support with several key stakeholders strongly opposing the location. As result, a Select Committee of the Legislative Council has been established to inquire into and report on the water supply needs of the Eyre Peninsula including a focus on the potential location of the desalination plant.

SA Water continues to provide consultation opportunities for stakeholders and the community to ensure that the design of the plant minimises any impacts to the coastal and marine environment. SA Water is also committed to engaging with the Barnjarla Determination Aboriginal Corporation. Aboriginal cultural heritage matters will be managed under a Section 21/23 process under the *Aboriginal Heritage Act 1988*.

For the Billy Lights Point site, the feedback has largely focused on the potential impact to the coastal and marine environment within Boston and Proper Bays from both the intake and outfall, and the potential impacts on the aquaculture businesses that operate in this area. Specific concerns for the marine environment include the impact on salinity levels near the desalination outfall, impacts to the broader bay system from accumulation of the brine discharge, and entrapment and entrainment of mussel spat in the intake structure. Consultation with the broader Eyre Peninsula community has also focused on these issues, as well as the importance of water security and water quality improvements for townships throughout the region. The community has also raised issues such as noise, increased traffic, dust, and visual amenity impacts in relation to the construction and operation of the desalination plant.

2.1.1 *Industry and key stakeholder sentiment and perception*

Since 2023, SA Water has had ongoing dialogue with the aquaculture sector both directly and indirectly as well as other key stakeholders in the Port Lincoln area. An independently facilitated risk workshop was held early in the Project's development phase. The consultation outcomes have included the identification of key considerations to be addressed as part of the Project's development. The key issues and themes raised that are relevant to the social impact assessment are summarised below:

- The Billy Lights Point site location's proximity to the prime mussel spawning area and the potential entrapment and entrainment of spat in the plant's intake and the subsequent potential impact to this industry.
- Impact to marine life and ecosystem from discharge, including hypersaline brine and other chemicals, and how adequate dispersion will be achievable given the natural conditions (sheltered, relatively low flushing-rate, etc.) of Boston and Proper Bays.
- Socioeconomic impact to the Port Lincoln community if the aquaculture and fishing industries are adversely affected.
- Amenity and wellbeing impacts to any future residential developments near the project site and associated infrastructure.

2.2 Community profile

2.2.1 *The Traditional Custodians of the Land*

The Barngarla, formerly known as Parnkalla and also known as Pangkala, are an Indigenous people of South Australia and the traditional owners of much of Eyre Peninsula, including the Port Lincoln region. On 22 January 2015 the Barngarla people were granted native title over much of Eyre Peninsula. The Barngarla Determination Aboriginal Corporation RNTBC (BDAC) is the official registered native title body corporate, appointed by order of the Federal Court of Australia to manage the Barngarla Determination. As mentioned above, Aboriginal cultural heritage matters related to the Project will be managed under a Section 21/23 process under the *Aboriginal Heritage Act 1988*.

2.2.2 *Port Lincoln characteristics*

Port Lincoln is the main regional city on the Lower Eyre Peninsula in South Australia, is located within the Federal Division of Grey, the state electoral district of Flinders, and the City of Port Lincoln local government area (LGA) (as shown Figure 2.1). The Australian census conducted in August 2021 reported that Port Lincoln had a population of 14,404 people, comprising 3,752 families, 6,949 private dwellings (average of 2.3 people per household), with a median weekly household income of \$1,243, median monthly mortgage repayment of \$1,300 and median weekly rent of \$240. The average motor vehicles per dwelling was 1.8 (ABS, 2021).



Source: ABS

Figure 2.1 Map of Port Lincoln LGA

2.2.3 Lower Eyre Peninsula characteristics

Adjacent the City of Port Lincoln are the District Council of Lower Eyre Peninsula and District Council of Tumby Bay. This takes in the broader geographical area of the southern tip of the peninsula, apart from the small area of the City of Port Lincoln and the City outskirts. According to 2021 ABS census figures, the population of the Eyre Peninsula Statistical Area comprising Lower Eyre and Tumby Bay district councils (Figure 2.2) is 6,824, comprising 1,870 families, 4,073 private dwellings (average of 2.3 people per household), with a median weekly household income of \$1,308, median monthly mortgage repayments of \$1,192, and median weekly rent of \$220. The average motor vehicles per dwelling was 2.2 (ABS, 2021).



Source: ABS

Figure 2.2 Map of Eyre Peninsula statistical area

Cummins, Coffin Bay and Tumby Bay are the three largest towns in the Eyre Peninsula Statistical Area, but the area is large and includes many rural localities. The towns and rural localities of the Lower Eyre Peninsula largely rely on the City of Port Lincoln for access to major services and most goods. The area's economy is reliant on agriculture, with cereal crops and sheep farming prominent in the district. Fishing and aquaculture are an important part of the economy also, with Coffin Bay highly regarded for its oysters.

2.2.4 Population and demographics

Population and demographic statistics for the City of Port Lincoln and wider area are presented below in Table 2.1.

Table 2.1 ABS 2021 Census statistics for the local and greater regions

	City of Port Lincoln LGA	Eyre Peninsula Statistical area Level 2	South Australia	Australia
Population	14,404	6,824	1,781,516	25,422,788
Median Age (yrs)	41	49	41	38
Unemployment rate	4.53%	3%	5.39%	5.09%
Participation rate	57.7%	57.5%	60%	61.1%
Median weekly household income	\$1,243	\$1,308	\$1,455	\$1,746
Average household size (no. of persons)	2.3	2.3	2.4	2.5
Persons born overseas	2,268	918	508,160	8,402,366
Low or no proficiency in English	0.39%	0.15%	2.68%	3.43%
Persons needing assistance with core activities	6.53%	5.14%	6.66%	5.76%
Main employing industry	Health care and social assistance 15.61%	Agriculture, forestry and fishing 27.62%	Health care and social assistance 16.35%	Health care and social assistance 14.54%
Proportion completed Year 12 or equivalent, 15 years +	41.87%	40.88%	54.89%	59.18%
Aboriginal and/or Torres Strait Islander	6.57%	2.81%	2.39%	3.2%

The data outlined in Table 2.1 demonstrates that Port Lincoln and the Eyre Peninsula Statistical Area when compared to the State and Country:

- Has a similarly aged population, living in similar average household size.
- Has a similar workforce participation rate.
- Has a moderately lower median weekly household income compared with Australia, but more similar to South Australia.
- Has a significantly higher percentage of persons who are proficient in English.
- Has a significantly higher percentage of persons who identify as Aboriginal and/or Torres Strait Islander.
- Has a similar percentage of people needing assistance with core activities.
- Health care is a significant employing industry in Port Lincoln, while the surrounding Statistical Area has large employment in agriculture, forestry and fishing.
- Has a significantly lower proportion of people who completed Year 12 or equivalent (over 15 years of age).

2.2.5 Regional population change

The ABS Estimated Resident Population at 30 June 2022 for the City of Port Lincoln LGA was 14,947 people, compared with 14,602 in 2017 and 14,495 in 2012 (ID Community, 2022). These figures indicate that Port Lincoln's population is seeing slight growth with statistics showing nominal increases over a 10-year period. The Estimated Residential Population of District Council of Lower Eyre Peninsula at 30 June 2022 was 6,100, up from 5,734 in 2017 and 5,186 in 2012, showing more than 15% growth in 10 years (ID Community, 2022). The Estimated Residential Population of District Council of Tumby Bay at 30 June 2022 was 2,889, up from 2,709 in 2017 and 2,626 in 2012, a 10% increase in 10 years. (ID Community, 2022).

2.2.6 Strategic plans for the region

The Eyre Peninsula Strategic Regional Plan 2023-2026 was prepared by Regional Development Australia Eyre Peninsula (RDAEP), Eyre Peninsula Local Government Association (EPLGA), and Eyre Peninsula Landscape Board (EPLB) outlines shared priorities of the Eyre Peninsula over the short to medium term and a vision and strategies for sustainable economic development.

It has outlined a number of key issues identified through community consultation including:

- housing
- access to healthcare services
- access to childcare
- attracting people and population
- non-climate dependent water supply and access to reliable power
- transport infrastructure
- natural values
- workforce shortages and upskilling
- better engagement with First Nations communities
- lack of government funding and regional collaboration.

The Eyre Peninsula has a pipeline of future projects valued at over \$14 billion and capable of creating over 25,000 new jobs. This reflects unprecedented levels of symbiotic business activity intent on leveraging the regions substantial and natural competitive advantage to diversity the economy through new and emerging industries.

The plan has outlined a number of goals for the region including:

- **Social capacity** – workforce attraction, retention, training and support.
- **Infrastructure capability** – provision of economic enabling infrastructure, including the need for a sustainable, non-climate dependent water source.
- **Economic prosperity** – economic growth through improved business efficiencies and industry diversification.
- **Environmental sustainability** – ecologically sustainable development and natural resource management.

Each local government area also has strategic plans that outline their vision and aspirations for the next 5-10 years, with similar goals to those outlined by RDAEP.

City of Port Lincoln's Strategic Plan recognises the natural beauty of the environment and the importance of its natural resources, in creating community identity and well-being and also driving economic benefits through clean and green qualities. Port Lincoln aims to continue being the Seafood Capital of Australia and continue growing as a tourist destination (City of Port Lincoln, 2020).

The District Council of Lower Eyre has set a vision for 2030 of "*We are a district of vibrant, inclusive and welcoming coastal and rural communities enjoying pristine natural environments and access to quality services and facilities*". It aims to enhance liveability, have a thriving local economy, have quality services, facilities and infrastructure, and preserve the natural and built environment (District Council of Lower Eyre Peninsula, 2020).

The District Council of Tumby Bay has identified four themes of continuous improvement (District Council of Tumby Bay, 2020):

- a desire to retain the essential qualities that define the district while pursuing growth
- an interest in further developing community capacity
- a need to build upon existing industry and business to enhance the local economy
- an intent to continually improve upon Council’s service and infrastructure standards.

The strategic plans and goals of the region are generally consistent and there are opportunities for projects such as the Eyre Peninsula Desalination Plant Project to contribute to achievement of these goals, while also needing to ensure that the project does not create impacts that would be detrimental to achievement of these goals, particularly in regard to the environment and the qualities associated with these coastal communities that rely on the marine environment.

2.3 Socio-economic profile

2.3.1 Key economic drivers

According to a September 2020 report published by Regional Development South Australia (2020), the Eyre Peninsula region is one of the world’s richest low carbon energy resource environments and had a gross regional product of \$3.35 billion, with agriculture, seafood, mining, manufacturing and tourism the primary drivers for regional employment and economic growth.

The region is highly export oriented with product valued at \$3.263 billion exported to domestic and international markets in 2021/22 (ID Community, 2023). In the RDA Eyre Peninsula Region, Agriculture, Forestry and Fishing had the largest total exports by industry, generating \$1.414 billion in 2021/22 (ID Community, 2023).

The Eyre Peninsula has many advantages including well-established industries, premium food and agricultural product, magnificent natural resources, high quality mineral resources, vibrant communities, and a quality lifestyle second to none. These factors collectively provide significant opportunities for economic growth in the region (RDAEP, 2023).

2.3.1.1 Fishing and aquaculture industry

Fishing and aquaculture are an important part of the economy in Port Lincoln and the Eyre Peninsula more broadly. In 2006, the *Eyre Peninsula – Australia’s Seafood Frontier* brand was launched to market the Eyre Peninsula as a premium region with strengths including environmental sustainability, innovation, pioneering spirit and premium food products, positioning the region as a culinary tourism destination (RDAEP, 2021). Port Lincoln, as the main regional city on the Lower Eyre Peninsula, is the centre of the ‘Seafood Frontier’ and home to the largest fishing fleet in the Southern Hemisphere.

In 2021/22, the output (i.e. total sales) of the Eyre Peninsula’s aquaculture industry totalled \$447.5 million and accounted for 91% of South Australia’s overall aquaculture output. The region’s aquaculture industry also employed 627 FTE direct roles which was 77% of the state’s total (BDO EconSearch, 2023). Aquaculture production statistics for the Eyre Peninsula during the 2021/2022 period are presented below in Table 2.2.

Table 2.2 PIRSA aquaculture production statistics for the Eyre Peninsula

	Value of production in 2021/22	Proportion of SA total value	KG of production in 2021/22	Proportion of SA total kg
Southern Bluefin Tuna	\$110.4 million	100.0%	8,322,000	100.0%
Marine Finfish	\$41.45 million	100.0%	2,919,000	100.0%
Oysters	\$34.5 million	72.3%	3,533,066	71.7%
Mussels	\$4.65 million	100.0%	2,112,725	100.0%
Abalone	\$9.9 million	64.6%	242,300	60.2%
Freshwater Finfish	\$2,000	<0.1%	220	0.1%
Marron and Yabbies	\$30,000	15.5%	533	14.1%
Other	\$13.1 million	100.0%	1,752,805	100.0%
TOTAL	\$214.15 million	90.0%	18,882,649	91.1%

2.3.1.2 Agriculture industry

In 2021-2022, the total value of agricultural output in the RDA Eyre Peninsula Region was \$1.265 billion, representing around 8% of South Australian output. International Exports were \$527 million, representing nearly 20% of South Australian Agriculture international exports. Agriculture employed 2,331 FTE roles in 2021-2022, being 8.5% of the State’s total (ID Community, 2023). The Industry Sector Analysis for the Eyre Peninsula Region during the 2021/2022 period is presented below in Table 2.3.

Table 2.3 Industry sector analysis

RDA Eyre Peninsula Region – Agriculture – Constant prices	2021/22		
Economic measure	RDA Eyre Peninsula Region	South Australia	RDA Eyre Peninsula Region as a % of South Australia
Employment (total)	2,095	27,743	7.6%
Employment (FTE)	2,331	27,460	8.5%
FTE to total employment ratio	1.11	0.99	0%
Output/Total Sales (\$m)	1,265.64	15,394.30	8.2%
Value add (\$m)	546.35	6,639.24	8.2%
Exports (\$m)	1,002.50	10,629.67	9.4%
Exports (domestic) (\$m)	475.57	7,959.33	6.0%
Exports (international) (\$m)	526.93	2,670.34	19.7%
Imports(\$m)	64.46	3,375.61	1.9%
Imports (domestic) (\$m)	63.10	3,356.75	1.9%
Imports (international) (\$m)	1.35	18.87	7.2%

RDA Eyre Peninsula Region – Agriculture – Constant prices	2021/22		
Economic measure	RDA Eyre Peninsula Region	South Australia	RDA Eyre Peninsula Region as a % of South Australia
Local Sales (\$m)	263.14	4,764.63	5.5%

Source: National Institute of Economic and Industry Research (NIEIR) . Compiled and presented in economy.id by.id (informed decisions). Data are based on a 2020/21 price base for all years. NIEIR-ID data are inflation adjusted each year to allow direct comparison, and annual data releases adjust previous years' figures to a new base year. Please refer to specific data notes for more information.

Agriculture across the Eyre Peninsula includes livestock (predominantly lamb as well as a small amount of beef and pork), wool production, and a range of cereal and broadacre crops. On average, the Eyre Peninsula region produces 40% of South Australia's wheat crop, 24% of the state's barley crop, and 22% of its canola (RDAEP, 2023). Agricultural production for the Eyre Peninsula Region in the 2020/2021 period is presented below in Table 2.4.

Table 2.4 Value of Agricultural Production in RDA Eyre Peninsula Region in 2020/21 (ID Community, 2021)

Commodity	\$
Cereal crops	520,047,895
Citrus fruit	932
Crops for Hay	14,564,261
Eggs	29,360
Grapes (wine and table)	3,841,346
Livestock slaughterings	71,361,742
Milk	36,707
Nurseries & cut flowers	304,487
Other broadacre crops	138,682,862
Other fruit	753
Vegetables	47,375
Wool	51,769,535
Agriculture – Total Value	800,687,255

Source: Australian Bureau of Statistics, Value of Agricultural Commodities Produced, Australia, 2020/21. Cat. No. 7503.0 Please refer to specific data notes for more information

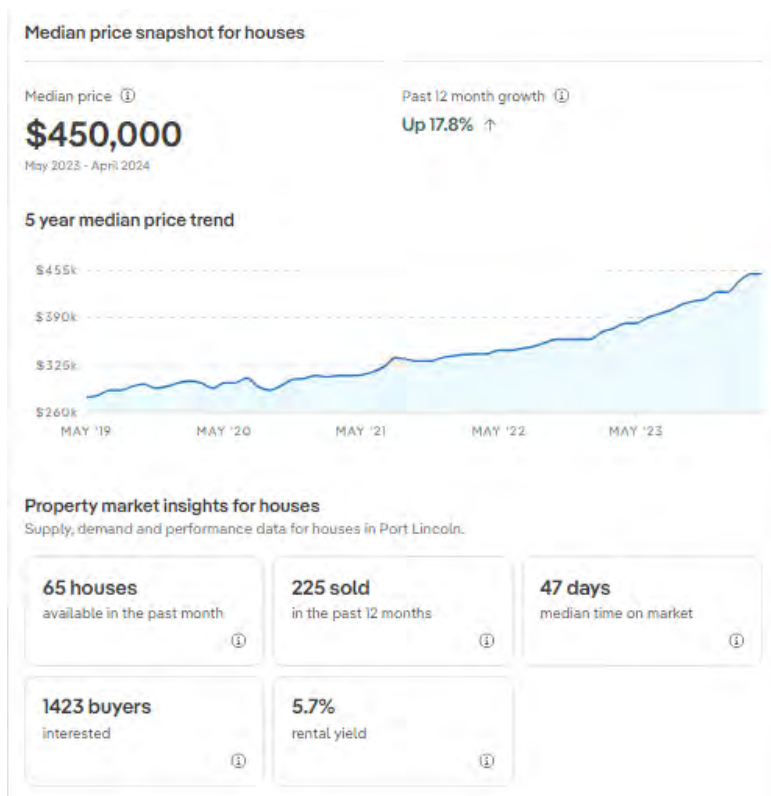
2.3.2 Housing and accommodation

In City of Port Lincoln, 58% of households were purchasing or fully owned their home, 23.6% were renting privately, and 8.5% were in social housing in 2021 (ID Community, 2021).

Data from realestate.com.au outlines that Port Lincoln, like much of Australia, has seen significant growth in median housing prices over the past three years. Median house prices have increased more than 17% in the 12 months to April 2024, and median unit prices have increased more than 13% in the same period (see Figure 2.3 and Figure 2.4).

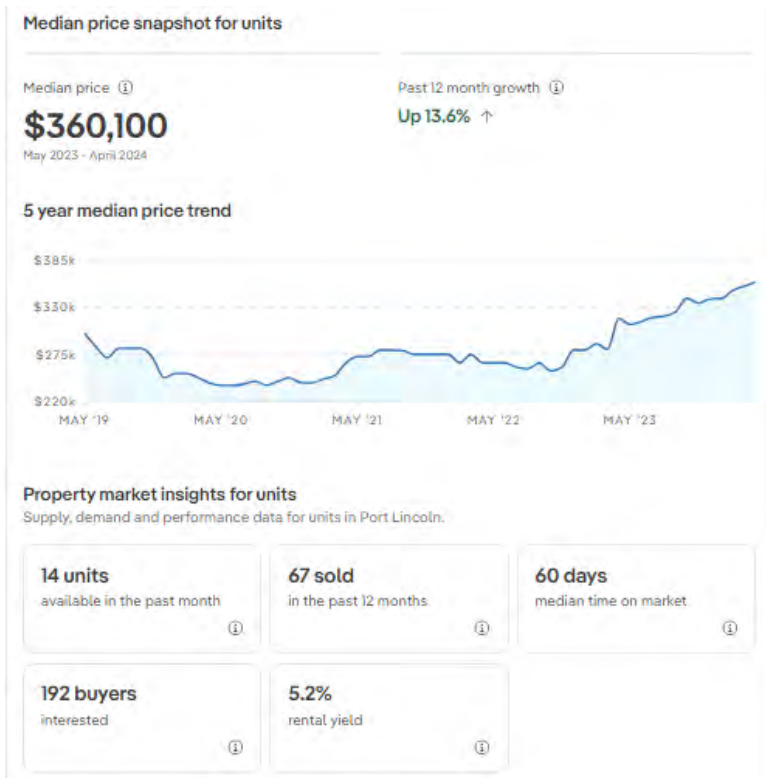
Rental prices have also increased, with unit rents up more than 16% in the 12 months to April 2024, and house rents also up more than 16% over the same period (see Figure 2.5 and Figure 2.6).

The data also indicates that demand is high, with many more interested buyers and renters than stock available.



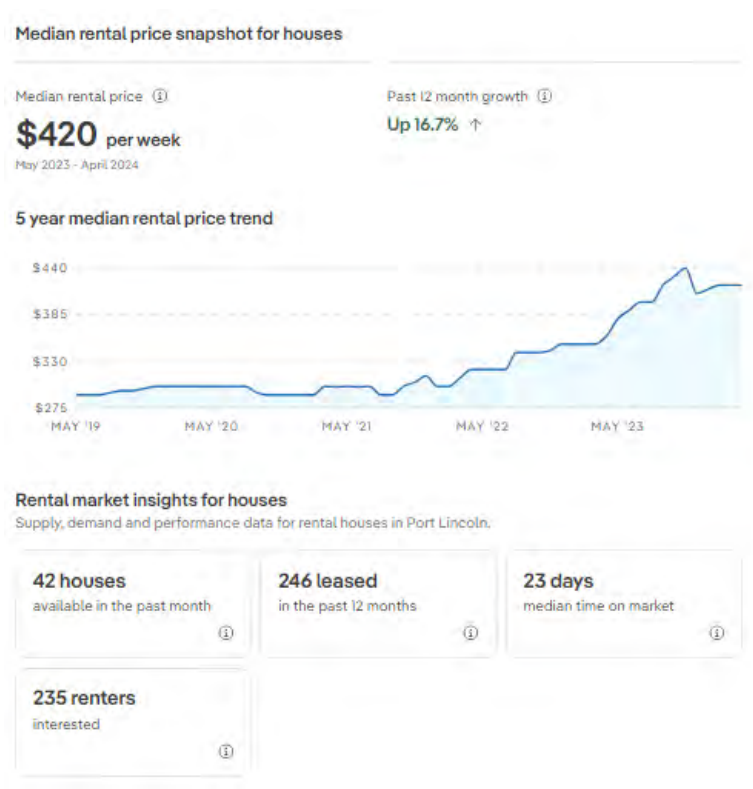
Source: *Realestate.com.au* – accessed 17 May 2024

Figure 2.3 Median price snapshot for houses Port Lincoln LGA



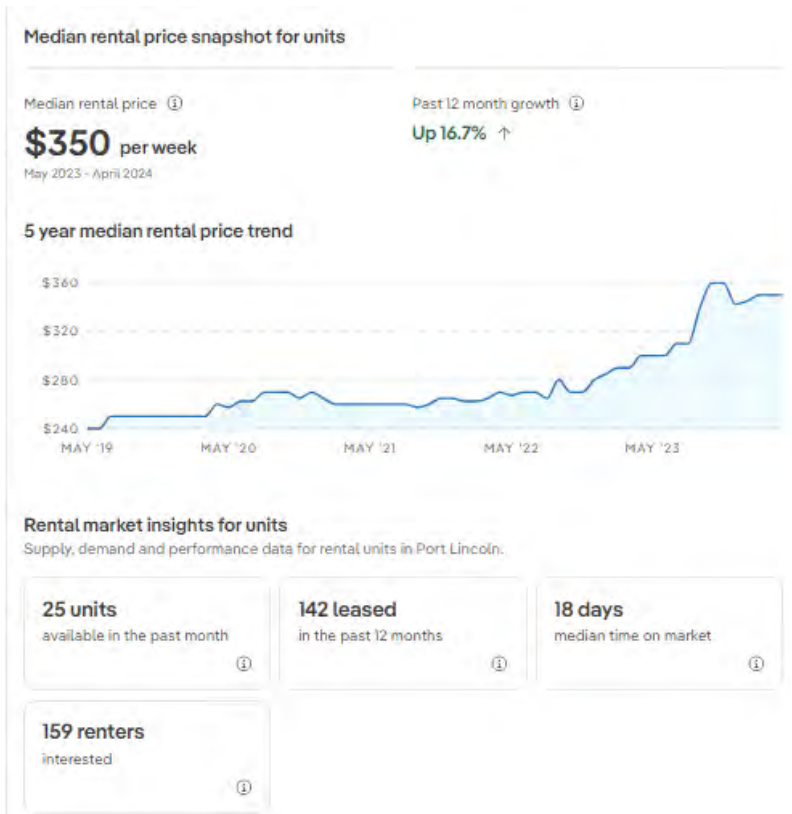
Source: *Realestate.com.au* – accessed 17 May 2024

Figure 2.4 Median price snapshot for units Port Lincoln LGA



Source: *Realestate.com.au* – accessed 17 May 2024

Figure 2.5 Median rental price snapshot for houses Port Lincoln LGA



Source: *Realestate.com.au* – accessed 17 May 2024

Figure 2.6 Median rental price snapshot for units Port Lincoln LGA

According to the Australian Housing and Urban Research Institute, Port Lincoln is likely to see significant population increases of older, low-income renters, with 40% growth predicted over the next 8 years (AHURI, 2023).

The City of Port Lincoln has recently commenced preparation of a Housing Strategy to address short and mid-term housing availability and affordability. The City of Port Lincoln noted housing in Port Lincoln is an issue across all strata, from social and affordable housing to mid-term/executive rental housing. The lack of mid-term rental housing is affecting businesses' ability to recruit suitable staff from outside the city and thus having a flow on effect on business development and investment (City of Port Lincoln, 2023).

In early 2023, the SA Government established the Office for Regional Housing to tackle the regional housing crisis, tasking it to facilitate the delivery of housing to attract and retain key workers in country areas.

Consultation has identified the needs in the Eyre Peninsula and Upper Spencer Gulf to support major projects such as the Hydrogen Jobs Plan in Whyalla and Port Pirie and the Northern Water Supply scheme, along with worker accommodation for the grain industry and the fishing industry in Port Lincoln and the Lower Eyre Peninsula. The SA Government has also fast-tracked changes to development regulations, removing red tape to allow temporary accommodation to be built for workers employed on major infrastructure projects in regional South Australia (Premier of South Australia, 2023).

2.4 Community and social infrastructure

2.4.1 Services and amenity

Port Lincoln offers a wide variety of major chain retailers such as Bunnings, Mitre 10, Stratco, Harvey Norman, Coles, Woolworths, Kmart, Cheap As Chips, Super Cheap Auto, major brand Car Sales, fuel, and repair centres/retailers, National Pharmacies, Priceline, Telstra, and OPSM. The area offers major fast food outlets such as McDonald's, Hungry Jack's, Wendy's, Subway, Domino's and KFC, as well as a wide variety of smaller takeaway businesses. A variety of independent retailers do business in Port Lincoln, especially within the categories of clothing retail and food and hospitality, with a number of fine dining seafood restaurants.

Port Lincoln is home to a variety of clubs and associations, primarily sporting and recreational with some social and hobby focused. The community centres, recreational facilities, parks and playgrounds provide a strong backdrop for holding club activities as well as recreational events and festivals promoting community cohesion. The area provides a range of accommodation offerings, as well as things to see and do. Further information on tourism in the region is provided in the Tourism Assessment undertaken for the Project 'PS137455-WSP-ADL-TOU-MEM-001 RevB'.

2.4.2 Health services in Port Lincoln and region

The Port Lincoln Hospital and Health Service is part of the Eyre and Far North Health Service. The hospital includes a modern 48 bed complex complete with obstetrics, renal dialysis, medium level chemotherapy and operating facilities, and an accident and Emergency Department open 24 hours a day. Patients can be admitted as private or public patients. There is also a community-based Mental Health service on the hospital site. The Port Lincoln Community Health Service works in partnership with the acute services and other providers to promote, maintain and restore the health and wellbeing of residents of Port Lincoln and the surrounding area (SA Health, 2023). The closest alternative hospital is in Tumby Bay, which provides emergency services, general medicine, diagnostic radiology and outpatient department. There is also a hospital in Cummins, with 11 beds, aged care beds, emergency, day surgery and palliative care services.

2.4.3 Transport infrastructure

According to Regional Development Australia (RDA), the limited capacity, condition and age of the Eyre Peninsula region's infrastructure is a major issue. Many of the region's development opportunities will not be realised without a substantial upgrade of utility, transport, community, and tourism infrastructure. This requires significant government and private sector investment (RDAEP, 2023). The RDA describes the region's transport infrastructure and its concerns as detailed below.

Road network

The road network is vast and is becoming a maintenance burden for Local Government. Strategic road improvements are needed to make the highway network safer and ensure that Local Government roads can accommodate increasing use by road trains and tourism vehicles.

Rail network

The isolated narrow gauge railway network is generally in poor condition, resulting in a declining use of rail for grain cartage. The subsequent growth in grain cartage by road has markedly increased heavy vehicle movement, magnified road maintenance costs, and raised community concerns about road safety. A corresponding growth in tourism caravans and recreational vehicle movement across the region has amplified these concerns.

The upgrade and connection of the narrow gauge railway system to the national standard gauge rail network, including a link to a Cape class port facility, is a high priority need to enhance access to national and international markets and improve the region's export capability.

Port infrastructure

Port Facilities at Thevenard, Port Lincoln and Whyalla provide the main domestic and international export hubs for regional product and commodities. Each has functional issues that are hindering export capability and increasing export costs. These ports also do not have container capability. Container shipping infrastructure is also needed to provide new value-adding business, employment, export and product development opportunities for the region’s primary production industries.

Airports

The airports at Port Lincoln, Whyalla and Ceduna have regular passenger transport (RPT) services, with two carriers (Qantas and Rex) providing RPT at Port Lincoln and Whyalla. As well as servicing the regional community, the airports are important regional gateways for tourists and business travellers.

The Port Lincoln Airport is the busiest regional airport in South Australia, averaging over 190,000 passengers per annum. 40% of passengers are business travellers. The facility also provides an important seafood export hub for fishing and aquaculture industries. The Port Lincoln Airport was substantially upgraded in 2013 with a new terminal building and aligned infrastructure costing \$13.4 million.

2.4.4 Education and training in Port Lincoln and region

Port Lincoln’s education facilities includes 5 pre-schools and kindergartens, 3 public primary schools, a public high school, Port Lincoln Special School (Reception-Year 13), and 2 private schools (Reception-Year 12).

The Lower Eyre Peninsula LGA has 3 pre-schools, 2 public primary schools and 1 Area School in Cummins (R-Y12). Tumby Bay LGA has 1 kindergarten, 2 public primary schools and 1 Area School (R-Y12).

TAFE SA offers a number of courses at its Port Lincoln Campus. The Australian Maritime and Fisheries Academy also has a campus in Port Lincoln, providing industry-based training for senior secondary school students. Flinders University’s Lincoln Marine Science Centre is located in the town and offers research and tertiary education in marine biology and ecology, oceanography and aquaculture. The University of South Australia’s Whyalla campus (approximately a 3-hour drive from Port Lincoln) is the region’s only general university facility.

2.4.5 Visitors and attractions

Eyre Peninsula is ranked 4th overall in the comparative importance of tourism across South Australia’s regions and 3rd in overall industry size, supplying 4.6% of the state-wide contribution to tourism (Port Lincoln City Council, 2018).

Ninety-six per cent of visitors come from the Domestic market and 4% are International. The strongest market is leisure and visiting friends or relatives (VFR), with 68% of the domestic market fitting into this category (Port Lincoln City Council, 2018).

The South Australian Tourism Commission (SATC, 2022) reported 127 attractions, 29 tours and 17 events on the Australian Tourism Data Warehouse Tourism Listings for the Eyre Peninsula. Table 2.5 provides a selection of these key attractions and tours in Port Lincoln and the Southern Eyre Peninsula.

Table 2.5 Port Lincoln and Southern Eyre Peninsula key attractions and tours

Location	Attractions and key events	
Port Lincoln	<ul style="list-style-type: none"> — Port Lincoln Visitor Information Centre — Mill Cottage Museum — Port Lincoln Railway Museum — Lincoln Cove — Boston Bay — Port Lincoln Cup — Calypso Star Charters Shark Cage and Sea Lion Tours 	<ul style="list-style-type: none"> — Rodney Fox Shark Expeditions — Adventure Bay Charters Port Lincoln Fishing Charters — Marina Cruises — Winter Hill Lookout — Axel Stenross Maritime Museum — Port Lincoln Long Lunch — Winter Hill Lookout — Port Lincoln Leisure Centre

Location	Attractions and key events	
Southern Eyre Peninsula	<ul style="list-style-type: none"> — Sleaford Mere Conservation Park — Sleaford Bay — Thorny Passage Marine Park — Fishery Beach — Sleaford Bay Retreat — Coffin Bay National Park — Coffin Bay Oyster Farm Tours — Lincoln National Park — Mikkira Station (pastoral lease operating a sheep station that offers camping, day trips, koala and bird encounters) — Sunset Charters Coffin Bay — Whaler’s Way and Whaler’s Way Lookout 	<ul style="list-style-type: none"> — Lone Pine Lookout — Mary Ellis Wreck Beach — Greenly Beach — Glen-Forest Tourist Park and Vineyard — Almoda Beach — Memory Cove Wilderness Protection area — Tumby Bay — Tumby Bay National Trust Museum — Colour Tumby Street Art Festival — Salt Festival

In 2023, the most popular activity for domestic travellers when visiting the Eyre Peninsula was to eat out at a restaurant or cafe (SATC, 2023). Other activities when undertaken by travellers included visiting friends or relatives, visiting wineries, sightseeing, bushwalking, visiting national parks, and going to markets.

At year end December 2023, the total amount of visitor expenditure in the Eyre Peninsula was \$591 million, with tourism-related employment in the region made up of 700 indirect and 2,100 direct jobs (with one in 13 jobs in the Eyre Peninsula supported by the tourism industry) (SATC, 2023).

This result achieved 100 per cent of the Eyre Peninsula’s 2025 target of \$397 million and 100 per cent of its 2030 target of \$500 million (SATC, 2023).

In 2021-2022, the Gross Value Added (GVA) of the Eyre Peninsula tourism industry was approximately \$107 million and \$96 million in direct and indirect tourism and \$203 million in total tourism GVA (SATC, 2023). Gross Regional Product (GRP) was \$116 million and \$123 million in direct and indirect tourism GRP and \$240 million in total tourism GRP (SATC, 2023).

2.5 Community cohesion and values

The Lower Eyre Peninsula community places high value on the pristine coastal amenity, environment and way of life (within a regional setting), including its conservation. The marine and land environment is highly valued and can form a strong part of local identity, as well as the way the region functions and why. Much of what the locals enjoy about the region – the views, environment, industry, food, recreational activities (including swimming with marine life and fishing), opportunities for work (i.e. eco-tourism, agriculture and fishing industries) stem from the natural environment the townships and region are set in. People are interested in the environment’s wellbeing and do not want to see detrimental impacts.

The community values preserving what it has, and opportunities to grow – hence the receptiveness of water security and improved water quality by means of a desalination plant. The effects of irregular weather and climate change are seen, and impacts are felt within the region (i.e. agriculture, recharging of underground aquifer etc.). A high value is placed on the natural environment as when the environment suffers, so can dependent industry (aquaculture, agriculture, tourism etc.). The community protects what it values. The proposed Project is perceived as an opportunity to expand industry in the region, but it could also act as a gateway for other industries (such as mining) to expand or develop.

The local community enjoys coming together in diverse ways, evident in the number and variety of current clubs and associations within Port Lincoln, including recreational and sport clubs. The area’s cohesiveness can be seen to be strong when coming together to celebrate (events, festivals, even local clubs and recreation. The community know the area’s rich natural environment is worth sharing, and the region draws large numbers of tourists annually, many through festivals and events. These events bring the community together and provide another platform to share it with outsiders by welcoming them in and hosting them during their stay (while positively injecting local economies). These events are major drawcards to the region where visitors from outside the peninsula (and country) come to enjoy the region’s abundant offerings including the relaxing coastal views.

3 Social impacts and assessment

The following section details the identified impacts and benefits to the local Port Lincoln community and greater Eyre Peninsula region that could be expected during the construction and operation of the proposed Project.

3.1 Social benefits

Construction and operation of the Project is expected to create some temporary and long-term benefits. Table 3.1 summarises the key benefits the Project will have on the local and regional community.

Table 3.1 Social benefits during construction and operation

Impact Category	Potential Impact	During construction (temporary)	Post construction/plant operation	Evaluation Rating
Livelihoods	Positive impact to community health and wellbeing and livelihoods through the security of water and provision of a long term, sustainable solution to water supply for the populations, economic industries, and tourism of the Eyre Peninsula.	This potential impact is not applicable to the construction phase of the Project.	<p>Securing fresh water is a high priority for Eyre Peninsula communities and is key to achieving many of the objectives of strategic plans for the region. The Project delivers a long-term solution, improving the area’s water security, but also maintains their current water resource as it is. The water from the Project will be used to supplement groundwater from the Uley South Basin and the River Murray and will allow the aquifers time to recharge (SA Water, 2023). The Project also has the potential to expand to 8 GL/annum of output in the future.</p> <p>The Project not only diversifies the region’s water sources but provides a long-term climate-independent solution for an area that has experienced several consecutive years of low rainfall and reduced natural recharging of groundwater basins. Parts of the Eyre Peninsula have been severely drought-affected in recent years and the plant will future proof the Peninsula’s water supply (SA Water, 2023). The Project not only provides relief and assurance for the regional area, it is considered the best option to ensure a sustainable, reliable and safe drinking water supply into the future.</p>	<p>Construction – N/A</p> <p>Operation – High Positive</p>

Impact Category	Potential Impact	During construction (temporary)	Post construction/plant operation	Evaluation Rating
Livelihoods	Improved regional and individual economic outcomes, job creation and training leading to improved livelihoods, mental health outcomes and community wellbeing.	The Project will directly create jobs and training opportunities in the Port Lincoln region through construction operation and maintenance. The Project is seeking to maximise the number of Port Lincoln residents employed to undertake the construction, however, it is anticipated that the workforce may require augmentation with a fly in/fly out (FIFO) or drive in /drive out (DIDO) workforce, who would still drive economic benefits in the region through use of local services and businesses when they are in Port Lincoln. There is expected to be up to 150 construction personnel across the 12-month construction program. This leads to improved wages and salaries and has positive effects on the way people live.	<p>While there will be significantly less fulltime jobs generated during the operation, there is expected to be 5 operations and maintenance personnel, having long term positive livelihood impacts.</p> <p>The Project is also expected to support future economic growth and attract development in the Eyre Peninsula in agriculture, mining, manufacturing, renewables and tourism which the primary drivers for regional employment and economic growth.</p>	<p>Construction – High Positive</p> <p>Operation – Medium Positive</p>

Impact Category	Potential Impact	During construction (temporary)	Post construction/plant operation	Evaluation Rating
Livelihoods	Improved direct and indirect regional and individual economic outcomes through increase demand on goods and services lead to improved livelihoods, mental health outcomes and community wellbeing.	The Project is expected to generate considerable direct and indirect local and regional economic benefits through construction activities and indirectly through additional demand for goods and services in the areas of accommodation, hospitality and retail.	The Project is expected to create 5 fulltime positions onsite and during operation there will likely additional local business generation as a result of the operation of the plant such as general maintenance and cleaning services.	Construction – High Positive Operation – Medium Positive
Health and Wellbeing	Improved water supply and quality resulting in improved wellbeing outcomes for the populations of the Eyre Peninsula.		The Project is expected to help reduce the region’s naturally occurring water hardness (which also leaves a chalky residue) and will likely improve the quality of the reticulated water for everyone on the Eyre Peninsula (SA Water, 2023). It should be noted that the water produced will be mixed with groundwater from the Uley South Basin before distribution in the Eyre Peninsula reticulated water network.	Construction – not applicable Operation – High Positive

3.2 Social impacts

Construction and operation of the Project is expected to create some temporary and long-term impacts. Table 3.2 summarises the identified key unmitigated impacts, the extent and magnitude of the impact and identifies specific affected communities and stakeholders.

Table 3.2 Social impacts during construction and operation

Impact Category	Potential Impact	During construction (temporary)	Post construction/plant operation	Unmitigated Evaluation Rating
Health and wellbeing	Construction and operation noise could result impacts to wellbeing as result of changes in the noise environment.	<p>Noise impacts to surrounding residential and recreational areas from machinery on site, additional traffic, and potential night works, particularly for the proposed overhead transmission line that runs through residential areas and past Navigator College.</p> <p>Construction activities may have the potential to exceed noise management levels where work is located close to nearby residential properties and sensitive receivers, however, will be temporary in nature and considered to have a moderate short-term impact. Construction activities at Billys Light Point site and will have relatively minor impact.</p>	<p>Ongoing noise associated with Project operation particularly from evaporative coolers during night period, impacting the nearest residential locations to the site.</p> <p>Without mitigation measures, some properties on Sheoak Court and Eucalyptus Drive are predicted to experience night time noise levels above the Noise Policy criteria.</p> <p>With mitigation, these noise levels would be reduced to comply with the Noise Policy. Further monitoring of noise will occur during operation and further mitigation considered if required.</p> <p>The operation of the Project will create a change in the noise environment that is expected to be audible above background during low ambient noise periods at the nearest residential locations, even though the level complies with the Noise Policy with proposed mitigation implemented.</p> <p>Operation of the marine intake and outfall pump station is also predicted to create audible noise around Billy Lights Point and boat ramp for recreational users of this area.</p>	<p>Construction – Medium</p> <p>Operation – Medium</p>

Impact Category	Potential Impact	During construction (temporary)	Post construction/plant operation	Unmitigated Evaluation Rating
Surroundings	<p>Traffic impacts may change the way people move around, potentially causing a diminished sense of safety when driving, riding or walking around.</p>	<p>Traffic movements generated by the Project construction activities will be distributed across the local road network. These will be concentrated closer to the Project Site along Ravendale Road, Marina Drive, and St Andrews Drive. During construction, there is anticipated to be up to 15,000 light vehicle movements to transport personnel to and from site, around 10,000 heavy vehicle movements and around 25 oversized deliveries.</p> <p>Passenger car trips and buses and minibuses transporting construction personnel to and from the Site will occur daily but will represent only a small proportional increase in daily traffic volumes on most roads. The volume of car and bus trips will have a minor impact on the performance of the road network.</p> <p>Truck movements are expected to be around 30-80 per day, with concrete deliveries along Marina Drive and St Andrews Drive expected to increase traffic by 1.2-2.4%.</p> <p>Total traffic generation is not expected to have any significant impacts on traffic operations, although it is expected to be noticeable to the community.</p> <p>5 km of 7 km buried pipeline will be within the road reserve, creating potential traffic impacts during construction, particularly in residential streets.</p> <p>The key social impact to the Port Lincoln community and residential areas closest to the site could include, delays at some intersections, driveways or where</p>	<p>In operation, there is expected to be around 5 operational staff and occasional maintenance personnel, which would generate mainly passenger car trips with occasional utility or small trucks, which may generate some additional traffic along St Andrews Drive which is a growing residential area. However, the low numbers of staff travelling to the site is considered to have low to negligible impact.</p>	<p>Construction – Medium</p> <p>Operation – Low</p>

Impact Category	Potential Impact	During construction (temporary)	Post construction/plant operation	Unmitigated Evaluation Rating
		<p>traffic management is required for large loads. Increased traffic could also increase safety risk through changed traffic conditions, and more heavy vehicles on residential streets. The potential impact to residents would be mitigated through traffic management plans. However, these are considered temporary throughout the duration of the construction period.</p>		
Surroundings	<p>Potential generation of dust, air pollutants and odour creates amenity impacts to local residents.</p>	<p>Construction would generate dust and air pollutants from earth moving activities, other construction activities and vehicle emissions and movements on unsealed surfaces. The risk of dust soiling or impacts to human health at sensitive receivers on St Andrews Drive is considered low and mitigation measures would be implemented to ensure residual dust impacts would not be of significance. Vehicle emissions would also be adequately managed through mitigation measures.</p> <p>Marine construction activities such as tunnel boring and dredging can lead to odour and dust emissions, particularly if stockpiled on land. With mitigation measures in place, the risk of impacts is negligible to low.</p>	<p>During operation, the largest potential impact is odour emissions from potential organic material collected at screening/trapping from the water intake, if it is not properly managed, creating potential amenity impacts at the recreational areas around Billy Lights Point. However, with mitigation measures including proper storage and disposal, the residual risk of this impact is low. Other potential impacts include venting from chemical storage tanks, however the risk of this impact is low through mitigation measures such as the installation of scrubbers on the vents. The risk of dust impacts during operation would also be negligible with appropriate mitigation measures implemented.</p>	<p>Construction – Low Operation – Low</p>
Surroundings	<p>Visual impact of construction and the location of the placement of the RO desalination plant and the</p>	<p>During the construction phase, there will be temporary changes to visual amenity for community in areas near Windsor Avenue and Greyhound Road from earthworks, with the presence of construction equipment and increase in the number of people and</p>	<p>The potential for visual amenity impact comes from new permanent facilities and transmission infrastructure. The new permanent facilities are not expected to create a visual impact from sensitive</p>	<p>Construction – Medium Operation – Medium</p>

Impact Category	Potential Impact	During construction (temporary)	Post construction/plant operation	Unmitigated Evaluation Rating
	associated above ground infrastructure	vehicles being visible to passersby. At the RO desalination plant site, the short-term use of a crane may create a change in visual amenity. Construction-related traffic is expected to be visually noticeable to the community, as described in the traffic impacts outlined above. These changes are temporary and low impact.	receiver locations due to dense vegetation that surrounds the site and distance from receivers. The overhead transmissions line will be on poles 11 m to 13 m above ground level and will be visible at locations on Windsor Avenue and Greyhound Road. At Windsor Avenue, the visual impact is considered to be slightly adverse to moderately adverse, and the lines and poles will be prominent and obvious to people using this road. At Greyhound Road, while the lines and poles will be highly visible in the landscape, visitation to this location is low and infrequent, and the visual impact is expected to be moderately adverse in the immediate vicinity and slightly adverse to no change within the wider visual landscape.	
Surroundings	Loss of vegetation at RO desalination plant site and along the transfer main and transmission line route in an area of significant vegetation may cause community stress about loss of habitat and environmental impacts	The Project is expected to impact on approximately 23.39 ha of native vegetation. The largest areas of impact are at the proposed desalination plant (5.0 ha) and along the corridor for the transfer main and SA Power Networks power line between proposed RO desalination plant and Greyhound Road (9.3 ha). Residual impacts will be offset by the rehabilitation of vegetation on SA Water land at Uley. While the loss of vegetation is not likely to be highly visible to receivers, the loss of vegetation through this area is likely to cause concern within the community about habitat loss and environmental impact.		Construction – Medium

Impact Category	Potential Impact	During construction (temporary)	Post construction/plant operation	Unmitigated Evaluation Rating
Way of life	Temporary Alteration of local access to the Billy Lights Point may result in changes in usage patterns and impact a sense of place for community and trail users.	Temporary Reduced access to walking path around Billy Lights Point while construction is underway, particularly of marine infrastructure and the marine intake and outfall pump station, may impact recreational users of this area and decrease enjoyment and amenity.	Following construction it is anticipated that there will no impact on the walking path around Billy Lights Point. SA Water are working with Council to identify whether we can extend the walking path.	Construction – Medium
Livelihood	Potential impact to the marine environment	There is expected to be a medium risk to the marine environment from habitat disturbance and removal and a low risk of impacts from sediment and impacts from noise and/or vibration during installation of the marine intake and outfall pipelines. While mitigation measures will be implemented to minimise or avoid impacts, there is a low possibility that impacts either real or perceived flow on to the community as a result of the high community value on the pristine coastal amenity of the area, and the aquaculture industry that accounts for 91% of South Australia’s overall aquaculture output.	There is expected to be a very low risk of impacts to the marine environment during operation, including from elevated salinity, reduction in dissolved oxygen, elevated concentrations of chemicals, entrainment of organisms during intake, and interruption to natural hydrodynamic coastal processes. While the current design and modelling indicates the minimum dilution targets are met, and further assessments and ongoing monitoring will be undertaken, there is the potential for these risks to create community impacts through real or perceived impacts to recreation, the community’s high value on the pristine coastal amenity of the area, and the aquaculture industry that accounts for 91% of South Australia’s overall aquaculture output.	Construction – Medium Operation – Low
Accessibility	Influx of construction workforce may increase the use and therefore place pressure on accommodation, housing, local services and infrastructure.	There is expected to be some pressure on housing from increased workforce in Port Lincoln, expected to peak at 150 people, in a climate of already limited supply. While the Project aims to employ as many local people as possible, there is expected to be workers who will move into the area to work on the	The operation period is expected to generate 5 fulltime positions and is unlikely to have any long-term impacts to accommodation, housing, services and social infrastructure.	Construction – Medium Operation – Low

Impact Category	Potential Impact	During construction (temporary)	Post construction/plant operation	Unmitigated Evaluation Rating
		<p>project or FIFO or DIDO. Section 2.3.2 outlines the increasing price of rental accommodation in Port Lincoln over the past 12 months, and additional people moving into Port Lincoln for the Project may put further pressure on affordability and availability of housing. This could impact vulnerable groups such as low-income owners, young people, single parents and Aboriginal people.</p> <p>There could also be impacts to the availability of short-term accommodation options which could impact local tourism industry.</p> <p>There is expected to be additional pressure on local services such as short-term accommodation, healthcare flight availability due to an increased workforce of up to 150 people during construction. This may create social impacts such as increased wait times for appointments and reduced level of service to local residents.</p>		
Health and Wellbeing	Disturbance of land previously used for fuel storage and unauthorised waste dumping may create contamination risks in the surrounding area	There is the potential that removal of soils and the nature of the Site as a historical bulk fuel storage may create perceived or real risks of contamination impacts to surrounding community during construction.		Construction – Low

Impact Category	Potential Impact	During construction (temporary)	Post construction/plant operation	Unmitigated Evaluation Rating
Community Values	Decrease in trust in SA Water decision- making	While there is strong support for a seawater desalination plant and SA Water has provided ongoing and significant consultation opportunities for the community and key stakeholders during the planning and development phase of this Project, there is a level of criticism from some sectors of the community regarding the decision to construct at Billy Lights Point. As a result, there is level of frustration and distrust in the decision making process which is likely to result in negative interactions and friction in the community and with key stakeholders during the construction period.	Ongoing community and stakeholder consultation during operation will be critical in addressing and monitoring of community concerns specifically to the coastal, marine and heritage environments	Construction – High Operation – High

4 Management, enhancement and mitigation measures

Table 4.1 and Table 4.3 summarise the recommended management, enhancement and mitigation measures. A residual social impact rating has been determined after implementation of the recommended mitigation or enhancement measure.

Table 4.1 Social benefits

Impact Category	Potential Impact	Benefit Enhancement Measure	Residual Rating
Livelihoods	Positive impact to community health and wellbeing and livelihoods through the security of water and provision of a long term, sustainable solution to water supply for the populations, economic industries, and tourism of the Eyre Peninsula.	Continued communication and engagement activities with the local community and stakeholders to highlight and promote the benefits and improvements of the Project.	Operation – High Positive
Livelihoods	Improved regional and individual economic outcomes, job creation and training leading to improved livelihoods, mental health outcomes and community wellbeing.	Prepare local employment and training plan to optimise the local employment benefits for the region both during construction and operation	Construction – High Operation – High
Livelihoods	Improved direct and indirect regional and individual economic outcomes through increase demand on goods and services lead to improved livelihoods, mental health outcomes and community wellbeing.	Prepare local industry participation plan to optimise the local employment benefits for the region. Continue engagement with local businesses and contractors through economic forums.	Construction – High
Health and Wellbeing	Improved water supply and quality resulting in improved wellbeing outcomes for the populations of the Eyre Peninsula.	Continued communication and engagement activities with the local community and stakeholders to highlight the benefits and improvements of the Project.	Operation – High Positive

Table 4.2 Social impacts during construction

Impact Category	Potential Impact	Management and Mitigation Measures	Residual Impact Evaluation
Health and wellbeing	Construction and operation noise could result in impacts to residents in the area as result of changes in the noise environment.	<p>Consult early with impacted neighbours including residents, the school and other sensitive receivers regarding potential impacts and mitigation measures.</p> <p>Monitor impacts and discuss options as needed with local residents including consideration of respite periods if necessary.</p> <p>Provide 24/7 phone number for community to contact the project team regarding any issues.</p>	Low
Surroundings	Changes to the way people move around, diminished sense of safety when driving, riding or walking around.	<p>Aim for deliveries to occur outside of peak traffic times in Port Lincoln wherever possible.</p> <p>Any oversized loads will be designed to account for road restriction in the Port Lincoln area and will have necessary permits and escorts (if required) in place.</p> <p>Delivering the large offshore intake structures via sea to be considered.</p> <p>Communicate truck routes and any changes to traffic conditions or access to residents, sensitive receivers, businesses and road users using appropriate tools such as face-to-face engagement, letter box drop, SMS technology, email and signage.</p> <p>Ensure truck operators use same local routes to build familiarity in the community of expected traffic conditions.</p>	Low
Surroundings	Potential generation of dust, air pollutants and odour	<p>Implement dust and odour suppression and mitigation measures in accordance with Environmental Management Plan.</p> <p>Consult early with potentially impacted neighbours regarding potential impacts and mitigation measures.</p> <p>Provide 24/7 phone number for community to contact the project team regarding any issues.</p>	Low
Surroundings	Potential visual impact of construction activities and the location of the desalination plant and the associated above ground infrastructure in coastal region	<p>Communicate these impacts to the community before construction commences and before vegetation clearance occurs, including the duration they will be experienced.</p>	Low

Impact Category	Potential Impact	Management and Mitigation Measures	Residual Impact Evaluation
Surroundings	Loss of vegetation at the RO desalination plant site and along the transfer main and transmission line route in an area of significant vegetation may cause community concern about loss of habitat and environmental impacts	<p>Consult with the community about the offset strategy/ Significant Environmental Benefit offset and keep updated with progress.</p> <p>Provide advance notice of when vegetation removal will be occurring.</p> <p>Ensure close monitoring of removal activities to ensure only designated vegetation is cleared.</p> <p>Identify opportunities to work with the community and local residents to revegetate areas as part of offset requirements</p>	Low
Way of life	Alteration of local access to the Billy Lights Point may result in changes in usage patterns and impact a sense of place for community and trail users.	<p>Advise community early regarding changes to access via appropriate channels such as social media, websites and advertisements to capture a wide audience who may use the area and provide appropriate warning signage and information on site.</p> <p>Consider alternative safe access arrangements if required.</p>	Low
Livelihood	Potential impact to the marine environment	<p>Communicate how impacts will be managed and avoided .</p> <p>Loop back with the stakeholders on how their concerns have been addressed.</p> <p>Share outcomes of further assessments and monitoring in a timely manner.</p> <p>Proactively develop a strategy and communicate with key stakeholders and aquaculture industry as to the nature of the plan in the unlikely situation of an adverse event.</p> <p>Ensure timely response and resolution to community concerns or complaints.</p>	Low
Accessibility	Influx of construction workforce may increase the use and therefore the pressure on housing, local services and infrastructure.	<p>Seek to maximise the number of Port Lincoln residents employed to undertake the construction.</p> <p>Ensure workforce planning includes consideration of accommodation and service provision needs and that these can be adequately supplied without detriment to the local community, and document in an accommodation strategy.</p>	Low

Impact Category	Potential Impact	Management and Mitigation Measures	Residual Impact Evaluation
Health and wellbeing	Disturbance of land previously used for fuel storage and unauthorised waste dumping may create contamination risks in the surrounding area.	<p>Ensure early and clear communication with neighbouring community about any identified contamination and how it is being managed safely.</p> <p>Provide advance notification of any clean up activities that will be visible to the neighbouring community.</p>	Low
Community Values	Decrease in trust in SA Water and government decision- making	<p>Prepare and implement a community engagement framework for implementation across the life of the Project, providing regular opportunities for community to be informed, including regular updates and reporting.</p> <p>Prepare and implement a community benefit strategy, to ensure the community can generate benefits from this significant investment in the region.</p>	Medium

Table 4.3 Social impacts post construction/project operations

Impact Category	Potential Impact	Management and Mitigation Measures	Residual Impact Evaluation
Health and wellbeing	Construction and operation noise could result in impacts to residents in the area as result of changes in the noise environment.	<p>Implement noise mitigation and management plan.</p> <p>Engage early with impacted receivers regarding potential impacts and mitigation measures.</p> <p>Provide 24/7 phone number for community to contact the project team regarding any issues.</p>	Low
Surroundings	Potential generation of dust, air pollutants and odour	<p>Maintain ongoing communications with the local community, including maintaining phone and email Contact channels.</p> <p>Ensure timely response and resolution to community concerns or complaints.</p>	Low
Surroundings	Possible visual impact of construction and the location of the placement of the RO desalination plant and the associated above ground infrastructure	Incorporate design solutions for materials and finishes to reduce visual impact in the environment and communicate these solutions to the community.	Low

Impact Category	Potential Impact	Management and Mitigation Measures	Residual Impact Evaluation
Livelihood	Potential impact to the marine environment	<p>Engage with relevant stakeholders in developing the Operational Environmental Management and Monitoring Plan.</p> <p>Communicate how impacts will be managed and provide opportunities for information transfer with industry, Council and recreation groups.</p> <p>Share outcomes of monitoring in a timely manner.</p> <p>Ensure timely response and resolution to community concerns or complaints.</p>	Low
Community Values	Decrease in trust in SA Water and government decision- making	<p>Implement an Operational Communications Plan to ensure ongoing communications with the community throughout operations.</p> <p>Ensure timely response and resolution to community concerns or complaints.</p>	Medium

5 Conclusion

This report provides the results of an SIA for the Eyre Peninsula Desalination Plant Project. The Project has been assessed as part of the development application and as such the combined effects have been considered throughout this report.

This report contains a description of the existing social baseline conditions for local and regional areas potentially affected by the Project, an assessment of the potential likelihood and magnitude of the predicted social impacts on those communities during the construction and operation and includes recommended mitigation and enhancement measures associated with each identified social impact or benefit.

The potential positive social benefits expected during construction and operation of the Project are:

- Increased employment and training opportunities for residents in Port Lincoln and surrounding communities on the Eyre Peninsula.
- Increased local procurement and business opportunities.
- Benefits of water security to health and wellbeing and livelihoods through the facilitation and growth of key industries.
- Improved water quality resulting in enhancements to health and wellbeing.

Potential negative social impacts were identified and assessed for construction and operation of the RO desalination plant. There is significant community concern regarding the Project and site location, particularly impacts to the marine environment and consultation processes. The potential for a decrease in community trust in SA Water and government decision-making was identified as a High negative social impact without mitigation, which would be reduced to a residual impact of Medium if mitigation measures are implemented. The level of residual impact of all other potential construction and operational impacts with mitigation measures implemented is Low.

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Appendix W Tourism Assessment



Memo

To: SA Water Corporation
From: Alison Boston
Subject: Eyre Peninsula Desalination Plant Project | Tourism Assessment
Our ref: PS137455-WSP-ADL-TOU-MEM-001 RevB
Date: 31 May 2024

1. Legislative and policy requirements

The following pieces of legislation are relevant to the tourism context of the proposed Eyre Peninsula Desalination Plant Project:

- *Planning, Development and Infrastructure Act 2016*

Through the assessment pathway, under Section 131 of the *Planning, Development and Infrastructure Act 2016* (PDI Act), the application will be publicly notified for a period of at least 15 days, seeking submissions from the public. Additionally, pursuant to Section 131 (13), there are no rights of appeal against Minister's the decision on the application.

- *Aboriginal Heritage Act 1988*
- *Environment Protection Act 1993 (including policies under this Act)*
- *Environment Protection Biodiversity Conservation Act 1999*
- *Heritage Places Act 1993.*

2. Assessment methodology

This report establishes a baseline summary of the significance of tourism to Port Lincoln and the Southern Eyre Peninsula as part of the wider regional area of the Eyre Peninsula, for the impact assessment of SA Water's proposed Eyre Peninsula Desalination Plant Project (the Project). A desktop assessment using both qualitative and quantitative resources was completed to assess the existing significance of tourism in the area and the potential impacts that the project may cause to the value of tourism and the industry during construction and operation of the proposed Project.

The assessment was undertaken using the following sources of information:

- Statistical information from Regional Development Australia Eyre Peninsula (RDAEP), South Australian Tourism Commission (SATC), and Tourism Research Australia (TRA)
- Desktop review of social service providers' websites including the District Council of Lower Eyre Peninsula and City of Port Lincoln
- Review of the role of the tourism industry and its significance to Port Lincoln, the Southern Eyre Peninsula and the Eyre Peninsula.

Where potential impacts are considered to have some impact, management and mitigation measures are proposed.

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WSP acknowledges that every project we work on takes place on First Peoples lands. We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.



2.1 Limitations and assumptions

For the tourism assessment, consideration of cultural heritage has been excluded. At the time of this assessment, the Aboriginal Cultural Heritage Assessment was not available for review. Aboriginal cultural heritage matters for the Project will be managed under a Section 21/23 process under the *Aboriginal Heritage Act 1988*.

3. Alternative sites considered

Through broad engagement with the Eyre Peninsula community in 2007, *SA Water's Long Term Plan for Eyre Region (2008)* identified seawater desalination as the preferred option to secure the region's drinking water supply for the long term. Two sites in Sleaford were thoroughly assessed prior to 2021, when SA Water announced a new preferred site of Billy Lights Point in Port Lincoln. Concern among the community and local aquaculture stakeholders regarding potential impacts to the marine environment adjacent to Billy Lights Point led to the then government announcing a 12-month pause on the project, to allow SA Water to conduct additional marine monitoring and data collection as well as greater engagement with key stakeholders and the local community.

Throughout 2022, SA Water undertook an independently-led and facilitated site selection process, with the Eyre Peninsula Desalination Project Site Selection Committee (SSC) consisting of representatives from key sectors including aquaculture, local business, and local government. The SSC was tasked with recommending a viable alternative site to SA Water and the South Australian Government for a desalination plant on the Eyre Peninsula. The SSC's process began with more than 20 sites grouped into five discrete precincts across the Eyre Peninsula: Western precinct (the west coast of the peninsula); Southern precinct (the southern tip of the peninsula); Port Lincoln precinct; North Shields precinct (near Port Lincoln Airport); and Northern precinct (between Tumbly Bay and Port Neill).

Through a structured assessment process, the SSC eliminated the Western precinct and the Port Lincoln precinct from consideration – however, the Billy Lights Point site within the Port Lincoln precinct was retained as a base case site for comparison. Through further ranking and elimination of sites, the SSC determined a shortlist of sites which included Point Boston, Shoal Point, Sleaford West (the west coast of Sleaford Bay), and Sleaford North (to the west of Sleaford Mere at the top of Sleaford Bay). At its 12th meeting on 8 August 2022, the SSC went through a multi-criteria analysis process to determine its final site rankings, with a variation of the Sleaford West site ultimately recommended to SA Water and the government for further assessment and consideration.

Following the recommendation, SA Water's project team conducted site investigations at Sleaford West to develop a preliminary design and a cost estimate. These investigations found a number of challenges and issues, including complexity of marine construction, extremely hard granite, a rare geological formation, rare and protected flora, areas of significance to the Traditional Owners, and a significantly higher cost to construct than the Billy Lights Point site. Further to the challenges at Sleaford West, SA Water have noted several factors that support Billy Lights Point being the preferred site for a desalination plant, such as its proximity to the existing water and electricity networks, the ability to expand the capacity of the desalination plant while minimising the visual and environmental footprint, and the location being industrial-zoned land that is relatively sheltered and flat.

4. Existing conditions

The local and regional context for the purposes of this assessment is focused on the value of tourism in Port Lincoln and the Eyre Peninsula region. This region is reported on annually for its significant contributions to the South Australian economy as a result of its tourism outputs.

4.1 Port Lincoln and the Southern Eyre Peninsula

4.1.1 Port Lincoln

Port Lincoln is the largest regional city in the Eyre Peninsula. It is situated on the shore of Boston Bay east of the Spencer Gulf. It is the largest city in the West Coast region and is located approximately 280 kilometres from the State's capital city of Adelaide. Port Lincoln is a major commercial and tourism hub in the Southern Eyre Peninsula.

The Port Lincoln Airport services the locality and the wider Eyre Peninsula region. It is the busiest regional airport in the State as a result of its 16,000 aircraft movements and visits from approximately 190,000 passengers annually, with up to 24 scheduled daily passenger flight movements (District Council of Lower Eyre Peninsula, 2023).

The area is known for its white sandy beaches, clear blue water, seafood, wine and craft beer and is an attractive destination for domestic and international tourists to the Southern Eyre Peninsula region (Port Lincoln City Council, 2018). It is referred to as the seafood and aquaculture capital of Australia (RDAEP, 2023).

Tourists and visitors are attracted to the area because of the unique recreational activities and nature-based experiences available. These activities include:

- cage diving with great white sharks
- swimming with sea lions and leafy sea dragons
- recreational fishing including fishing charters
- walking and walking trails in the Lincoln National Park.

Other water-related recreational activities include yachting, windsurfing, kayaking, kite surfing and stand up paddle boarding in sheltered and unsheltered (surf) waters (RDAEP, 2023).

Land-based recreational activities include museums such as maritime and railway, encounters with koalas and kangaroos, 4WD tours, golf, go-karting and horse racing (RDAEP, 2023).

4.1.2 Southern Eyre Peninsula

In addition to the City of Port Lincoln, the Southern Eyre Peninsula includes the council areas of District Council of Lower Eyre Peninsula and District Council of Tumby Bay.

Key tourist hotspots in the region include:

- Coffin Bay: popular holiday location, culinary tourist spot for oysters, recreational activities (fishing, sailing, swimming, kayaking, water skiing and diving), walking trails and wildlife of the Coffin Bay National Park.
- Tumby Bay: popular holiday location, recreational fishing and other water activities, historic buildings, the marina, museums and art galleries.
- Sleaford: an area frequently visited by locals and tourists for its heritage, conservation parks and marine wildlife including Sleaford Mere Conservation Park, Thorny Passage Marine Park and Fishery Bay Whaling Station.
- Cummins: the Eyre Peninsula's agricultural hub with local museums and caravan and camping options.

4.1.3 Tourism development

Eyre Peninsula is ranked 4th overall in the comparative importance of tourism across South Australia's regions and 3rd in overall industry size, supplying 4.6% of the state-wide contribution to tourism (Port Lincoln City Council, 2018).

Ninety-six per cent of visitors come from the Domestic market and 4% are International. The strongest market is leisure and visiting friends or relatives (VFR), with 68% of the domestic market fitting into this category (Port Lincoln City Council, 2018).

City of Port Lincoln in partnership with District Council of Tumby Bay and District Council of Lower Eyre Peninsula developed the *Port Lincoln and Southern Eyre Peninsula Tourism Strategy 2018 – 2028* to enhance the Southern Eyre Peninsula as a tourism destination. The strategy includes a number of focus areas to support tourism growth in the southern region for strong sustainable tourism and regional economy (Port Lincoln City Council, 2018).

The Strategy's areas for development include:

- visitor services networks
- event tourism (festivals)
- heritage tourism (farming, fishing, military and service history)
- Aboriginal tourism (cultural knowledge, assists and resources, enhance visitor demand)

- nautical tourism (sailing)
- cruise tourism
- educational tourism
- nature-based tourism.

Key attractions in the Port Lincoln and Southern Eyre Peninsula are provided in Section 4.2.

4.2 Key attractions, tours and events

The South Australian Tourism Commission (SATC, 2023) reported 133 attractions, 29 tours and 16 events on the Australian Tourism Data Warehouse Tourism Listings for the Eyre Peninsula.

Table 4.1 provides a selection of these key attractions and tours in Port Lincoln and the Southern Eyre Peninsula.

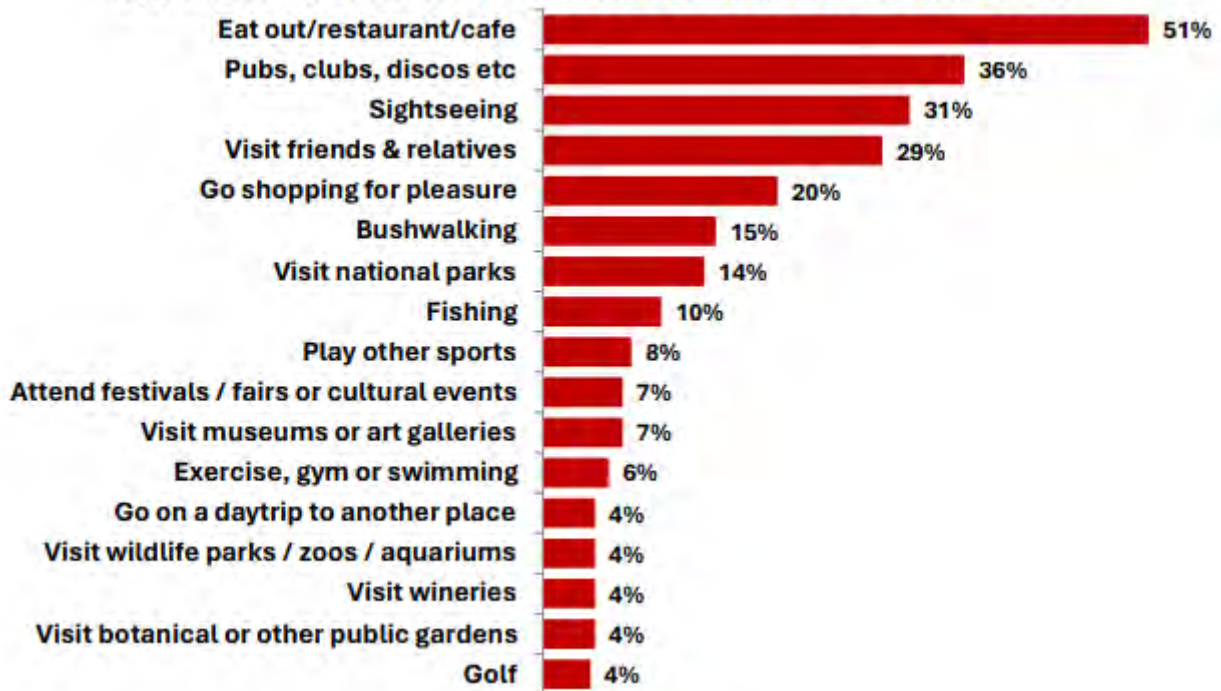
Table 4.1 Port Lincoln and Southern Eyre Peninsula key attractions and tours

Location	Attractions and Key Events	
Port Lincoln	<ul style="list-style-type: none"> — Port Lincoln Visitor Information Centre — Mill Cottage Museum — Port Lincoln Railway Museum — Lincoln Cove — Boston Bay — Port Lincoln Cup — Calypso Star Charters Shark Cage and Sea Lion Tours 	<ul style="list-style-type: none"> — Rodney Fox Shark Expeditions — Adventure Bay Charters Port Lincoln Fishing Charters — Marina Cruises — Winter Hill Lookout — Axel Stenross Maritime Museum — Port Lincoln Long Lunch — Winter Hill Lookout — Port Lincoln Leisure Centre
Southern Eyre Peninsula	<ul style="list-style-type: none"> — Sleaford Mere Conservation Park — Sleaford Bay — Thorny Passage Marine Park — Fishery Beach — Sleaford Bay Retreat — Coffin Bay National Park — Coffin Bay Oyster Farm Tours — Lincoln National Park — Mikkira Station (pastoral lease operating a sheep station that offers camping, day trips, koala and bird encounters) — Sunset Charters Coffin Bay — Whaler’s Way and Whaler’s Way Lookout 	<ul style="list-style-type: none"> — Lone Pine Lookout — Mary Ellis Wreck Beach — Greenly Beach — Glen-Forest Tourist Park and Vineyard — Almota Beach — Memory Cove Wilderness Protection area — Tumby Bay — Tumby Bay National Trust Museum — Colour Tumby Street Art Festival — Salt Festival

4.2.1 Visitor activities

In 2023, the most popular activity for domestic travellers when visiting the Eyre Peninsula was to eat out at a restaurant or cafe (SATC, 2023) (see Figure 4.1). Other activities when undertaken by travellers included visiting friends or relatives, visiting wineries, sightseeing, bushwalking, visiting national parks, and going to markets.

DOMESTIC OVERNIGHT VISITOR ACTIVITIES IN EYRE PENINSULA



Source: SATC, 2023

Figure 4.1 Domestic overnight visitor activities in Eyre Peninsula for year-end December 2022

4.3 Eyre Peninsula strategic tourism priorities

Strategic priorities to grow tourism and the Visitor Economy in the Eyre Peninsula as part of the South Australian Regional Visitor Strategy 2025 are summarised in Table 4.2.

Table 4.2 Strategic priorities for the Eyre Peninsula

Priority	Strategies
Marketing	<ul style="list-style-type: none"> — Increase promotion of the region’s strengths and new offerings (coastal, wildlife, seafood, soft adventure, outback, Aboriginal experiences, and astrotourism) — Promote seasonal wildlife and natural occurrences across the whole year — Capitalise on the region’s appeal and growth potential to international markets — Grow select smaller higher yielding cruise visitation and onshore regional spend — Improved the region’s digital presence and align with South Australia Tourism Communion’s digital strategy
Leisure and business events	<ul style="list-style-type: none"> — Attract new visitors (increase length of stay and spend) through new events and growth of signature events — Build regional resourcing
Collaboration	<ul style="list-style-type: none"> — Develop network of visitor information services — Build on existing partnerships to drive dispersal to inland and outback — Increase visitation along the Seafood Frontier touring route and foster dispersal to other parts of the region — Work with aviation partners to improve access to the region — Increase collaboration of activities across three tiers of government including Regional Development Australia Eyre Peninsula
Industry capability	<ul style="list-style-type: none"> — Raise capability in digital marketing, business operation, event management and promotion — Support Aboriginal tourism operators across all areas of business growth

Priority	Strategies
Experience and supply development	<ul style="list-style-type: none"> — Create new visitor experiences (across coastal, wildlife, seafood, outback, soft adventure, astrotourism and Aboriginal themes) — Embrace the evolution of the Seafood Frontier brand for coastal experiences — Increase bookable products to assist with building the region’s profile domestically and internationally. — Encourage accommodation development including 63 new rooms and 133 upgraded rooms and development of 5 or 6 star accommodation in national park or iconic natural location. — Support the Eyes on Eyre project (https://www.rdaep.org.au/eyes-on-eyre/)
Visitor infrastructure	<ul style="list-style-type: none"> — Maintain and enhance key coastal infrastructure and national parks — Invest in infrastructure that supports the drive markets and encourages overnight stay — Address reliability of water, telecommunications and energy supply for regional tourism related businesses

Source: South Australian Tourism Commission, 2021

4.4 South Australian tourism recovery following covid-19 pandemic

The COVID-19 pandemic posed significant challenges and contraction of tourism across South Australia. However, for the year end March 2023, total domestic visitor expenditure in South Australia was \$8.6 billion, up 24 per cent on the high of \$6.9 billion in December 2019 (SATC, 2023). Day trips expenditure was up 21 per cent to \$2.0 billion (SATC, 2023).

Recovery is still ongoing, with other data revealing to year end March 2023, South Australia attracted 7.5 million domestic overnight trips, down 8 per cent on December 2019 and 26.6 million domestic nights in South Australia, a decline of 5 per cent on December 2019 (SATC, 2023).

4.5 Eyre peninsula tourism value

4.5.1 Eyre Peninsula

At year end December 2023, the total amount of visitor expenditure in the Eyre Peninsula was \$591 million, with tourism-related employment in the region made up of 700 indirect and 2,100 direct jobs (with one in 13 jobs in the Eyre Peninsula supported by the tourism industry) (SATC, 2023).

This result achieved 100 per cent of the Eyre Peninsula’s 2025 target of \$397 million and 100 per cent of its 2030 target of \$500 million (SATC, 2023).

In 2021-2022, the Gross Value Added (GVA) of the Eyre Peninsula tourism industry was approximately \$107 million and \$96 million in direct and indirect tourism and \$203 million in total tourism GVA (SATC, 2023). Gross Regional Product (GRP) was \$116 million and \$123 million in direct and indirect tourism GRP and \$240 million in total tourism GRP (SATC, 2023).

4.5.2 Port Lincoln

In the reporting period 2021-2022, the City of Port Lincoln’s total tourism sales was approximately \$83.5 million, and the total value added was \$45.3 million (.idcommunity, 2023). In this period, there was 367 direct jobs and 231 indirect jobs in the tourism industry (.idcommunity, 2023). There was a total increase of 40 jobs compared with 2020-21, suggesting the beginning of recovery from the impacts of the COVID-19 pandemic (.idcommunity, 2023)..

4.6 Tourism businesses

4.6.1 Eyre Peninsula

In the Eyre Peninsula, there are 600 tourism businesses (SATC, 2023) with 437 business listed on the Australian Data Warehouse (ATDW) as at December 2022 (SATC, 2023). Table 4.3 provides a breakdown of business types listed on the ATDW.

Table 4.3 Eyre Peninsula tourism listings

Type	Eyre Peninsula
Accommodation	179
Attractions	133
Tours	29
Food and Drink	28
Events	16
General services	32
Destination information	4
Information services	5
Hire	10
Journey	2
Total	437

Source: South Australian Tourism Commission, 2023

4.6.2 Port Lincoln

In 2019, the City of Port Lincoln had 192 tourism businesses in Tourism Research Australia’s Local Government Area Profile (TRA, 2019) .

4.7 Visitors

4.7.1 Eyre Peninsula

For year end December 2023, the South Australian Tourism Commission (SATC, 2023) reported there were approximately 519,000 domestic overnight visitors to the Eyre Peninsula. The region saw 18,000 international visitors in this period. Seventy-seven per cent of overnight visitors were from intrastate, 19 per cent from interstate and 3 per cent from overseas. 532,000 day trips were taken to the Eyre Peninsula for the year.

The most common purpose for travel to the region was for holidays (35 per cent), followed by business-related travel (35 per cent), and visiting friends and relatives (24 per cent).

National Visitor Survey data shows that in 2023 January and October were the strongest months for visitation in the Eyre Peninsula. January and October are busy with the school holidays and long weekend.

The age profile of domestic overnight visitors to the Eyre Peninsula shows the 35-54 and 65+ age brackets strong in the local market and the 25-34 and 55-64 age groups show a higher proportion of international visitors.

The average length of stay for intrastate overnight visitors was 3.5 nights, for interstate overnight visitors 4.8 nights and international overnight visitors of 12.6 nights.

The origin of domestic overnight visitors to the region was made up of:

- 44 per cent from regional South Australia
- 37 per cent from Adelaide
- 8 per cent from Western Australia
- 5 per cent from regional Victoria
- 3 per cent from Sydney
- 1 per cent from Melbourne



- 1 per cent from Northern Territory
- 1 per cent other.

4.7.2 Port Lincoln

Tourism Research Australia (TRA, 2019) estimates that the four-year average between 2016 and 2019 for visitors to Port Lincoln was 71,000 domestic overnight visitors, 4,000 international overnight visitors and 598,000 domestic day trips.

The most common purpose for travel to the area was for holidays and visiting friends and relatives.

Domestic visitor overnight stay was an average of three nights. International visitors stayed 18 nights on average.

The average spend per trip for domestic day travel was \$58, with domestic overnight travellers spending \$408. International overnight travellers spent on average \$901 per trip.

The top three international markets of travellers to the area were:

- New Zealand
- USA
- United Kingdom.

4.8 Holiday and short-term accommodation

4.8.1 Eyre Peninsula

South Australian Tourism Commission (SATC, 2023) reports that as at December 2023 there were 177 establishments in the Eyre Peninsula that accommodate guests, accounting for 2,997 rooms. Eighty-one per cent of rooms have 15 or more rooms, 7 per cent have 11-15 rooms, 3 per cent have 6-10 rooms and 9 per cent have 1-5 rooms.

Occupancy data is only provided for both Eyre Peninsula and Yorke Peninsula combined. In 2019 prior to COVID, average occupancy for these regions was 62 per cent, this fell to 53 per cent in 2020, rose to 69 per cent in 2021, the dropped to 60 per cent in 2022 and 59 per cent in 2023.

Thirty-four per cent of domestic overnight visitors to the Eyre Peninsula stayed with friends or relatives, 20 per cent stayed in hotel/motel/resort and 19 per cent stayed in caravan park or campground. Port Lincoln and surrounds

There are 95 accommodation options in the Port Lincoln area listed with Council's Visit Port Lincoln Directory (City of Port Lincoln, 2023). Table 4.4 outlines the accommodation type and number of options available.

Table 4.4 Port Lincoln accommodation options

Establishment type	Total amount
Apartments	37
Backpackers and hostels	1
Bed and breakfast	1
Caravan, camping and holiday parks	12
Cottages	3
Holiday houses	33
Hotels/motels	5
Motels	3
Total	95

5. Potential impacts

The following section details the potential impacts and benefits to tourism to Port Lincoln, the Southern Eyre Peninsula and the wider region of the Eyre Peninsula that are anticipated during the construction and operation of the Project. Where potential impacts have been identified during each Project phase, corresponding mitigation measures have been recommended.

It is recommended that SA Water and their appointed contractor prepare and develop a Construction Environment Management Plan (CEMP) and a Community Engagement Plan, which covers a range of likely construction impacts with consideration to the identified potential impacts in Table 5.1 below. This framework will provide direction to the construction contractors who are normally responsible for the preparation of the detailed CEMPs and SA Water who will be responsible for the delivery of community and stakeholder engagement activities and management.

An Operational Community Engagement Plan should also be developed that outlines how SA Water will continue to engage with and involve the community during the Project’s operation.

Table 5.1 Potential impacts and recommended mitigation measures for identified impacts to tourism during construction and operation of the Project

Potential Impact	Implications	Mitigation Measures
Changes to pedestrian access	<ul style="list-style-type: none"> During construction, pedestrian access to areas such as the walking trail around Billy Lights Point may be impacted, which will discourage visitors. 	<ul style="list-style-type: none"> Ensure adequate signage on approaches and appropriate alternative pathways and wayfinding information Provide information to tourism-related websites and services so they can advertise closures or other changes to access Provide contact information on signage so public can contact SA Water about any issues or concerns. Ensure issues and concerns are responded to and resolved in a timely manner.

Potential Impact	Implications	Mitigation Measures
<p>Visual amenity and temporary changes to landscape</p>	<ul style="list-style-type: none"> — The proposed site is near key areas of interest for tourists including the marina, boat ramp, picnic areas, hiking trails such as Billy Lights Point walk and Boston Bay. The changes to visual amenity in this area during construction may discourage visitors. — In operation, a new facility, the intake pump station, will be constructed on Billy Lights Point within the existing Waste Water Treatment Plant that may be visible to people walking around or using the area. The desalination plant itself would not be visible from Billy Lights Point due to dense vegetation. — The site has previously been used for industrial purposes so the visual amenity impact is not expected to be significant. 	<ul style="list-style-type: none"> — Use appropriate fencing or barriers around construction site and where visible to people using adjacent areas consider using materials that enhance amenity such as landscaping or semi-permanent rather than temporary fencing. — Consider if public art can be used to enhance visual amenity of construction areas. — Ensure construction site is appropriately maintained and free from debris and damage visible from public areas. — Provide contact information on signage so public can contact SA Water about any issues or concerns. — Ensure issues and concerns are responded to and resolved in a timely manner.
<p>Increased demand on accommodation, hospitality and services, including airport, from increased workforce</p>	<ul style="list-style-type: none"> — Construction of the desalination will require around 150 workers at the peak. While attempts will be made to maximise the number of local employees, it is anticipated that some workers will need to come from outside Port Lincoln, and will therefore require accommodation while they are working at the site. This could impact the availability of accommodation for tourists and visitors. — With occupancy rates around 60% in 2023 (as outlined in Section 4.8), it is not expected that the construction workforce will create a significant impact on accommodation availability, however peak tourist periods such as school holidays could limit the accommodation options available and make it harder for tourists to visit. — Services such as food and beverage, health, taxis, and the airport may also have increased usage as a result of additional workers, which may create impacts for tourists and visitors who also use these services. 	<ul style="list-style-type: none"> — Workforce plan to include processes and procedures for sourcing appropriate accommodation and services for workers including engagement with accommodation providers to manage peak periods

Potential Impact	Implications	Mitigation Measures
<p>Construction traffic and activities impacting local access and pedestrian and traffic movements</p>	<ul style="list-style-type: none"> — Increased truck movements or other construction related traffic could create local access issues and delays, particularly at peak tourist times. — Access to the site from the north is through Port Lincoln township and increased truck and construction traffic is expected to have a low but noticeable impact on traffic conditions through the town. — Safety risks from more trucks and heavy vehicles on roads, particularly with tourists who may be unfamiliar with the area as drivers or pedestrians. 	<ul style="list-style-type: none"> — Traffic management plan to ensure consideration of local access and routes to places of high visitor interest and times of peak visitor travel and consider routes that bypass the township to reduce traffic impacts. — Early, regular communications to the Port Lincoln community including visitors about expect traffic impacts, any traffic changes, major construction routes and other relevant information regarding traffic and access.
<p>Construction and operational noise impacting amenity</p>	<ul style="list-style-type: none"> — Noise from construction activities at Billy Lights Point could potentially be heard at nearby areas frequented by tourists and visitors such as the boat ramp, picnic and walking areas and Boston Bay, reducing amenity and discouraging visitors. — During operations, there will be noise associated with the operation of the intake pump station at Billy Lights Point, which is expected to be audible at recreational areas around the point such as the boat ramp and walking areas, especially at times when ambient noise is low such as early morning. — While noise is likely to be noticeable at times, the location of the site is expected to be a sufficient distance from nearby public areas for noise impacts to not be significant. On-water areas near the coastline where the site is located may also experience noise impacts. 	<ul style="list-style-type: none"> — Construction environmental management plan to outline noise mitigation measures to ensure nearby users of public spaces are not significantly impacted. — Early and regular communication with community and visitors about construction activities and potential noise impacts. — Consider respite periods for high noise activities at times of high visitor usage of adjacent public areas. — Operational environmental plan to outline noise mitigation measures to ensure nearby users of public spaces are not significantly impacted by the operation of the Project at Billy Lights Point. — Ensure signage with contact information is available at publicly accessible areas so issues and concerns can be reported. — Ensure issues and concerns are responded to and resolved in a timely manner.

Potential Impact	Implications	Mitigation Measures
Construction and operational odour impacting amenity	<ul style="list-style-type: none"> — Dredging and tunnelling of the sea bed during construction, and screening/trapping of the water intake during operations has the potential to cause odour related to the stockpiling of this organic matter/waste at Billy Lights Point, which may be noticeable to users of this area and discourage visitation. — The intake pump station is adjacent a wastewater treatment plant that may cause cumulative odour impacts if not managed appropriately. — With appropriate mitigation for storage and disposal of this waste, odour impacts are not expected to be significant. 	<ul style="list-style-type: none"> — Ensure signage with contact information is available at publicly accessible areas so issues and concerns can be reported. — Ensure issues and concerns are responded to and resolved in a timely manner.
Construction and operational impacts to the marine environment.	<ul style="list-style-type: none"> — Construction of the marine infrastructure and operations of the Project have the potential to disrupt the marine environment and impact marine activities that are attractive to tourists such as fishing and boating. 	<ul style="list-style-type: none"> — Consult with the marine tourism industry about potential impacts and mitigation measures and keep them informed of further assessments and monitoring activities to build trust and confidence that the Project will not impact marine-related tourist activities.

6. Potential benefits

6.1 New tourism opportunities

It is recommended that SA Water engage with the RDAEP, Councils and local tourism boards and operators to identify potential long-term benefits of the Project for the local area as a tourist attraction. Opportunities should be sought to use the Project as an education tourism opportunity for visitors, similar to the Kauwi Interpretive Centre and Desalination Plant Community Tour, including schools and universities, as well as tourists. Educational and technical tours may include:

- the need for the Project and education piece around the need to secure a reliable water source for the surrounding area
- the projects operations and objectives
- the project, including the changes in preferred locations, and construction processes
- information on the environmental protection measures in place to safeguard the natural surrounding ecologically significant environment
- education on the desalination process in the form of an accompanying information centre.

Furthermore, it is recommended to engage and partner with representatives of the RDAEP’s Tourism Development program (RDAEP, 2020) to seek opportunities to align with the strategic program for tourism in the Eyre Peninsula to maximise potential tourism opportunities via partnership and collaboration to attract new and returning visitors to the area.

Undertaking these engagement activities for potential benefits would align with SATC’s (SATC, 2023) strategic priorities of:

- collaboration (by creating new and enhancing existing partnerships)
- experience development (by creating new visitor experiences)
- new visitor infrastructure (investment in infrastructure to support overnight stay and securing water supply for regional tourism related business).

6.2 Secure quality water supply

Securing a quality water supply for the Eyre Peninsula will allow the region's industries and economy to grow, including the tourism sector, and provide better services to support more tourists and visitors.

The Project will diversify the region's water sources and provide a long-term climate-independent solution for an area that has experienced several consecutive years of low rainfall and reduced natural recharging of groundwater basins.

The Project is expected to help reduce the region's naturally occurring water hardness (which also leaves a chalky residue) and will likely improve the quality of the reticulated water for everyone on the Eyre Peninsula (SA Water, 2021).

6.3 Community benefit sharing

The Project has the opportunity to ensure that the community benefits from the development of this new infrastructure being built and operated in their community. Community benefit sharing initiatives could include improving facilities and services that are also a benefit to visitors and tourists, increasing the attractiveness of the Port Lincoln region as a tourist destination.

7. Summary and recommendations

Tourism is significant to Port Lincoln and the Eyre Peninsula, generating valuable economic output and creating jobs.

Tourists and visitors are attracted to the region primarily due to its natural environment and recreational activities, particularly marine activities. Mitigating any impacts to the environment and amenity of places visitors come to the region to enjoy will be important to ensure the Project does not negatively impact tourism.

Housing supply, like much of the State, is significantly constrained in Port Lincoln, so if workers are required to move into Port Lincoln to construct the Project, they may be reliant on tourist accommodation, which has the potential to impact the availability of suitable accommodation for tourists.

While temporary, construction activities may create impacts to the tourist experience in Port Lincoln. Operations may also create impacts to the enjoyment of areas adjacent the site, including on-water. These impacts will need to be managed carefully to avoid making the area unattractive to tourists.

Aboriginal heritage and culture are also important in Port Lincoln and of interest to visitors and tourists, and ensuring close engagement with the Aboriginal community will be an important part of the Project. Note that Aboriginal cultural heritage matters will be managed under the Section 21/23 process of the *Aboriginal Heritage Act 1988* and in compliance with any authorisation given.

The Project has the opportunity to provide benefits for tourism through creating educational and special interest tours and site visits, securing a quality water supply, and improving facilities and services that are beneficial to tourists and visitors.

Recommendations to mitigate impacts to tourism and realise benefits include:

- Construction Environmental Management Plan considers how environmental impacts may affect tourists and visitors and mitigates impacts accordingly.
- Mitigating visual impacts through appropriate use of landscaping, quality, maintained fencing and barriers, and public art.
- Engaging early and often with the Barngarla Determination Aboriginal Corporation about proposed construction and operational activities to determine potential impacts and appropriate mitigation measures in accordance with the Section 21/23 process of the *Aboriginal Heritage Act 1988* and any authorisation given.
- Early and regular communication with stakeholders, the community and visitors about construction and operational activities and mitigation measures, particularly traffic, access and noise, as well as transparent information about how impacts to the environment and marine areas will be managed in construction and operation.
- A workforce plan to include processes and procedures for sourcing appropriate accommodation for workers including engagement with accommodation providers to manage peak periods.

- Traffic management plan to ensure consideration of local access and routes to places of high visitor interest and times of peak visitor travel and consider routes that bypass the township to reduce traffic impacts.
- Work with RDAEP and Councils and other relevant stakeholders to realise the opportunity for the Desalination Plan to be a tourist attraction through site tours, educational and scientific learning opportunities and events.
- Consider how community benefit sharing initiatives can include facilities or services that also support tourists and visitors.

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Yours sincerely,

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Senior Associate, Communications & Engagement

Appendix X Draft Construction Environmental Management Plan



Eyre Peninsula Desalination Project

Draft Construction Environmental Management Plan

Version: 0.1

Date: 27/05/2024

Status: Draft

Document ID: TBD

Confidentiality: OFFICIAL



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South Australia**

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Document Controls.

Version History

Version	Date	Author	Comments
0.1	27/5/2024	SA Water	First draft

Template: Document - Long Version 6.0 09/06/23

Approvers

Approver Name	Approver Role	Signature	Date
	Role title		

Endorsers

Endorser Name	Endorser Role	Signature	Date

Reviewers

Name	Role	Version	Review Date
First name Surname		0.n	dd/mm/yy

Distribution

Role / Department / Organisation	Name
	First name Surname

Document Location

This information will assist in locating the source document from a hard copy.

URL:

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1 Introduction

This Construction Environmental Management Plan (CEMP) has been prepared to ensure that the environmental objectives and requirements for the Eyre Peninsula Desalination Plant (EPDP) are addressed and that potential environmental impacts on the site are managed throughout construction.

The CEMP identifies and describes the environmental values and potential impacts that may be caused by the EPDP and defines critical environmental values, ultimately informed by the consent conditions of the environmental assessment process, which are to be protected. Environmental protection objectives and performance criteria have been identified followed by mitigation measures and monitoring and reporting actions.

Each of the objectives and performance criteria will serve as the benchmark for measuring the effectiveness of the CEMP during construction through the specification of monitoring, reporting and auditing requirements, with nominated responsibilities and timing to ensure the necessary mitigation measures are met.

1.1 Glossary

The following glossary items are used in this document:

Term	Description
Australian Standards	Published documents setting out specifications and procedures designed to ensure products, services and systems are safe, reliable and consistently perform the way they were intended to
Ballast Water	Water used in the hull of a boat for added stability. Typically containing non-native nuisance and exotic species that can cause extensive ecological damage once released
Biodiversity	The variety of different species, the genetic variability of each species, and the variety of different ecosystems that they form
Biofouling	The overgrowth of algae, marine invertebrates, and other organisms on nets, intake pipes, and structures in the water
Bund	Means of embankment of earth or a wall constructed of brick, stone or concrete to form the perimeter of a compound that will prevent lateral movement of the material contained within the embankment or wall
Coastal Cliff Zone	The area extending vertically from the top of the cliff to the edge of the horizontal intertidal reef
Contractor	The successful proponent selected by SA Water to design, build, operate and/or maintain the Desalination Plant (components included dependent on contract award/s)
Desalination	The process of removing salts and other minerals from seawater so that it can be used for drinking water
Dewatering	The removal of water by pump or evaporation during site development due to a high-water table.
Diffuser	An outlet designed to break up the flow of brine into small streams and 'jet' these streams into a large volume of surrounding seawater with sufficient velocity to mix and disperse the brine rapidly and effectively
Discharge	The waste stream that will be emitted from an outfall pipe. May be used in relation to saline discharge from the brine diffuser or stormwater discharge from a stormwater lagoon
Dissolved Oxygen	The amount of oxygen freely available in water and necessary for aquatic life and the oxidation of organic materials
Entrainment	The drawing of fish and other aquatic organisms into an intake system

Entrapment	When fish and other organisms get caught on screens or physical barriers of intake pipes
Environmental Incident	Any event or impact on the environment involving actions or assets associated with the project that is capable of: <ul style="list-style-type: none"> • coming to the attention of the public or an environmental regulatory agency. • causing harm to the environment or any person; and • causing pollution.
Geofabric	An industrial non-woven fabric used to protect the underlying soil from erosion or to contain dredge material.
Phytophthora	An introduced parasitic fungus that lives in the soil and attack the roots and basal stems of plants causing extensive damage to native vegetation
Rock armour	Rock or other hard substrate used to armour shorelines, seabed or streambed against water erosion
Saline Concentrate	A liquid by-product of the desalination process that has a higher concentration of suspended and dissolved materials (particularly salt) than intake seawater due to the salt concentrating effects of the reverse osmosis system
SA Water	South Australian Water Corporation
Silt Fence	A temporary vertical sediment barrier designed to prevent fine debris carried by water from entering natural waterways and stormwater systems
Stockpile	A pile or storage location for bulk materials

1.1.1 List of Abbreviations

1.1.1.1 Terms

AHA	<i>Aboriginal Heritage Act 1988</i>
AQIS	Australian Quarantine and Inspection Service
CEMP	Construction Environmental Management Plan
DEW	Department for Environment and Water (SA)
DMP	Dredge Management Plan
DCEEW	Department of Climate Change, Energy, the Environment and Water (Cwth)
DTI	Department for Infrastructure and Transport
DWTP	Desalinated water transfer pipeline
EDS	Ecological Sustainable Development
EMS	Environmental Management Systems
EPA	Environment Protection Authority
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwth)</i>
EPDP	Eyre Peninsula Desalination Project

EPA (AQ)	Environment Protection (Air Quality) Policy 2016
NIASA	Nursery Industry Accreditation Scheme Australia
OEMMP	Operational Environmental Management and Mitigation Plan
PDI	Planning, Development and Infrastructure Act 2016
PIRSA	Primary Industries and Regions (SA)
PPE	Personal Protective Equipment
RO	Reverse Osmosis
SARDI	South Australian Research and Development Institute
WSUD	Water Sensitive Urban Design

1.1.1.2 Measurements

°C	Temperature in degrees Celsius
cm	Centimetre
dB	Decibels of noise
GL	Gigalitre
ha	Hectare
kg	Kilograms
km	Kilometre
m	Metre
m²	Square Metre
ML	Megalitre

1.2 References

The following table identifies the documents and/or articles that are referenced in this document:

Title/URL	Version	Date
		dd/mm/yy

2 Project Overview

2.1 Detailed Construction Works

SA Water proposes the construction of a 5.3 gegalitre per annum (GL/annum) Reverse Osmosis RO seawater desalination plant, a 7 kilometre (km) desalinated water transfer pipeline, associated marine works and infrastructure including seawater intake and saline waste outfall pipelines, siteworks and laydown areas, fencing and directional signage, and a 3.5 km overhead electricity transmission line (the Project).

The marine works and infrastructure are expected to be constructed for an 8 GL/annum ultimate capacity including the intake and outfall pipes.

The project can be considered as 3 main elements:

- RO desalination plant and saline waste/seawater transfer pipelines,
- Marine intake and outfall pump station and associated intake and outfall pipelines within the marine environment; and
- Desalinated water transfer pipeline to North Side Hill tanks

This section will need to provide further detail on the construction works including:

- Location Maps
- Earthworks
- Excavations
- Timeframe Duration

2.2 Purpose of this CEMP

The purpose of this CEMP is to:

- Provide a framework for the management of the environment during construction of the EPDP.
- Address the statutory environmental requirements for the project.
- Identify the actions to be undertaken to manage the environmental impacts of the construction works; and
- Address community and government expectations of transparency and accountability by identifying the management actions and making this CEMP publicly available.

2.3 Amendments

This CEMP has been developed to provide a framework for environmental management during the construction of the EPDP and will be further refined to incorporate specific construction methodologies of the successful construction contractor. The CEMP will also be refined and expanded in consultation with the regulators, following the detailed design phase of the project.

The contractor will conduct a regular auditing process for the CEMP. During this process the CEMP document will be reviewed and amended accordingly.

3 Environmental Objectives and Legislation

3.1 Environmental Management Approach

SA Water is committed to operating in a manner that allows for sustainable development with minimal harm to the site at Billy Lights Point and its surrounding areas.

The contractor is required to develop and implement an Environmental Management System (EMS) in accordance with the internationally recognised standard AS/ANZ ISO 14001:2004. The EMS will also be required to integrate with SA Water's existing certified EMS.

The contractor's EMS must establish the overall framework for achieving the environmental performance objectives for the EPDP, including compliance with approval conditions and regulatory requirements. This EMS will be supported by Environmental Management and Monitoring Plans (EMMPs) for specific project stages addressing construction and operation. This Construction Environmental Management Plan (CEMP) will address the construction requirements of the project environmental performance criteria, regulatory requirements, EPA licence requirements and specific management and mitigation measures identified during the environmental impact assessment process.

This CEMP addresses matters relating to the construction of the EPDP. A separate Operation Environmental Management and Monitoring Plan (OEMMP) will be developed by the successful contractor. Included in Appendix C of the CEMP is a check list for each environmental aspect showing all the requirements needed to comply with the management plan. These have been split into daily, weekly, and monthly checklists to make it easier to see the frequency for checking each requirement.

3.2 Environmental Objectives

SA Water is committed to constructing and operating the EPDP in a sustainable manner that results in minimal harm to the surrounding environment. A series of environmental objectives have been developed to guide the development.

To define the environmental objectives for the proposed EPDP, SA Water has required within its technical specifications that the successful contractor achieve key design, construction, and operational features to achieve the following objectives:

3.2.1 Terrestrial Environment

The Terrestrial Environment Objectives seek to:

- Protect biodiversity values at the site and avoid (or minimise) impacts to native vegetation and fauna,
- Minimise energy use and greenhouse gas emissions throughout the design, construction, and operation,
- Protect the coastal cliff zone,
- Protect sites of Aboriginal heritage significance, avoid impacts, and manage interactions with known and unknown heritage sites,
- Protect historic places and sites from disturbance where impacts can be avoided and manage interactions with known and unknown heritage sites,
- Protect the quantity and quality of groundwater consistent with relevant State water policies,
- Minimise erosion and sediment movement,

- Ensure stormwater management is incorporated into the construction and operation of the Desalination Plant,
- Minimise waste production and manage wastes consistently with relevant State waste policies and guidelines,
- Protect local amenity and minimise noise during construction and operation, including noise impacts to the marine environment,
- Maximise efficient use of resources, including minimising resource use and maximising recovery and recycling,
- Protect visual amenity, including landscape and amenity values of the coastline,
- Protect air quality during construction and operation,
- Manage effects of increased traffic and transportation during construction and operation to minimise impacts to the community and protect public safety,
- Protect human health and the environment through management of any contamination,
- Protect waterways and surface water quality,
- Manage the site to enhance site environmental values,
- Manage and maintain communication with the local community, and
- Restore and rehabilitate disturbed areas including incorporating opportunities for enhancing site environmental values.

3.2.2 Marine Environment

The Marine Environmental Objectives seek to:

- Avoid introduction and spread of marine pests.
- Minimise impacts to marine recreational activities.
- Protect the intertidal zone.
- Protect the ecological integrity and values of the marine environment.
- Protect existing coastal processes.
- Protect marine mammals; and
- Protect marine flora and fauna and associated habitats.

3.3 National Strategies and International Conventions

The following national policies provided guiding principles for the design, construction, and operation of the EPDP:

- National Ecologically Sustainable Development (ESD) Strategy 1992.
- National Greenhouse Response Strategy 1992; and
- Framework Convention on Climate Change 1994.

3.4 Legislative Requirements

The following legislation is considered relevant to the project:

- Environment Protection Act 1993;
- Local Nuisance and Litter Control Act 2016
- Aboriginal and Torres Strait Islander Heritage Protection Act 1984.
- Aboriginal Heritage Act 1988
- Climate Change and Greenhouse Emissions Reduction Act 2007.
- Coast Protection Act 1972.
- Dangerous Substances Act 1979.
- Dangerous Substances Regulations 2002.
- Environment Protection (Commercial and Industrial Noise) Policy 2023
- Environment Protection and Biodiversity Conservation Act 1999 (Cwth);
- Environmental Protection (Air Quality) Policy 2016.
- Environmental Protection (Burning) Policy 1994.
- Environmental Protection (Waste Management) Policy 1994.
- Environmental Protection (Water Quality) Policy 2003.
- Explosives Act 1936.
- Fisheries Management Act 2007.
- Heritage Act 1993.
- Land Acquisition Act 1969.
- Landscape South Australia Act 2019.
- Local Government Act 1999.
- National Greenhouse and Energy Reporting Act 2007.
- National Parks & Wildlife Act 1972.
- Native Vegetation Act 1991.
- Petroleum Products Regulations Act 1995.
- Planning, Development, and Infrastructure Act 2016
- Road Traffic Act 1961.
- South Australian Public Health Act 2011.
- Water Industry Act 2013
- Work Health and Safety Act 2012 (and associated regulations).

A summary of the likely approvals required for the EPDP are provided in Table 1.

Table 1: Summary of Likely Approvals Required for Eyre Peninsula Desalination Project

Legislation	Administering Authority	Trigger	Project Response
Environment Protection and Biodiversity Conservation Act 1999	Department of Climate Change, Energy, the Environment and Water	Actions that could have a significant impact on matters of national significance need referral to the Department of Climate Change, Energy, the Environment and Water.	<p>An EBPC self-assessment was undertaken.</p> <p>Results indicate that the Project is not expected to impact upon Matters of National Environmental Significance.</p> <p>Out of an abundance of caution a self-referral under the EPBC Act will be prepared for the Project and submitted for the Department of Climate Change, Energy, the Environment and Water</p>
Native Title Act 1993	Attorney-General's Department	Existence of native title rights over land and waters	Advice sought from the Crown Solicitor's Office of the Attorney-General's Department indicated native title rights have been extinguished over the EPDP site
Landscape South Australia Act 2019	Minister for Climate, Environment and Water Department of Environment and Water, Eyre Peninsula Landscape Board	Protection of natural resources including groundwater, surface water, native vegetation, and soil.	Implementation of the CEMP and various management plans. Water Affecting Permits to be obtained if necessary.
Native Vegetation Act 1991	Minister for Climate, Environment and Water Department of Environment and Water, Native Vegetation Council	Damage and disturbance to native vegetation	Application to clear native vegetation to be obtained

Planning, Development, and Infrastructure Act 2016	Minister for Planning State Commission Assessment Panel	Matters significantly affecting the environment, the community, or the economy because of a proposed development require assessment through the Major Development process under the Act.	Crown Development Application, Environmental Impact Assessments (Marine & Terrestrial), Decision Notification Requirements
Aboriginal Heritage Act 1988	Minister for Aboriginal Affairs and Reconciliation	Duty of care to take all reasonable and practicable measures not to harm Aboriginal cultural heritage	To be determined by Section 21/23 application
Environment Protection Act 1993	Environment Protection Authority (EPA)	Protection of the environment from environmental harm	Authorisation to undertake prescribed activities of environmental significance will be obtained e.g. dredging, discharge to marine environment
Dangerous Substances Act 1979	Minister for Industrial Relations	Large dangerous goods location established	A licence to keep or transport a prescribed dangerous substance will be obtained if required
Coast Protection Act 1972	Minister for Climate, Environment and Water	Protection and conservation of the coastline	Protection of the cliff and intertidal zone.
Fisheries Management Act 2007	Minister for Agriculture, Food and Fisheries	Work in areas causing removal, destruction, or damage to marine plants	Development Permit for Operational Work to be obtained.
National Parks and Wildlife Act 1972	Minister for Climate, Environment and Water Department of Environment and Water	Taking, using, keeping, or interfering with a protected animal or plant (Section 88 and 89).	Licence/Permit to be obtained if removal of or interference with protected plants or animals is proposed.

Table 2 Other Key Legislative Requirements

Legislation or Policy	Administering Authority	Trigger	Project Response
Environment Protection (Commercial and Industrial Noise) Policy 2023	EPA	Various triggers relating to activities creating excessive noise with procedures for measuring noise to determine compliance	Compliance with requirements of the policy, consultation with the EPA for works outside of normal hours
Environment Protection (Air Quality) Policy 2016	EPA	Various triggers relating to activities involving discharge to the atmosphere	Compliance with requirements of the policy, consultation with the EPA
Environmental Protection (Water Quality) Policy 2015	EPA	Various triggers relating to activities involving discharge to the waters of the state	Compliance with requirements of the policy, consultation with the EPA
Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry (1999)	EPA	A code of practice for activities that have the potential to generate sediment-laden runoff because of construction activities	Compliance with requirements of the Code of Practice, consultation with the EPA. Development of Soil Erosion and Drainage Management Plan.
Environmental Protection (Waste Management) Policy 1994	EPA	Various triggers relating to waste tracking	Waste management to comply with relevant provisions

3.5 Australian Standards

The following Australian Standards should be considered (but not limited to) during the construction period:

- AS/NZS ISO 14001:1996 – Environmental management systems – specification with guidance for use.
- AS 2436 – Guide to noise control on construction, maintenance and demolition sites.
- AS 1216.1 Hazardous Substances.
- AS 1940 Storage and Handling of Flammable and Combustible Liquids.
- AS 2508 Safe Storage and Handling Information Cards for Hazardous Materials; and
- AS 1216 Classification, Hazard Identification and Information Systems for Dangerous Goods.

****These standards will need to be reviewed & updated by contractor.**

3.6 Codes of Practice & Guidelines

The following Codes of Practices and Guidelines should be considered (but not limited to) during the construction period:

- Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry 1999 (SA).
- National Code of Practice [NOHSC: 2017(2001)] Storage and Handling of Workplace Dangerous Goods.
- SA EPA Guideline. Bunding and Spill Management (May 2016).
- SA EPA Handbook. Pollution Avoidance on Commercial and Residential Building Sites (2004).
- SA EPA Information. Construction Noise (September 2023).
- Building Code of Australia (BCA);
- SA EPA Acid Sulfate Soil Material Guidelines (November 2019).

****These above will need to be reviewed & updated by contractor.**

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4 Responsibilities for Environmental Management

4.1 Personnel and Responsibilities

Environmental management is the responsibility of everyone working on the project. The Project Manager should ensure Contractors or SA Water works groups are made aware of the contents and requirements of this document, and that all inductions are formally undertaken and recorded. The Contractor's / SA Water's site manager (or nominated on site representative) is responsible for ensuring compliance with this document. Specific roles and responsibilities are outlined below in Table 3. Position titles within the table will need to be defined by the contractor. For the purpose of this document, the following roles are used through the report to represent the responsible personnel.

(The contractor will be required to submit a detailed employee responsibility schedule which will outline responsibilities and contact details for each shift/element of work)

Table 3 Personnel and Responsibilities

Position Title	Key Responsibilities
SA Water Project Manager	<ul style="list-style-type: none"> Oversee the establishment, implementation, and maintenance of the CEMP, including consultation requirements. Liaise with statutory agencies and report environmental incidents as required. Monitor statutory approvals obtained by the contractor. Review and approve the CEMP prior to commencement of works on site. Review audits and incident reports to monitor contractor's compliance with the CEMP. Ensure corrective action is implemented where necessary and CEMP updated where required. and Monitor and report to EPA on CEMP performance
Contractor Project Manager	<ul style="list-style-type: none"> Coordinate the approval / endorsement of the CEMP with SA Water. Ensure that the CEMP is developed and implemented to address the management of all environmental issues. Ensure that all project personnel are appropriately inducted and where a deficiency is identified, trained in the environmental requirements of the project. Review and sign off management of environmental incidents to ensure that they have been appropriately addressed and systems/control improvements implemented. Ensure that regular assessment/review of the environmental risks is undertaken, and that the CEMP is amended (subject to the approval of SA Water) to reflect changing risks (or knowledge) if appropriate. Audit works and review conformance with the requirements of the CEMP. Ensure that corrective action is implemented where necessary. Report environmental incidents, enquiries and complaints to regulatory authorities and SA Water.

	<ul style="list-style-type: none"> • Ensure that corrective actions are implemented, and measures are developed to mitigate breaches to CEMP conditions. • Ensure all complaints are registered and promptly responded to, and • Monitor works and report to SA Water on CEMP performance.
Contractor On-site Environmental Supervisor	<ul style="list-style-type: none"> • Develop the site-specific CEMP in consultation with the Contractor Project Manager. • Submit the CEMP to the Contractor Project Manager and SA Water for approval. • Implement and manage the CEMP. • Monitor, audit, and conduct surveillance of the implementation and effectiveness of the CEMP and report its effectiveness. • Engage specialist environmental advice where required. • Identify and manage environmental incidents promptly and effectively in consultation with the Contractor Project Manager. • Report environmental incidents, enquiries and complaints to the Contractor Project Manager who will then inform SA Water, and relevant statutory authorities if necessary. Document actions taken to rectify the situation. • Ensure that all project personnel are appropriately inducted and where a deficiency is identified, trained in the environmental requirements of the project. and • Inform Contractor Project Manager of any queries from Statutory Authorities.
Contractor personnel	<ul style="list-style-type: none"> • Undertake works in accordance with the CEMP requirements; and • Promptly report environmental incidents, enquiries and complaints to the Contractor On-site Environmental Supervisor or Contractor Project Manager

4.2 Induction and Training

All employees involved in the construction of the EPDP will receive training on relevant management plans within this CEMP. Employees will also be required to receive a site induction, including familiarisation of the site's environmental controls and emergency response procedure. A CEMP Training Log and Induction Log will be maintained to record the names of the people trained and inducted for the EPDP construction site.

4.3 Emergency Contacts

Table 4 Emergency Contacts

Emergency Contacts	
Contact	Number
Ambulance, Fire	000
Police	Emergency 000 Police Assistance XXXX
EPA	XXXXX
SA Water	SA Water's Superintendents Representative (TBC)
SA National Parks and Wildlife Service	XXXX
Department of Environment & Heritage	XXXX
SA Water Environmental Manager	TBC
Contractor Project Manager	TBC
Contractor Environmental Supervisor	TBC
Contractor Communications Officer	TBC

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5 Land Management Plan

The construction of the EPDP will require the clearing of some land. This will be carried out within defined clearing areas to minimise the construction impacts on flora and fauna.

5.1 Performance Objectives

- To protect the biodiversity values of the site and avoid impacts to native vegetation or fauna;
- Manage the site to protect and enhance site biodiversity values; and
- Restore and rehabilitate disturbed areas including incorporating opportunities for enhancing site environmental values.

5.2 Performance Criteria

- Develop a Land Management Plan for the site that incorporates opportunities to improve current biodiversity at the site through revegetation with locally sourced indigenous species endemic to the region and ongoing management of weeds.
- Consultation on the plan should be undertaken with the Eyre Peninsula Landscape Board and City of Port Lincoln Council to ensure it integrates with broader Regional Strategies.
- Ensure the site is progressively rehabilitated during the works.
- Incorporate opportunities in the design for habitat restoration and regeneration of the site, including undertaking revegetation at the site using locally sourced indigenous species endemic to the region.
- Comply with the requirements of the Native Vegetation Act 199
- No removal of native vegetation is to be undertaken at the site without prior approval from SA Water and if applicable a native vegetation clearance application to the Native vegetation Council.
- Identify 'no go' zones including the coastal cliff zone which comprises of the area at the top of the cliff still influenced by coastal instability and erosion (approximately 10 metres back from the cliff edge) to the edge of the intertidal zone. The plan should address biodiversity protection, including flora and fauna management at the site. and
- Ensure management of noise, vibration, dust, fill, and excavation are in accordance with CEMP that identify management requirements to minimise disturbance or impacts to site flora and fauna.

5.3 Potential Impacts

- Unnecessary damage to and/or clearance of native vegetation on-site.
- Disturbance to on-site fauna or flora during construction.
- Fauna becoming accidentally trapped in the open trenches, posing a threat to the health of fauna and safety of the contractors working in the trench.
- Clearing of coastal native vegetation. and
- Potential to influence natural geological and biodiversity values of the region.

5.4 Mitigation Measures

5.4.1 Flora

- Removal and/or disturbance of native vegetation will be kept to a minimum and will be carried out in accordance with approval conditions as detailed in this CEMP.
- Clearing of native vegetation will only occur in pre-determined areas (as identified in Appendix A), and only once permission is obtained under the Native Vegetation Act 1991.
- 'No go' zones to protect vegetation from damage will be identified (Appendix A) including the cliff zone (comprising the area at the top of the cliff still influenced by coastal instability and erosion (approximately 10 metres back from the cliff edge) to the edge of the intertidal zone)
- Cleared vegetation will not be burned, but instead mulched and retained or disposed of appropriately off site.
- Unnecessary disturbance to vegetation will be minimised by restricting unnecessary access to the coastal zone and confining construction traffic to designated tracks.
- Ensure site staff have received appropriate instruction in the identification of native vegetation and weeds.
- Laydown areas to temporarily stockpile excavated soil and imported sand material, as well as parking, and ancillary infrastructure need to be in cleared areas. The stockpile area is to be located outside the drip zone of surrounding trees and shrubs, to avoid off target impacts, and should be no more than 3-5m in height. If native vegetation is in the vicinity of the laydown area, it is recommended that these areas be flagged/closed off.
- If any roots are discovered during the works, these are to be bridged over the trench where possible (roots ≥ 50 mm). Roots discovered ≤ 50 mm are to be clean cut with a saw. Any roots that are bridged/cut need to be recorded and reported back to the SA Water Environment Representative.
- If hydro-vac works are to be undertaken, they must be done so under low pressure to ensure not to strip the roots of their living fibres. Exposed roots are to be covered with a wet hessian when working in an open trench on hot days to avoid damage and stress caused by sunlight.

5.4.2 Fauna

- At the end of each day, open pipelines will be covered to prevent fauna entering the installed pipelines.
- At the end of each day, open excavations (such as trenches) will either be left graded at one end to allow trapped fauna to escape or contain shelter such as a hessian covered box for trapped animals. Where practical, excavations will not be left open overnight.
- Before the commencement of construction work each day, excavations will be visually inspected to check for trapped or injured fauna. The visual inspections will be completed no later than 0800 hrs each morning.
- If safe, any trapped fauna found within the EPDP construction site will be removed and re-located to a minimum distance of 50m from the site. Fauna removed and re-located will be recorded in the Fauna Removal Log (Appendix A), which shall be retained at the site office.
- If trapped, injured or orphaned fauna are found within the construction site, the SA National Parks and Wildlife Service or Fauna Rescue of South Australia will be contacted.

- There is the potential for other wildlife to be encountered whilst within project areas, with ground dwelling fauna such as snakes and other reptiles common. All personnel are to ensure:
 - Suitable footwear is worn.
 - Known, visible, audible fauna species are not to be approached/disturbed.
 - Be consideration of their movement and noise through the area
 - Cleared tracks within the project areas are adhered to and are within SA Water boundaries.

Raptor Management

The project area is within an area previously utilised by Raptor species which is within the advised 3km buffer zone by the Department of Environment and Water (DEW).

Disturbance of this protected species is an offence. Activities onsite and particularly at areas of the site such as the spit and coastal areas with 'line of site' to nests / observation areas are considered particularly high risk as disturbance may result in nesting failure and abandonment of the nest.

In consultation with DEW, SAW partnered with a raptor specialist in developing a Raptor Management Plan to minimise potential impacts on raptor species.

Controls at the plant site/within 500 m of the spit are as follows.

- Key approved personnel to observe the site and monitor raptor activity/movement (if any) for at least 60 mins before arrival.
- All personnel are to remove high visibility clothing (where safe to do so) when entering coastal /line-of-site areas at Plant site (not WWTP)
- Smaller groups are to visit the spit for a limited time with only necessary personnel to visit this area.
- Care should be taken not to stare / engage with wildlife if observed.
- No photos of the jetty structure are to be taken.
- All visits and works to the plant site should start at the spit and continue to move further away from the spit to reduce the perceived threat to the birds.
- A 'Stop! Think! Then Act!' protocol needs to be enacted if eagles exhibit behavioural responses.

***The current Raptor Management Plan will be reviewed, adapted, and re-issued to take into account final designs and construction methodologies.

5.4.3 Revegetation

- Disturbed areas will be contoured to achieve close to natural contours as possible.
- Areas compacted by construction works that are to be rehabilitated will be ripped along the contour to a depth of approximately 300mm. Land will be graded following ripping to ensure that high or low point do not remain.
- Stockpiled topsoil will be evenly spread over the ripped and graded areas.
- Disturbed areas will be rehabilitated with native species (preferably local indigenous species) as soon as practical following ripping and grading.

5.5 Monitoring and reporting

- The construction area will be formally inspected daily by the Onsite Environmental Supervisor to identify non-compliance with the mitigation measures identified in this CEMP.
- A Compliance Improvement Notice will be completed for any identified non-compliance and will be followed up and resolved; and

- Visual inspections for trapped fauna in open excavations will be conducted each morning and will be completed no later than 0800 hrs.
- Site inspections will identify any lack of progress in revegetating disturbed areas and the Onsite Environmental Supervisor will follow up to ensure erosion and sedimentation do not occur.
- Visuals inspection to identify any diseased or dead plants that need removing and replacing.

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6 Pest and Weed Management Plan

6.1 Performance Objectives

Protect biodiversity values of the site and avoid impacts to native vegetation or fauna.

6.2 Performance Criteria

Develop and implement a site Pest and Weed Management Plan to ensure risk associated with the importation of weeds or plant pathogens to the site are minimised. The plan should include:

- weed management strategies, hygiene procedures and the control of any declared weeds at the site.
- management of construction equipment, vehicles and any imported materials (e.g. soil) used during construction to ensure such equipment and imported materials are weed and pathogen free; and
- compliance with the requirements of SA Water's Phytophthora Management Guidelines (Appendix B).

6.3 Potential Impacts

Potential introduction of weed species on site or infestation of declared an environmental weed species currently at the project site, including:

- *Asparagus asparagoides* – Birdal creeper
 - *Asparagus declinatus* Bridal Veil
 - *Casuarina glauca* - Swamp Oak
 - *Cynara cardunculus ssp. flavescens* - Artichoke Thistle.
 - *Euphorbia terracina* - False Caper
 - *Galenia pubescens var. pubescens* - Coastal Galenia.
 - *Juncus acutus* – Spiny Rush
 - *Lycium ferocissimum* - African Boxthorn.
 - *Nothoscordum sp.* - Onion Weed
 - *Olea europaea ssp. Europaea* – Olive.
 - *Oxalis pescaprae* – Soursob.
 - *Pinus halepensis* - Aleppo Pine
 - *Piptatherum miliaceum* - Rice Millet
 - *Polygala myrtifolia* - Myrtle-leaf Milkwort
 - *Rhamnus alaternus* - Blow-fly bush
 - *Scabiosa atropurpurea* - Pincushion
- The project site is currently not known to be affected by soil pathogens although is potentially at risk of becoming infected with Phytophthora during the construction period considering its location is in a High-Risk Area; and
 - Potential non-compliance with *Native Vegetation Act 1991*.

6.4 Mitigation Measures

6.4.1.1 Pest and Weed Management.

- Ensure that the source of any imported fill is weed/pest free and meets required standard of the Eyre Peninsula Landscape Board.

- Evidence of the source of any imported topsoil shall be provided to the Project Manager and SA Water Environment Representative.
- Vehicles transporting materials must have loads always covered to prevent escape of material to surrounding environment.
- Plant, vehicles, clothing and footwear should be cleaned/swept down and inspected for weed presence and loose soil/sand (which might become dislodged during transport) material prior to entering or leaving worksite.
- Disturbed and/or revegetated areas must be maintained to reduce weed growth. Maintenance activities to be carried out will include spot spraying as required to ensure no weed spread.
- Implement work site conditions (hygiene, waste management) as necessary to ensure that animals do not become a pest during construction activities.

6.4.1.2 Phytophthora Management

- Ensure vehicles, machinery, equipment, and footwear entering the site Phytophthora-free. Objects are to be judged Phytophthora-free when a visual inspection reveals the objects are free of:
 - Clods of soil and/or mud.
 - Slurry consisting of soil and water; and
 - Plant material, especially roots and lower stems.
- Particular attention should be given to cleaning down objects when moving from suspected or confirmed Phytophthora sites to the EPDP site.
- Chlorinated mains water, sources free of Phytophthora, or water disinfected with an appropriate fungicide (e.g. Phytoclean®) or pool chlorine should be used when cleaning down.
- Ensure all materials used, including rubble, sand and gravel, are free of Phytophthora. If in doubt, look for visual symptoms of Phytophthora infestation in vegetation surrounding the quarry or gravel pit and/or have soil/gravel samples tested in the laboratory.
- Restrict soil movement. Replace at original site where possible.
- Any machinery used off the project site/s during the construction or maintenance of a culvert or drain should be cleaned or washed down before moving away from the culvert or drain in all High-Risk Areas.
- Ensure all water used is free of Phytophthora. Disinfect water obtained from dams and streams with chlorine (2ppm for 20 minutes). Water from domestic supplies, deep bores or rainwater does not usually require treatment unless stored in containers exposed to soil organic matter.
- Plant nursery stock (if purchased) should be Phytophthora free prior to planting and sourced from NIASA (Nursery Industry Accreditation Scheme Australia) accredited nurseries.
- In the event of soil, plant material, wash-down effluent, or other potentially Phytophthora infected material being deposited on a Phytophthora free or status unknown site, the following steps should be considered:
 - Demarcate a buffer of 10 - 20 metres around the site of the breakdown (this may be larger depending on the size of the area).
 - Move plant, equipment, or vehicles out of the site only after wash-down.
 - Sign-post the site "Phytophthora Infected" and manage; accordingly, and
 - Raise a non-conformance if appropriate, and record area of Phytophthora infestation.

- Refer to SA Water's Phytophthora Standard Operating Procedure as an aid to identify potential Phytophthora infestations (Appendix B).

6.5 Monitoring and Reporting

- Inspect vehicles, machinery and equipment entering site to ensure compliance with the mitigation measures identified in this CEMP; and
- Revise the CEMP and re-educate site personnel to increase mitigation measures as appropriate if soil pathogens are found to have infested the site.

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7 Soil Erosion, Sediment & Drainage Management

7.1 Performance Objectives

- To minimise erosion and sediment movement.
- To minimise off-site impact of dust and erosion of sediment from stockpiles.
- To protect waterways and surface water quality.
- To ensure stormwater management is incorporated into the construction of the plant; and
- To minimise off-site impacts from surface water runoff during construction.

7.2 Performance Criteria

- Comply with the requirements of the *Environment Protection (Water Quality) Policy 2015* and other relevant regulations.
- Ensure the Construction Environmental Management Plan document addresses the management of excavated material and fill, including incorporating measures to suppress dust and to control the transport of dirt and mud onto local roads.
- Develop and implement a Soil Erosion and Drainage Management Plan (SEMP) for the construction and operation phases of the project. The plan should be in accordance with EPA requirements, and comply with the Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry (1999). The plan should include the following management and monitoring strategies:
 - Minimising areas disturbed, location of stockpiles to protect drainage lines, installation of erosion and sediment control devices and ongoing monitoring of erosion control measures.
 - Maintenance of erosion control devices and sediment control measures and progressive rehabilitation and stabilisation (including revegetation) of disturbed areas.
- Implement opportunities (where possible) for roof runoff and stormwater containment and / or reuse on site. Where feasible, this should incorporate opportunities for stormwater reuse as an alternative to mains water.
- Adopt Water Sensitive Urban Design (WSUD) principles for the design, construction and operation of the Desalination Plant as part of surface water management at the site.
- Construction activities will be managed to minimise the potential for surface water runoff entering the existing drainage channel located to the south of the site, which is ultimately discharged to the marine environment. and
- Ensure management of runoff from the site are in accordance with the CEMP and SEDMP, which will address site stormwater management and control to minimise any impacts to the drainage line that may provide some habitat value to native species

7.3 Potential Impacts

- Potential for surface water runoff entering existing drainage and ultimately discharge into the marine environment.
- Potential altering of drainage lines.
- Potential smothering of / or damage to vegetation.
- Potential loss of topsoil.

- Potential pollution of stormwater to surrounds; and
- Potential for windblown dust to surrounding environment (potential traffic hazard and nuisance to residents).

7.4 Mitigation Measures

7.4.1.1 Sediment and Erosion Control Management Plan

- Ensure total work area footprint is defined and minimise the total area disturbed. Identify 'no go' zones.
- Ensure all works and machinery stay within the defined work footprint.
- Excess soil removed from the site will be disposed of to an EPA licensed landfill or other appropriate location.
- Provision of sediment control structures to prevent sediment entering drainage systems.
- Ensure suitable mechanism for preventing dust/soil leaving site boundary (e.g. provide appropriate washdown facilities).

7.4.1.2 Fill Management and Monitoring Plan

- Locate designated stockpiles and / or construction materials away from drainage lines.
- Avoid placing stockpiles within the drip lines of trees to minimise compaction of the root zones.
- Ensure exposed areas and stockpiles are protected or wetted down in accordance with requirements of water conservation measures to minimise dust generation.
- Install erosion control measures such as silt fences, sterile hay bales, sedimentation sumps or other appropriate measures on the down slope side of fill stockpiles.
- Apply water (in accordance with State Government Water Restrictions) or other soil stabilisation measures to minimise the potential for erosion and dust generation from fill stockpiles.
- Minimise site disturbance beyond that required for specific components of the project to minimise amount of fill requiring stockpiling.
- Control non-contaminated drainage by diverting upslope surface water runoff around/away from fill stockpiles; and
- Progressively stabilise/vegetate fill slopes.

7.4.1.3 Surface Water Management and Monitoring Plan

- Install erosion control measures such as silt fences, sterile hay bales, sedimentation sumps or other appropriate measures in disturbed areas and excavations to prevent runoff to waterways or stormwater.
- Collected stormwater from operational areas will be diverted into on-site.
- Apply water at rates that will not generate significant runoff or use alternative dust suppressants.
- Carry out wash down in dedicated bunded areas.
- Minimise site disturbance beyond that required for specific components of the project.
- Ensure existing monitoring wells are maintained and not damaged to ensure sediments and pollutants do not enter wells and contaminate groundwater.
- All clean water will be diverted and kept separate from potentially contaminated water; and
- Maintain road surfaces.

7.5 Monitoring and reporting

- Inspect and maintain erosion control measures.
- Maintain and upgrade erosion and sediment control structures if necessary to ensure sediment transfer is minimised.
- Maintain surface water management ponds and if necessary, upgrade for expected flow conditions.
- Regular visual inspection of natural drainage channel for deposition of sediment.
- Implement a surface water monitoring program.
- Analytes may include suspended solids, hydrocarbons, and heavy metals.
- Observations of off-site discharge of sediment reported in accordance with site CEMP.
- Observations of dust from stockpiles discharging off-site.
- Results of surface water sampling assessed and reported in accordance with CEMP requirements.
- Maintain and upgrade erosion and sediment control structures if necessary to ensure sediment transfer is minimised.
- Amend dust control measures as a corrective action.
- Implement a surface water monitoring program. Analyses may include suspended solids, hydrocarbons, and heavy metals.
- Results of surface water sampling assessed and reported in accordance with CEMP requirements; and
- Incidents will be reported to SA Water and EPA as required by CEMP and EPA licence.

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8 Groundwater Management Plan

8.1 Performance Objectives

Protect the quantity and quality of groundwater consistent with relevant State water policies.

8.2 Performance Criteria

- Design and construction must protect groundwater during any tunnelling and drilling in relation to groundwater movement and associated migration of potential contaminants; and
- Development of a Groundwater Management Plan that addresses groundwater management, including disposal of groundwater if dewatering is required during construction. The management plan should be developed in consultation with the EPA and should meet EPA licensing requirements.

8.3 Potential Impacts

- Groundwater could become contaminated or in the event of existing contamination, contamination may be mobilised.
- Potential for groundwater movement between aquifers due to excavations.
- Potential migration of contaminants into groundwater from dewatering activities; and
- Potential seepage of chemicals into groundwater systems through spills.

8.4 Mitigation Measures

- Any chemicals utilised are to be used / prepared in areas that have sealed surfaces and bunding in accordance with the EPA Guideline – Bunding and Spill Management, 2016 to prevent seepage into the groundwater systems.
- Excessive dewatering will be avoided. The rate of dewatering will be limited to the minimum rate required for the infrastructure to be installed within the trench / excavation.
- Dewatering water will be infiltrated on-site within cleared or agricultural areas once it has been established that no contaminants are present. Infiltration of dewatering water will be within a defined area (may require earth bunding).
- Dewatering water may be used for dust suppression if monitoring confirms that the discharge water meets set water quality criteria for discharge to land.
- Dewatering water may be discharged to a water course if monitoring confirms that the water meets set water quality criteria for discharge to a water course.
- Dewatering water will be discharged to a watercourse via a settling tank/bund to remove suspended sediments. The size of the settling tank/bund will be designed (subject to land availability) to allow for sufficient retention time to remove visible suspended solids.
- The dewatering water will be discharged from the settling tank/bund onto a hard surface (such as a rocky ledge), or via a diffuser, to minimise flow velocity that could erode the water course bed, banks or vegetation of the water course, and to aerate the discharge; and

- Continuous row(s) of sterile hay bales or geofabric will be installed, through which the discharge will pass prior to entering the watercourse if the settling tank/bund does not sufficiently remove suspended sediments (i.e. the water course is visibly turbid). The bales / geofabric will be fixed using stakes to the base of the watercourse. The bales / geofabric and stakes will be removed following the completion of discharge.
- The design of any below ground structures must ensure that they will not be affected by any potentially contaminated groundwater and designed to prevent groundwater ingress. Future delineation of the existing groundwater contamination will further inform the contractor in implementing these design features effectively.

8.5 Monitoring and reporting

- The discharge water will be monitored at the discharge point once per day for pH and temperature using a calibrated multimeter probe(s).
- The water within a watercourse to which dewatering water is discharged will be monitored at 100m upstream and 100m downstream of the discharge point for pH and temperature using a calibrated multimeter probe(s). The results of discharge will be compared to the upstream water quality.
- A visual turbidity assessment will be taken of the discharge and of the watercourse at 100m upstream and downstream of the discharge.
- Sterile hay bales and/or a geofabric will be installed within the watercourse downstream of the discharge to reduce turbidity if the watercourse is identified as visibly turbid.
- The results of monitoring for pH, temperature and turbidity will be recorded on the Water Discharge Monitoring Log.
- The rate of dewatering will be adjusted, or location of dewatering changed, if the dewatering discharge to a watercourse does not meet the temperature discharge objectives.

9 Marine Management Plan

The EPDP will require the construction of an intake pipeline and inlet structure, and an outfall pipeline with diffusers. The final design and construction methods of the intake and outfall pipeline and structures are the responsibility of the contractor appointed by SA Water.

The marine works may be outlined in a separate Dredge Environmental Management Plan. If developed, this section should be removed and the DEMP implemented as a standalone plan.

9.1 Performance Objectives

- Avoid the introduction, spread and establishment of marine pests.
- Minimise impacts to marine recreational activities.
- Protect the ecological integrity and values of the marine environment.
- Protect existing coastal processes.
- Protect marine mammals; and
- Protect marine flora and fauna and associated habitats.

9.2 Performance Criteria

Develop and implement a Marine Management Plan that includes:

- A Marine Pest Risk Assessment and Monitoring Plan, including quarantine and cleaning protocols for all marine vessels and equipment used on the Desalination Plant. The plan should address risks associated with aquatic animal diseases, including Abalone Viral Ganglioneuritis (AVG).
- Receiving water monitoring in accordance with project approvals and demonstrating compliance with project environmental objectives and the *Environment Protection (Water Quality) Policy 2015*.
- Contingency, spill management and emergency response plan for risks associated with potential spillage of chemicals and contaminants to marine environment.
- Management of underwater noise, consistent with the procedures outlined under EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales.

Any dredging will be undertaken under a separate dredging licence from the EPA. As such a Dredge Management Plan (DMP) will be required and will include the following:

- Best practice measures to minimise dredge footprint.
- Sediment/turbidity control including a monitoring plan and turbidity trigger levels that when exceeded work will cease.
- Compliance with all regulatory requirements, including EPA licensing requirements management of spoil from dredging works,
- Spoil to be disposed of in accordance with EPA licence requirements and national Ocean Disposal Guidelines for Dredged Material. Where feasible land-based disposal and reuse of material should be considered; and
- Timing of dredging to avoid dredge tides and recruitment periods for key reef species (July to December), where feasible.

Develop and implement management systems, including communication protocols with recreational fishers and divers to minimise disruption to recreational activities.

- Minimise the potential for damage caused by recreational and commercial vessels with the establishment of an exclusion zone in accordance with DTI requirements.
- Provision of navigation aids to identify locations of marine structures in accordance with DTI and regulatory requirements.
- No explosive blasting to be undertaken within the coastal cliff intertidal and subtidal zone and minimised elsewhere within the marine environment. If blasting is required, it must be in accordance with Construction Environmental Management Plan and consistent with the procedures outlined under EPBC Act Policy Statement 2.1.
- Minimise the impacts on marine flora, fauna and habitats during construction, commissioning, and operation.

9.3 Potential Impacts

- Removal, damage and disturbance to marine habitats and species during construction
- Interruption of marine habitat connectivity.
- Sediment and debris discharge to marine system during construction smothering marine habitats and associated issues.
- Disturbance or injury to marine species through noise / vibration impacts during construction.
- Introduction of marine pest species by vessels during construction; and
- Potential for spillage during construction.

9.4 Mitigation Measures

9.4.1.1 Marine Pest Risk Assessment and Monitoring Plan

- Follow quarantine protocol for all barges, tugs and other vessels used on the EPDP. Marine vessels arriving from outside Australian waters will be inspected for biofouling and sediments in accordance with Australian Quarantine and Inspection Service (AQIS) requirements and the *Quarantine Act 1908*.
- Ensure that vessels have a Ballast Water Management Plan to provide detailed instructions for ships personnel on how to manage ballast water on board.
- Precautionary measures to prevent the translocation of pests in biofouling or entrained in seawater may include (depending on the origin of the vessel):
 - Slipping or dry docking and removal of all biofouling growth for the hull and hull niches (propellers, propeller shafts, sea chests, intakes and discharges, cathodic protection anodes etc.) and ally, renew or repair the antifouling system using a system appropriate to the vessels intended operation, with particular attention to the surface preparation standards and paint application in accordance with the manufacturers specifications.

- Ensure all wetter areas and hull recesses (e.g. sea chests, anchor lockets, deck wells, and internal pipework) are drained, any sediments and biological material removed, and the areas allowed to dry out.
- Diver inspection and cleaning – if a maintenance slipping/dry docking has been recently undertaken (less than 12 months ago), and the vessel cannot be easily reslipped for inspection and cleaning, undertake a diver inspection prior to relocating the vessel to ensure the hull and hull niches are free of biofouling. If secondary biofouling growth is detected (visible animal or plant growth), the vessel will be slipped, and biofouling removed.
- Cleaning and sterilising techniques applied to equipment – before departure, and routinely during operations, inspect and clean all berthing lines, anchors, anchor chains, cables, and other submersible equipment to ensure they are free of attached or entangled marine growth; and
- Manage ballast water – on arrival at a South Australian port, discharge any seawater carried into the state into a land-based waste system (e.g. sewer or waste contractor) that does not discharge into the marine environment.

9.4.1.2 Marine Habitat and Species Removal, Damage and Disturbance

- Offshore construction works will be contained within the Marine Exclusion Area and construction footprint will be reduced as far as practicable.
- Reduce blasting to the minimal level and reduce impact by using a number of smaller rather than larger charges for the blasting event and in accordance with EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales.
- No blasting activities should occur within the marine mammal migration season (approximately May to November).
- Marine mammal spotters should be utilised during construction and an exclusion zone established whereby blasting and/or dredging stops if a marine mammal is spotted within 500m of the work area.
- Use of rock armour to protect pipe will 'reconnect' and encourage recovery of subtidal reef system.

9.4.1.3 Dredge Management Plan

- If dredging is required, this will be subject to a separate approval from the EPA. A Dredge Management Plan (DMP) will be required to be submitted to the EPA as part of licence agreements.
- The DMP should include the following:
 - Ensure dredging contractor utilises best industry practice to minimise the dredging footprint.
 - Dredging will take place to coincide with suitable local currents and swell patterns.
 - Depth and width of dredge channels will be planned and completed to reduce the footprint of impact (and the need for future dredging);
 - A water quality monitoring program will be implemented to ensure that turbidity levels do not have the potential to impact on marine flora and fauna, particularly seagrass beds and subtidal reefs.

- Bund walls and sediment traps will be designed and constructed in accordance with relevant standards. This should limit the movement of contaminants and risk of erosion/breaching.
- Sediment containment structures will be appropriately maintained and where containment screens are used, joints should be over-lapping and be appropriately secured.
- Sediment containment screens should be made of puncture and tear resistant material, hessian is not recommended. Screen Selection should consider fire retardancy, burst strength and ultra-violet resistance. Shade cloth will not prevent the escape of fine dust and should not be used for temporary enclosures if work generates silica, lead, or other toxic dusts.

9.4.1.4 Underwater Noise and Vibration Management

- Explosive works should only be conducted during periods when fish and/or marine mammal activity or sensitivity is lowest such as outside of the known migratory months for whales (approximately June to late November).
- Marine mammal spotters should be employed during the dredging and entrenching campaign and an exclusion zone established whereby dredging stops if a marine mammal is spotted within 500 metres of the dredging vessel.
- In the event of injured marine mammals or birds call FISHWATCH (1800 065 522).

9.4.1.5 Chemical and Contaminant Spillage and Leakage

- Prepare and follow an Emergency Spill Response Plan which contains contingency measures in the event of an accident (refer to Section 16.4); and
- Construction equipment and storage tanks shall be bunded.
- No maintenance of construction equipment is to occur on site and if re-fuelling is necessary, it must be undertaken in an area where spills can be contained.

9.5 Monitoring and reporting

- Dredging monitoring and reporting will be under agreement with the EPA and detailed within the DMP under a dredging licence; and
- Monitoring and reporting requirements will be detailed by the contractor once stipulated by the EPA as part of licence agreements.

10 Traffic Management Plan

Approximately 15,000 light vehicle movements predominantly supporting the transport of construction personnel are expected, during construction of the development. Buses will be utilised to transport personnel to site from Port Lincoln accommodation.

Of the 10,000 heavy vehicle movements anticipated (excluding the desalinated water transfer pipeline), the trips are broken down as below:

- quarry material (3,500)
- concrete (5,000)
- plant mobilisation (100)
- deliveries (1,000)
- bus (600–800).

25 oversized deliveries are expected to transport prefabricated components.

Construction vehicle movement will occur within publicly accessible roads and road reserves. The construction vehicles movements to and from the site may pose a risk to members of the public and construction workers if accessing the site.

(The contractor will need to provide details of any road closures and any associated mitigation measures. They will also be required to specify the preferred routing for the different vehicle types.)

10.1 Performance Objectives

Manage effects of increased traffic and transportation during construction and operation to minimise impacts to the community and protect public safety.

10.2 Performance Criteria

- Develop and implement a Traffic Management Plan in consultation with relevant Authorities to manage and minimise any adverse traffic impacts to the local community and businesses during construction and operation.
- Access to the site to consider impacts on the local and regional road network and to incorporate measure to reduce these impacts; and
- Ensure ongoing communication with the local community and businesses to manage any impacts associated with traffic.

10.3 Potential Impacts

- Impacts on existing traffic and infrastructure associated with the transport of plant, equipment, and materials during construction.
- Disruption to local traffic patterns.
- Disturbance to traffic patterns outside of construction work area.
- Potential disturbance and interruption to local traffic patterns; and
- Potential soil compaction and nuisance dust.

10.4 Mitigation Measures

- Traffic management will be approved and coordinated with Department for Transport and Infrastructure (DIT) and the City of Port Lincoln prior to start of construction.
- Establish designated access route/s to the site and inform drivers of these routes, parking areas and acceptable delivery times. Construction vehicles will typically use the following major roads for the transport of construction materials and equipment to and from the construction site to minimise the disturbance on local traffic and the community:
 - B100 Level 3 heavy vehicle route (Hallett Place, Liverpool Street, Porter Street)
 - Dublin Street (bridge over railway line)
 - Luke Street
 - Verran Terrace and Bel-Air Drive
 - Ravendale Road
 - Marina Drive
 - St Andrews Drive
 - Blue Fin Road
 - Proper Bay Road
- Limit vehicle speeds in critical areas both on and off site.
- Allow one way traffic flow through the site to minimise the use of reversing alarms as much as possible and minimise traffic delays.
- Minimise diesel engine idle times and queuing.
- Ensure vehicles within compounds do not queue outside the worksite close to residential areas. This particularly applies in the commencement of shift during morning hours, where sleep disturbance issues may arise.
- Entry and departure of heavy vehicles to and from the site are restricted to the standard daylight construction times where possible.
- Ensure ongoing communication with the local community and businesses to manage any impacts associated with traffic.
- Position frequently trafficked haulage routes as far away from sensitive receptors as practicable.
- Seal heavily trafficked areas to the extent possible; and
- Restrict vehicle speeds (e.g. 5 to 10km/hr) to minimise wheel generated dust on unsealed routes.

10.5 Monitoring and reporting

- Undertake regular site road maintenance (and inspections) to minimise impact noises from trucks travelling over irregularities in the road surface (potholes, washouts or ruts); and
- Undertake regular monitoring of traffic to ensure construction traffic are complying with mitigation measures including speed limits, driver routes, parking areas, working hours.

11 Air Quality Management

Air emissions such as nuisance dust may result during construction activities from a number of sources, specifically from activities such as:

- Excavation and transportation of materials.
- Loading and unloading of trucks.
- Vehicle movements; and
- Wind erosion from stockpiles and unsealed roads.

11.1 Performance Objectives

- Manage impacts to air quality during construction activities due to emissions from vehicles, plant and equipment.
- Ensure air emissions do not exceed regulatory requirements; and
- Minimise the generation of dust and associated impacts during construction activities such as construction vehicles and machinery and earthworks.

11.2 Performance Criteria

- Compliance with regulatory requirements of Atmospheric emissions including the National Environmental Pollution Measure for Air Quality (NEPM), the *Environment Protection (Air Quality) Policy 2016 (SA)* and the *Environment Protection Act 1993 (SA)*.
- Development and implementation of a Construction Air Quality Management Plan, including specific measures to manage dust and limit dust emissions.
- Ensure minimal odour to sensitive receptors with regular disposal of waste and with waste disposal practices fully compliant with regulatory requirements.
- Outline air quality monitoring requirements in order to ensure that air emissions do not exceed regulatory limits.
- The Contractor must ensure that all plant and equipment at the site, or used in connection with the Contractor's activities, are maintained and operated in a proper and efficient manner; and
- Air Quality needs to be carefully managed in accordance with the CEMP to alleviate the potential concern these impacts may cause to local residents.

11.3 Potential Impacts

- Reduction in air quality in the local area during construction activities.
- Emissions from construction traffic impacting on the local community.
- Greenhouse gas emissions increase during construction activities.
- Potential odour emissions which may affect the local community; and
- Air borne dust emissions which may impact on the local community and local businesses.

11.4 Mitigation Measures

Construction activities will be limited to the hours from 7.00 am to 7.00 pm Monday to Saturday not including public holidays and residents / sensitive receptors will be advised of any works taking place outside the specified hours.

11.4.1.1 Air Emission Management

- Minimise idling time in construction machinery to reduce greenhouse gas emissions during construction.
- Vehicles and equipment are to be appropriately maintained to facilitate efficient operation and air emissions will be minimised by the utilisation of appropriate emission control mechanisms.
- Emissions control devices will be installed (e.g. fabric filters) on concrete batching/crusher plants.
- All fossil-fuelled plant and equipment will be maintained to facilitate efficient operation.

11.4.1.2 Dust Management

- Activities with high dust generating potential (including heavy excavations and drilling) will be restricted or cease during periods when strong winds are blowing towards sensitive receptors.
- Disturbed areas will be kept to a minimum and then revegetated as soon as possible so that dust emissions will be minimised.
- Stockpiled material will be located as far away from sensitive receptors as practicable and covered or watered regularly (in accordance with State Government Water Restrictions) to prevent dust.
- Natural landforms will be used to shield sensitive receptors/ residents from air borne dust generated during construction operations in exposed areas.
- Regular watering (in accordance with State Government Water Restrictions) of exposed surfaces including exposed stockpiles, unsealed roadways, and dry/fine material in regions within blasting/drilling areas will be undertaken to suppress dust generation.
- All construction vehicles will be maintained and have covers (where possible and as required) to prevent any loss of load, whether in the form of dust, liquid, solids or otherwise.
- Truck cleaning stations will be installed at the site boundaries to minimise off-site transport of material which could cause dust emissions.
- Vehicle speeds will be restricted (e.g. 5 to 10 km/hr) to minimise wheel-generated dust on unsealed routes and truck loads limited to a vertical height no greater than 0.5 m above the side walls of the vehicle.

11.4.1.3 Odour Management

Waste materials will be taken off site to be disposed of at regular intervals using appropriate waste disposal protocol.

11.5 Monitoring and reporting

- Undertake regular inspections to monitor air quality outputs to ensure that regulatory limits are not exceeded.
- Monitoring of air quality will be undertaken at boundary of sensitive receptors during the dustiest periods of construction (e.g. soil excavation works).
- The monitoring frequency for air quality monitoring will be agreed upon with the EPA and is likely to be specified as a consent condition within the Project Approvals. *(The contractor will detail monitoring frequency in this CEMP when provided).*

- Where air quality levels above *Environment Protection (Air Quality) Policy 2016 limits* are recorded, the Contractor Onsite Project Manager will be notified, and appropriate actions shall be determined to rectify the problem.
- In the event of a complaint, the following actions will be taken:
 - Complaint will be recorded and actioned according to the community complaints management procedures in Section 20 20, Community Complaints Management.
 - Change procedures to reduce the emission that is the cause of the nuisance complaint.
 - Liaise with the administering authority and/or complainant over remedial action; and
 - Where the above actions do not resolve the air quality issue and when requested by the administering authority, air quality monitoring must be undertaken to investigate any complaint of environmental nuisance and the data and analysed results notified to the administering authority within 7 days of completing the monitoring.
- Procedures should be implemented whereby activities generating dust cease when strong winds are present and the prevailing for the southwest and there is visible dust movement off-site.
- Monitor plant and equipment at the site, or plant used in connection with the contractors' activities are maintained and operated in a proper and efficient manner.

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12 Noise & Vibration Management

The proposed development has the potential to cause adverse impacts on the acoustic environment of nearby noise sensitive receptors if mitigation measures are not implemented. Primary noise sources include, but are not limited to, diesel powered mobile plant equipment used for excavation and earth moving operations.

12.1 Performance Objectives

- To minimise adverse noise and vibration impacts resulting from the construction of the proposed development; and
- To implement proactive measures at the source, path, and receptor so that no noise and vibration complaints are received during the construction of the proposed development.

12.2 Performance Criteria

- Comply with the South Australian *Environment Protection (Commercial and Industrial Noise) Policy 2023 and Local Nuisance and Litter Control Act 2016*.
- Ensure Noise and Vibration Management Plans are developed for both construction and operation. These plans should be developed in consultation with the EPA. The plans must accurately predict noise or vibrations levels generated from noisy activities and identify mitigation measures to minimise noise impacts, particularly to residential areas. Such measures should include, where feasible:
 - Controlling noise at the source, incorporating less noisy construction techniques.
 - Scheduling noisy activities for daytime hours in accordance with any authorisations required under *Environmental Protection Act 1993 (SA)*;
 - Equipment maintenance and use of mufflers and silencers; and
 - Use of noise barriers.
- The Noise and Vibration Management Plan should include monitoring (either on a regular or where required continuous basis) to verify that the noise levels generated are not exceeding the criteria set by the EPA. It will also allow for a regime of regular community/stakeholder consultation regarding noise and vibration management.

12.3 Potential Impacts

- Nuisance noise and vibration emissions disturbing local residential and industrial areas; and
- Noise and vibration emissions disturbing local fauna.

12.4 Mitigation Measures

- Ensure that construction works, and consideration of quiet work practises are carried out in accordance with AS 2436:1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites and the South Australian *Environment Protection (Commercial and Industrial Noise) Policy 2023*;

- Ensure that prior to the commencement of site works, the surrounding community has been informed of the upcoming activities and likely duration via the Community Engagement Plan.
- Ensure works comply with normal working hours as stated in the *Environment Protection (Commercial and Industrial Noise) Policy 2023*. For works required outside of normal working hours consultation will be required with the EPA.
- Schedule noisier activities such as earthworks and piling during normal operational hours.
- Maximise the offset distance between noisy plant and continuous operations (generators, crushers etc) and nearby noise sensitive receptors or use screening such as:
 - Temporary barriers.
 - Purpose built barriers.
 - Materials stockpiles.
 - Site sheds, buildings, or other structures; and
 - Natural topographical barriers.
- Control noise at the source, incorporating less noisy construction techniques.
- Noise issues will be discussed during work site induction and techniques to minimise noise emissions will be promoted.

12.4.1.1 Construction Plant and Equipment

- Where possible, loading and unloading of materials and equipment will be carried out in areas as far away from noise sensitive areas as possible.
- Respite periods will be employed for particularly noisy activities where possible.
- Equipment having directional noise characteristics (emits noise strongly in a particular direction) will be orientated such that noise is directed away from sensitive areas.
- The coincidence of noisy plants operating at the same time close together adjacent to sensitive receptors will be avoided.
- Acoustic enclosures or localised noise screens will be incorporated around fixed plants or over individual pieces of equipment where appropriate based on acoustic assessment.
- All mechanical plant equipment will be silenced by practical means using current control technology such as the fitting of silencers and mufflers in accordance with manufacturer's specifications, and the equipment will also be maintained appropriately.
- When using pneumatic equipment, compressors with silencers fitted will be selected or quieter hydraulic equipment will be used.
- Plant with the lowest noise rating which meets the requirement of the task will be selected.
- Where possible, works in close proximity to sensitive receptors, will use electric motors in preference to diesel motors.
- Where reversing alarms are to be used, their acoustic range will be limited to the immediate danger area. Traditional "beeper" alarms for mobile equipment could be replaced with:
 - "Smart alarms" that adjust their volume depending on the ambient level of noise. These are particularly useful during operations in quieter areas of the site, where other noise on the site is less, or when works take place during quieter periods such as night time and early morning. and
 - "Broadband" or "quacker" alarms. These emit a less annoying sound and are more directional (meaning the sound is focused to the area of concern). and

are less likely to travel to noise sensitive areas. Enclose noisy equipment as much as possible, depending on the nature of the equipment, access and ventilation requirements.

- Where practicable, metal surfaces subject to impacts with heavy objects (such as rock dropping into empty truck trays, or metal grates on road ramps etc) will be lined with rubber impact protection to minimise noise.
- Tailgates on trucks will be fitted to avoid noise from the movement of empty trucks.
- Equipment not being utilised as part of the work will not be left standing with engines running for extended periods.
- Drivers will be informed of the designated access router/s to the site, the parking areas and acceptable delivery times that will be established.
- Regular site road maintenance (and inspections) will be undertaken to minimise impact noises from trucks travelling over irregularities in the road surface (pot holes, washouts or ruts).
- Vehicle speeds will be limited in critical areas both on and off site.
- One way traffic flow only will be allowed through the site to minimise the use of reversing alarms as much as possible and traffic delays will be kept to a minimum.
- Ensure vehicles within compounds do not queue outside the worksite close to residential areas. This particularly applies in the commencement of shift during morning hours, where sleep disturbance issues may arise.
- Entry and departure of heavy vehicles to and from the site will be restricted to the standard daylight construction times which are 7.00am to 7.00pm Monday to Saturday excluding public holidays. Sensitive receptors and residents will be informed if any works are to take place outside of the specified hours; and
- Residents/sensitive receptors will be advised of any works outside of the hours outlined in EPA Policy.

12.5 Monitoring and reporting

- Due to the varying nature of the construction activities undertaken throughout the project the effectiveness of the construction noise mitigation measures and management procedures should be reviewed regularly.
- Regular inspections will be conducted, and effective maintenance of both stationary and mobile plant and equipment (including mufflers and enclosures etc) will take place.
- A site activity log will be maintained to record the type of activities occurring during various times of the day to assist with retrospective investigation of community complaints related to noise.
- Monitoring of noise levels will be undertaken at boundary of sensitive receptors during the noisiest periods of construction (e.g. during piling or soil excavation works).
- The monitoring frequency for noise and vibration monitoring will be agreed with the EPA and is likely to be specified as a consent condition within the Project Approvals. *(The contractor will detail monitoring frequency in this CEMP when provided).*
- Where noise levels above *Environment Protection (Commercial and Industrial Noise) Policy 2023* limits are recorded, the Contractor Onsite Project Manager will be notified and appropriate actions shall be determined to rectify the problem.
- In the event of a complaint, the following actions will be taken:
 - Complaint will be recorded and actioned according to the community complaints management procedures in Section 2020, Community Complaints Management.

- Change procedures to reduce the noise that is the cause of the nuisance complaint.
- Liaise with the EPA and/or complainant over remedial action. and
- Where the above actions do not resolve the noise issue and when requested by the administering authority, noise monitoring must be undertaken to investigate any complaint of environmental nuisance and the data and analysed results notified to the administering authority within 7 days of completing the monitoring.
- Measuring and reporting the monitoring following a complaint must comply with the *Environment Protection (Commercial and Industrial Noise) Policy 2023* as well as include the following:
 - LA_{max}, adj T.
 - L_AN, T (where N equals statistical levels of 1, 10, and 90);
 - The level and frequency of occurrence of impulsive or tonal noise.
 - Atmospheric conditions including temperature, relative humidity and wind speed and direction; and
 - Effects due to extraneous factors such as traffic noise.

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13 Waste Management

Construction of the EPDP will produce a number of waste streams, including:

- Soil and excess cut from earthworks.
- Timber and concrete waste.
- Steel and metal off cuts.
- Plastic from pipework and insulating wiring
- Paint; paint tins.
- Packaging equipment from equipment and materials.
- Office refuse, paper etc; and
- Food containers, wrappings, and food scraps.

During construction all efforts shall be made to minimise waste generated onsite. All construction wastes generated onsite will be transported off site for appropriate disposal. Appropriate waste collection, transport and disposal contracts will be in place to ensure all wastes are managed in accordance with the CEMP.

Each Construction Contractor will ensure collection and offsite disposal of all liquid wastes, including sewage. Collection facilities are to be located within the boundaries of the site.

13.1 Performance Objectives

Minimise waste production and manage wastes consistent with relevant State waste policies and guidelines.

13.2 Performance Criteria

- The Contractor must ensure that waste produced as a result of construction activities is minimised.
- In assessing waste management options, adopt the waste management hierarchy in order of preference:
 - Waste avoidance and reduction.
 - Maximise waste reuse, recovery and recycling.
 - Waste treatment; and
 - Waste disposal.
- Waste to be disposed of in accordance with EPA guidelines.
- Where possible, design excavation works should balance cut to fill to minimise the requirement for offsite disposal.

13.3 Potential Impacts

- Inappropriate disposal of waste materials and products causing environmental damage; and
- Ineffective waste reuse, recovery and recycling practice.

13.4 Mitigation Measures

- Waste will be collected and segregated onsite and either recycled or disposed of to an EPA licensed disposal facility.
- Where possible waste materials will be reduced in quantity or re-used, and segregation of waste materials will be required prior to offsite disposal to allow the capture of recyclable materials (oils, metals, glass, plastics, paper, and wood products);
- Construction and demolition material will be segregated, reused onsite where possible or removed by a waste contractor for recycling or disposal.
- In the event that spillage resulting in soil contamination occurs, the potentially contaminated material will be segregated and appropriately disposed of to a licensed waste repositories in accordance with EPA requirements.
- No litter allowed to be left onsite from site personnel. All work areas to be tidied each day.
- Spent chemical solutions (CIP, Chemical preservative solution and associated flushing waste) to be discharged to a collection tank for neutralisation and off-site disposal to a trade waste collection point.
- Any chemical waste disposal will occur in accordance with Material Safety Data Sheets (MSDS) and industry guidelines.
- Sewage waste generated during construction will be collected and pumped out as necessary for offsite disposal.
- Construction Contractors are to enter (into an agreement with an approved waste contractor) and provide monthly reports detailing the following information:
 - Date of pickup of waste.
 - Description of waste.
 - Cross reference to relevant waste transport documentation.
 - Quantity of waste.
 - Origin of the waste.
- Destination of the waste (for listed wastes); and
- Intended fate of the waste, for example, treatment, reprocessing or disposal.
- All listed waste removed from the site, both solid and liquid wastes, must be removed by a person who holds a current approval to transport waste under the provisions of the *Environment Protection Act 1993*.

13.5 Monitoring and Reporting

- Environmental Supervisor to conduct inspections of the site for general waste and litter and ensure waste recycling protocols are being followed.
- Any non-compliance identified will be recorded and followed up according to Section 21.3, Compliance Management.

14 Sustainability Management Plan

During construction all efforts will be made to reduce the greenhouse gas emissions, and to use construction techniques that are more sustainable such as the use of self-compaction concrete, formwork that can be re-used and environmentally friendly chemicals.

14.1 Performance Objectives

Maximise efficient use of resources including minimising resource use and maximising recovery and recycling.

14.2 Performance Criteria

- Development and implementation of Sustainability Management Plans for each phase of the project to minimise the greenhouse footprint through design, construction, and operation.
- Incorporate reuse or recycling of materials where possible.
- Minimise water use and as part of the design, construction, and operation for temporary and permanent works; and
- Incorporate reuse or recycling of water including rainwater harvesting and stormwater recycling and reuse of construction water where possible.

14.3 Potential Impacts

- Ineffective waste reuse, recovery and recycling practice.
- Increased volume of greenhouse gases emissions.
- Increased energy consumption

14.4 Mitigation Measures

- Selection and sourcing of materials for the desalination plant must take into account whole-life impacts and embodied energy (utilise Section 4.3 of the State Government's Renewable Energy, Energy Supply and Greenhouse Gas Emissions Strategy).
- Where possible source materials locally to minimise transportation and fuel costs.
- During construction equipment, materials and transportation with a low embodied energy or carbon footprint will be selected where efficiency is not significantly compromised.
- Water use will be minimised during construction. Water used to control dust or other pollutants resulting from building works must be applied from a hand-held hose fitted with a trigger nozzle or directly from a motor vehicle designed to carry and deposit water (in accordance with State Government Water Restrictions).
- Topsoils will, where possible be re-used as landscaping materials while rock and soil will be used as base material during levelling of the site in preparation for the construction of tanks and structures; and
- All excess soil materials will be taken off site for disposal and reuse in an approved manner to landfill following appropriate classification as per the contamination management plan.

14.5 Monitoring and reporting

- The Environmental Supervisor will carry out inspection to ensure compliance with water saving measures.
- Monitoring of greenhouse gas emissions, energy production and energy consumption will be carried out in accordance with the *National Greenhouse and Energy Reporting (NGER) Act 2007* part 3.
- Records will be kept that will allow accurate reporting of energy consumption, energy production and greenhouse gas emissions, under the NGER Act 2007.
- Public disclosure of corporate level greenhouse gas emissions and energy information; and
- Consistent and comparable data available for decision making in particular the development of the Australian Emissions Trading Scheme.

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15 Contamination Management Plan

Contamination assessment was undertaken at the construction site to identify areas of existing soil and groundwater contamination. Soils at the site are not likely to pose significant health or ecological risk.

Investigations on site have indicated that there is an extremely low probability of acid sulfate soils being present on the construction site, however the following section details procedures to manage acid sulfate soils in the unlikely event that they are encountered.

15.1 Performance Objective

Protect human health and the environment through management of any contamination.

15.2 Performance Criteria

- Assess risk and management requirements associated with identified contamination issues in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999, and any EPA regulatory requirements.
- Develop a Management Plan, in accordance with EPA requirements, that outlines measures for the assessment, management or removal of any contaminated material; and
- Where practicable, re-use and remediate any contaminated material encountered on site. Where disposal of contaminated material is required, this should be undertaken in accordance with appropriate EPA licensed landfill.

15.3 Potential Impacts

- Potential to contaminate soils and groundwater with the use of hazardous materials such as fuels, and the importation of fill materials from a potentially contaminated site.
- Potential to expose and further delineate any groundwater contamination.
- Potential to expose previously unknown regions of soil contamination or acid sulphate soils; and
- Potential to impact on the existing levels and quality of shallow and regional groundwater aquifers.

15.4 Mitigation Measures

- Practice appropriate storage and use of potentially hazardous materials to prevent site contamination and implement management controls for hazardous goods on site to protect groundwater and soil, including a spill response procedure, and on-site equipment and training (refer to Section 16), Hazardous Materials Management);
- Adopt appropriate waste management strategies (Section 17 13, Waste Management) to prevent pollution to soil and ground and surface waters.

- Where possible, avoid groundwater during any tunnelling and drilling and ensure its protection in relation to groundwater movement and associated migration of contaminants.
- Any fill to be imported to site is to be verified as 'clean fill' and suitable for use on site.
- If contaminated soil is found on site or soil becomes contaminated during site works, the soil must be stockpiled in a bunded area, taking care not to cross-contaminate clean soils and locating stockpiles in an area of least disturbance to the natural environment.
- In the event that potentially contaminated soils are identified, suitable and appropriate laboratory testing will be undertaken to classify the soils.
- Ensure that any contaminated soils (and/or fill) are managed appropriately in liaison with the Environmental Consultant.
- If re-use of remediated materials is not possible, then the material is to be disposed of to a licensed waste repositories in accordance with EPA requirements.
- Surface water drainage control should be implemented to ensure that contaminants are not mobilised off site and surface water resources are protected.
- Personnel should follow the contractors Occupational Health and Safety requirements when directly involved in excavation of contaminated soils to avoid human contact.

15.4.1.1 Acid Sulphate Soils

- In the unlikely event of uncovering potential acid sulfate soil, minimise disturbance or drainage of the acid sulphate soil materials and prevent oxidation.
- Follow SA EPA Acid Sulfate Soil Material Guidelines, November 2007 (Appendix C) to further investigate, including:
 - Implement field identification indicators in accordance with Appendix A of the Guideline.
 - Undertake detailed testing in accordance with Appendix B of the Guideline if field indicators indicate the presence of actual or potential acid sulphate soils; and
 - Use criteria in Appendix C of the Guideline to classify acid sulphate soil material.
- In addition, if actual or potential acid sulphate soil material is indicated by additional investigations, the following management protocols will need to be considered:
 - Minimise the disturbance or drainage of acid sulphate soil materials.
 - Prevention of oxidation.
 - Minimise oxidation rate and isolate higher risk materials from exposure.
 - Contain and treat acid drainage to minimise off-site impacts.
 - Separate acid sulphate material.
 - Manage stockpile areas; and
 - Provide an agent to neutralise acid as it is produced.

15.5 Monitoring and reporting

- Continue groundwater level monitoring during construction including periodic measurements of electrical conductivity and pH, and assess baseline water levels considering seasonal variations;

- Daily inspections are to consider the potential for site contamination and any identified activities which have the potential to contaminate the site are to be modified so that the risk is eliminated or reduced significantly.
- The Site Supervisor is to review documentation for any imported fill to site.
- Daily inspections are to be conducted by the Environmental Supervisor during activities that have the potential to uncover previously unidentified soil or groundwater contamination or acid sulphate soils (such as earth moving and excavations).

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16 Hazardous Materials Management

16.1 Performance Objectives

Protect the environment and human health from the impacts of hazardous materials.

16.2 Performance Criteria

- Hazardous materials (including chemicals and fuels) delivery and storage areas must be bunded in accordance with the South Australia EPA Bunding and Spill Management guidelines and must ensure that any spills do not enter the site stormwater system.
- Limit the on-site storage of hazardous substances; and
- Emergency response and contingency plans must be developed that include procedures that deal with the management and reporting of any spills. Spill response kits to be available on site (including for offshore works) and maintained to relevant standards.

16.3 Potential Impacts

Potential for accidental spill of hazardous substances such as chemicals and/or hydrocarbons.

16.4 Mitigation Measures

- Chemicals and fuels storage areas are to be located away from existing drainage lines, have appropriate bunding and wastewater collection mechanisms in accordance with relevant Australian Standards including SA EPA Bunding and Spill Management Guidelines (May 2016).
- Empty fuel containers must also be stored within bunded areas.
- Fuels or other chemicals used during construction shall be handled in accordance with these relevant Australian Standards and accepted industry practice so as to minimise the risk of spills. All containers holding fuels and/or chemicals are to be clearly labelled and empty containers are to be disposed of appropriately.
- Where fuel is to be stored and dispensed on site, appropriate measures shall be implemented to minimise spillage to ground (i.e. bunding). Refuelling is only to be undertaken in these bunded areas.
- Chemical and hydrocarbon wastewater must be disposed to a liquid waste disposal facility or company or treated to an acceptable level for discharge to the sewer with the permission of the responsible authority.
- Waste storage facilities and spoil placement areas are to be located away from existing drainage line and have appropriate bunding and drainage mechanisms.
- Material Safety Data Sheets relevant to the specific chemicals are to be stored on site and shall be available at all times and accessible to all personnel.
- All potentially contaminating materials used on site shall be listed in a Hazardous Materials Register (to be provided/curated by contractor), including storage location details and requirements, proper usage, safe handling procedures and appropriate disposal procedures.

16.4.1.1 Emergency Spill Response Plan

- Appropriate spill response and containment equipment (Spill Response Kits) will be kept at the site in close proximity to storage and handling areas.
- All employees will be educated in the Emergency Spill Response Plan for a spill or leak of contaminating materials.
- Spills and leaks will be cleaned up and remediated promptly with a Spill Response Kit. The following procedures should be followed:
 - Isolate the spill area and.
 - Identify hazards and use Personal Protective Equipment (PPE) equipment.
 - If it is safe to do so, restrict or stop the source of the spill (i.e. close a valve if it is safe to do so).
 - On advice from the Environmental Supervisor and Onsite Site Supervisor, the spilled material may be pumped from the source contained or the bunded containment into a second container if the source cannot be stopped.
 - Contain the spill and clean up the spill using a Spill Response Kit.
 - Alert the Environmental Supervisor of the contamination incident.
 - If the spill is significant and occurring outside a containment bund, use earthmoving equipment to construction additional earthen bunds to contain the extent of the flow.
 - Isolate any nearby drains.
 - If the spill occurs in an area where a water body has become contaminated, use mini air booms to contain the spread of some spills such as hydrocarbons on the surface of the water.
 - Use a skimmer to collect and contain hydrocarbon in a triple oil separator or retained on the surface of a water body and pumped to a waste oil tank or other safe container.
 - Contaminated material from a spill will be disposed of according to a licensed waste repository in accordance with EPA requirements.
 - On advice from the Environmental Supervisor, contaminated soils may be collected and disposed of or encapsulated within the waste dump or may be collected or remain *in situ* and treated on site by a remediation specialist.
 - Complete the appropriate Environmental Incident Report.
- The appropriate Spill Response Kits will be located within all vehicles carrying chemicals, near chemical storage areas and on offshore locations. They will contain:
 - Universal absorbent pads or pillows or blankets.
 - A containment boom (for containing discharges to water).
 - Labelled plastic contaminated waste bags.
 - Safety Gloves.
- Develop and implement management controls for hazardous goods on site to protect groundwater and soil, including a spill response procedure, and on-site equipment and training.

16.5 Monitoring and reporting

- Regular inspections by the Environmental Supervisor will identify the storage of chemicals and fuel on site and inspect the appropriateness of the storage practices.
- Inspect bunded areas regularly to confirm integrity of bunds.

- Where inappropriate use/storage of chemicals or fuel is identified, appropriate actions are to be undertaken by the Site Supervisor to rectify the problem and controls put in place to prevent it from occurring again.
- In the event of a spill incident undertake monitoring to assess whether environmental impact has occurred and clean up areas of accidental spills of fuels and dispose appropriately.
- Incidents will be reported to SA Water and EPA as required by CEMP, Section 83 of the EP Act and EPA licence.

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17 Cultural Heritage and Native Title Values Management Plan

The project area is within the Barngarla Determination Area.¹ Under the Determination, which took effect on 6 April 2018, native title is recognised as existing in large parts of the Eyre Peninsula, including lands and waters adjacent to the project area. Native title was found not to exist on the basis of extinguishment in most of the project area. The Barngarla Determination Aboriginal Corporation RNTBC (BDAC) is the registered Native Title body corporate appointed to manage the Barngarla Determination. Even though native title is extinguished over much of the project area, SA Water acknowledges that Barngarla people maintain a connection to that area under their traditional laws and customs and acknowledges them as Traditional Owners for the project area.

SA Water also acknowledges that the Traditional Owners of the western Eyre Peninsula region; the Nauo (Tribunal file no. SCD2023/003; Federal Court Number SAD65/2022, SAD185/2021), also maintain connections to the project area.

Native Title and Aboriginal cultural heritage are key considerations in the planning, design and construction of this project.

SA Water has engaged with BDAC over a number of years in relation to potential locations for a desalination plant on Eyre Peninsula.

SA Water has taken steps to assess cultural heritage risks associated with the project area, including obtaining an independent desktop assessment and conducting a search of the AAR database. SA Water has also sought, unsuccessfully, to conduct a heritage survey of the project area with BDAC and to seek feedback from BDAC on cultural heritage sites and values within and around the project area to assist in informing project design and construction methodology.

Although no assessment of cultural heritage through a survey with the Barngarla people has yet been carried out, sites of cultural heritage significance identified through desktop assessments have been considered in the current design and construction methodology.

SA Water acknowledges the publicly stated heritage significance of Billy Lights Point to the Barngarla People including statements that the construction of a desalination plant at Billy Lights Point risks damage to Aboriginal heritage.

SA Water continues to seek constructive engagement with BDAC regarding measures to minimise any damage to their cultural heritage as a consequence of the project.

However, due to the critical nature of the project, SA Water has lodged a Section 21 and Section 23 Authorisation request under the *Aboriginal Heritage Act 1988* seeking authorisation of the Minister to damage, disturb or interfere with any Aboriginal site or object, where this cannot be avoided by project design or construction methodology. Details of the results of site-specific heritage investigations and engagement with the Traditional Owners have been provided to the Minister of Aboriginal Affairs and Reconciliation in support of that application.

¹ Croft on behalf of the Barngarla Native Title Claim Group v State of South Australia (No 2) [2016] FCA 724; Croft on behalf of the Barngarla Native Title Claim Group v State of South Australia (No 3) [2018] FCA 552

SA Water will ensure compliance with Native Title and Aboriginal Heritage laws in relation to this project and acknowledges that an authorisation under the *Aboriginal Heritage Act 1998 (SA)* will be required in relation to this project.

17.1 Performance Objectives

- Protect sites of Aboriginal Heritage significance and avoid impacts. Manage interactions with known and unknown heritage sites; and
- Avoid interacting with lands where Native Title continues to exist or co-exist.
- Protect historic places and sites from disturbance where impacts can be avoided. Manage interactions with known and unknown heritage.

17.2 Performance Criteria

- Ensure compliance with the requirements of the *Aboriginal Heritage Act 1988 (SA)*.
- Ensure ongoing consultation with the local Aboriginal Community on the project through the Barngarla Determination Aboriginal Corporation (BDAC) and Nauo Aboriginal Corp.
- Endeavour to develop and implement a Cultural Heritage Management Plan for the works that includes induction requirements and cultural awareness training for contractors and protocols for the management of items of heritage significance, if found.
- Ensure the Construction Environmental Management Plan (CEMP) site map identifies known areas or sites to avoid.
- Endeavour to acknowledge and recognise Barngarla connection with the land and waters, with the BDAC.
- In collaboration with BDAC, establish a keeping place for any artefacts salvaged during the construction process; and

17.3 Potential Impacts

- Potential for ground disturbing activities to uncover and disturb Aboriginal archaeological materials.
- Potential damage or disturbance to known Aboriginal heritage sites, objects and Ancestral remains; and

17.4 Mitigation Measures

- Significant Aboriginal sites are located within the project footprint, these will be fenced off and protected, where practicable, to ensure that ground disturbing works take place well away from such sites.
- Where feasible, Barngarla Cultural Monitors will be employed to monitor ground disturbing activities were justified and reasonable (based on independent heritage advice).
- If at any time during the works, a suspected Aboriginal site, objects, or Ancestral remains is encountered, work must stop immediately and the Environmental Supervisor and SA Water must be notified immediately with the details of the nature and location of the site, objects or Ancestral remains.

- Work must not recommence in the affected area until the conditions of any approved section 21 & 23 Authorisation are fully satisfied.
- Educate site personnel of their responsibilities under the *Aboriginal Heritage Act 1988 (SA)*, and the terms of any Section 21 & 23 Authorisation.

17.5 Monitoring and reporting

- The Environmental supervisor will conduct inspections compliance with the Aboriginal Heritage Act 1988 and any Section 21 & 23 Authorisation. to monitor any work practices near any known and fenced off Aboriginal sites.
- Liaise with the Barngarla Determination Aboriginal Corporation during construction to discuss and resolve any potential concerns.
- Any discoveries will be managed under the terms of the Section 21 & 23 Authorisation.

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18 Non-Aboriginal Heritage

An assessment of impacts on non-Aboriginal was undertaken for the Project.

The Project site does not directly impact any registered local, State, National, Commonwealth or World heritage places or items.

Within 2 km of the Project site, 6 terrestrial State heritage places are registered; the nearest being the State heritage listed dwelling 'Ravendale House' located adjacent to the proposed overhead transmission line on Windsor Avenue. No local, National, Commonwealth or World heritage places or items were identified within 2 km of the Project site.

One shipwreck is recorded within 2 km of the proposed marine components of the Project. The expected location of this shipwreck is recorded at approximately 1 km from the intake and outfall pipelines; however, it should be noted that the location of this shipwreck is not verified, and the location of shipwrecks and related relics may shift due to coastal processes.

18.1 Performance Objectives

- Protect sites of European Heritage significance and avoid impacts. Manage interactions with known and unknown heritage sites.
- Protect historic places and sites from disturbance where impacts can be avoided. Manage interactions with known and unknown heritage.

18.2 Performance Criteria

- Ensure compliance with the requirements of the *Heritage Places Act 1993*, *Historic Shipwrecks Act 1981*, *Commonwealth Underwater Cultural Heritage Act 2018* & *PDI Act 2016*.
- Ensure the Construction Environmental Management Plan (CEMP) site map identifies known areas or sites to avoid.

18.3 Potential Impacts

The construction and operation of the Project is not expected to result in direct impacts on any registered non-Aboriginal heritage places or items (including shipwrecks).

The key potential impacts on non-Aboriginal heritage places and items include:

- Potential vibration impacts and temporary visual amenity impacts to the State heritage listed dwelling 'Ravendale House', located in close proximity to construction works and construction transport routes.
- Potential indirect impacts on shipwreck number 440 due to desalination plant outflow discharges. This presents a low risk as the outflow discharge is located approximately 1 km away from the shipwreck.
- The risk of unexpected finds of non-Aboriginal heritage items during ground disturbing construction works in the marine or terrestrial environment.

18.4 Mitigation Measures

- Implement the recommendations of the visual impact assessment to mitigate any potential visual impacts of the Project to the 'setting' of any heritage places in the wider area; in particular, the State heritage listed dwelling 'Ravendale House'.

- As a risk mitigation strategy, heritage listed structures within 10 m of the preferred construction traffic route could be assessed for the risk of vibration damage. Consideration should also be given to the existing nature of use of the road, condition of the road surface, and condition of the heritage structure.
- Undertake earthworks with care, particularly when working in close proximity to heritage places.
- Have contingency in place for any unexpected discovery of non-Aboriginal heritage items during works in both the marine and terrestrial environment; including an unexpected finds protocol and stop work procedure, until items are assessed.

18.5 Monitoring and reporting

- In the event of the discovery of any potential archaeological materials (land or seabed), the event shall be recorded by the Environmental Supervisor and reported to SA Water and the Heritage Branch of the Department for Environment and Water (Phone 08 8124 4960).

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19 Stakeholder Engagement Strategy and Action Plan

To be completed

19.1 Performance Objectives

Manage and maintain ongoing communication with the local community.

19.2 Performance Criteria

- Develop and implement a Community Engagement Plan to ensure community and stakeholder engagement is undertaken to inform the community about the project during all project stages. The plan should incorporate:
 - ongoing communication with potentially affected communities to identify and address concerns.
 - the communication of measures to minimise any adverse impacts or perceived adverse impacts.
 - measures to encourage community support and ownership of the project.
- The Contractor will be required to implement measures to maximise opportunities for local Indigenous employment, where possible, particularly through the Kurna Heritage Board,
- The Contractor will be required to maximise opportunities to involve local industry group, businesses and service providers to encourage local employment and business benefits.

19.3 Potential Impacts

- Potential equity, housing, physical health and safety, mental health, and employment impacts on residents during construction
- Potential business disruption and business development impacts on local businesses
- Potential dust, vibration, odour, noise and vehicle emissions in local area during construction.
- Potential disruption to local businesses as a result of dust, noise, vibration and traffic impacts.
- Possible disruption to recreation-based businesses as a result of the likely extension of the marine exclusion zone.
- Potential conflict and intensification of industrial activity along roads used by residential traffic.

19.4 Mitigation Measures

- Preparation and distribution of newsletters and fact sheets to residential areas in proximity to the project (i.e. Port Lincoln and nearby residential areas) prior to the various phases of construction.
- Maintain liaison with other projects expected to be developed in the Lonsdale region to coordinate construction and minimise/avoid potential overlap.
- Ensure efficient timing and management of the construction phase of the project and where possible, coordinate with other projects being undertaken in the Lonsdale area.
- Specifically target the employment of local and regional professionals, technical, skilled and semi-skilled workers.

- Minimise the impacts of construction activities on the existing structure and values of nearby local communities.
- Wherever possible, enhance the development of community wellbeing and amenity, including the provision of commercial and employment opportunities.
- Provide clear communication to community members of the project objectives, project definition and scope of the assessment to allow community members to consider the potential issues, benefits and impacts.
- Obtain community input to identifying local values and knowledge to be considered in the impact assessment investigations and development of the design.
- Provide inclusive and regular opportunities for community members to participate in consultation.
- Develop and implement a comprehensive Community Liaison programme, including regular meetings with community representatives and a project construction awareness program.
- Develop and implement a Stakeholder Engagement Strategy and Action Plan to ensure community and stakeholder engagement is undertaken to inform the community about the project during all project stages. The plan should incorporate:
 - ongoing communication with potentially affected communities to identify and address concerns.
 - the communication of measures to minimise any adverse impacts or perceived adverse impacts.
 - measures to encourage community support and ownership of the project.
- The Contractor will be required to implement measures to maximise opportunities for local Indigenous employment, where possible, particularly through the Kurna Heritage Board.
- The Contractor will be required to maximise opportunities to involve local industry group, businesses and service providers to encourage local employment and business benefits.
- Minimise the impacts of construction activities on the existing structure and values of nearby local communities.
- Wherever possible, enhance the development of community wellbeing and amenity, including the provision of commercial and employment opportunities.
- Provide clear communication to community members of the project objectives, project definition and scope of the assessment to allow community members to consider the potential issues, benefits and impacts.

19.5 Monitoring and reporting

- Preparation and distribution of newsletters and fact sheets to residential areas in proximity to the project (i.e. Hallett Cove and nearby residential areas) prior to the various phases of construction.
- Maintain liaison with other projects expected to be developed in the Lonsdale region to coordinate construction and minimise/avoid potential overlap.
- Ensure efficient timing and management of the construction phase of the project and where possible, coordinate with other projects being undertaken in the Lonsdale area.
- Specifically target the employment of local and regional professionals, technical, skilled and semi-skilled workers

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20 Community Complaints Management

Construction works will take place on public and private lands and near private residences and industrial areas. A community complaints procedure will be established to ensure that community complaints are managed effectively.

20.1.1 Management Actions

- The Contractor Project Manager, or an approved agent will be responsible for to coordinate the receipt, investigation, and resolution of community complaints.
- Establish a telephone number and email address through which the community can telephone/email and have their complaints recorded. These contact details will be displayed at the external fence of the construction site and on the SA Water website.
- The Communications Officer will record all complaints received on a Community Complaint Record/
- The Communications Officer will commence investigations into the nature and cause for the complaint within nominally 48 hours of receipt of the complaint. The investigation will include construction with the Onsite Environmental Supervisor to determine if the cause for the complaint was conformity with the mitigation measures contained within the CEMP.
- The Communications Officer will aim to provide a response to the complainant within 7 days of receipt of the complaint. Details of how the complaint was addressed and the close-out discussions with the complainant will be recorded on the Community Complaints Record; and
- All Community Complaint Records will be maintained at the site office and will be made available to SA Water upon request.

21 Monitoring and Compliance

The Contractor will identify and appoint individual team member/s that will be responsible for undertaking monitoring to ensure compliance with the CEMP (detailed in Section 2).

21.1 Monitoring

Monitoring of the management actions will be undertaken by the Onsite Environmental Supervisor. Monitoring will be an environmental site inspection to be undertaken weekly as a minimum, and monitoring records are to be maintained on site and be available to SA Water and for inspection by relevant regulatory authorities. Monitoring will also be undertaken according to the specific monitoring and reporting actions identified in the CEMP.

The effectiveness of environmental protection measures will be assessed by the Onsite Environmental Supervisor using an Environmental Evaluation Checklist during inspections. The purpose of the checklist is to:

- Provide a surveillance tool to ensure that mitigation measures are being implemented.
- Identify where problems and non-conformance might be occurring; and
- Facilitate the early resolution of any identified problems and non-conformance.

Any incidents identified through the checklist process will be recorded using an Environmental Incident Report, and non-conformance will be highlighted using a Compliance Improvement Notice. The checklist will remain open until:

- The issue had been resolved.
- A new or revised procedure has been established and implemented; and/or
- Training has been provided to relevant personnel/subcontractors.

21.2 Environmental Incident Management

For the purpose of this CEMP, an Environmental Incident is:

Any event or impact on the environment involving actions or assets associated with the project that is capable of:

- *causing harm to the environment or any person.*
- *causing pollution; and*
- *coming to the attention of the public or an environmental regulatory agency.*

Environmental incidents include matters such as:

- Chemical spills.
- Fires.

- Discharges of contaminated waters to the environmental.
- Environmental monitoring results indicating an impact to the environment or any person (water quality, noise); and
- Death or injury of terrestrial fauna.

21.2.1 Management Actions

- All environmental incidents shall be reported to the Onsite Environmental Supervisor. The Onsite Environmental Supervisor will assess the impact site and make a determination (based on professional scientific experience) on whether the suspected environment incident is confirmed.
- All confirmed environmental incidents shall be reported promptly and accurately via the Contractor to the *appropriate SA Water Manager*.
- The Onsite Environmental Supervisor will determine if the incident is likely to have a continued environmental impact if the construction works continues and will act accordingly.
- Construction works at the affected area will only recommence on the approval of the Onsite Environmental Supervisor.
- The incident will be investigated, and an Environmental Incident Report will be completed as soon as reasonably practicable (generally within 24hrs). Copies of Environmental Incident Reports will be maintained at the site office and made available to SA Water when required.

Reporting and Environmental Incident

- The Onsite Environmental Supervisor will liaise with SA Water to determine if the environmental incident should be reported to the EPA.
- Environmental incidents will be reported to the EPA by phone as soon as reasonably practicable following the environmental incident if the environmental incident has caused or is likely to cause serious or material environmental harm (in accordance with s83 of the *Environment Protection Act (SA) 1993*. Contact:

EPA Incident Reporting

Phone: (08) 8204 2004

Remediation of an Environmental Incident

- The onsite environmental supervisor will determine any requirement to undertake remediation works, and the manner in which remediation works will be undertaken. Additional advice maybe sought from SA Water, the other on-site personnel or the EPA in making that decision; and
- Following any environmental incidents, all personnel will be briefed on the incident and any identification of construction process improvements that could prevent reoccurrence of the same environmental incident. The CEMP will be updated (as appropriate) to reflect process improvements.

21.3 Compliance Management

This Construction Environmental Management Plan outlines the objectives, criteria and management actions to be implemented or achieved during the construction works for the EPDP. If for any reason the mitigation measures are not implemented or

achieved, a response process is required to correct those matters within an appropriate timeframe and with notification to appropriate personnel.

This process involves a Compliance Improvement Notice for the resolution of non-conformity with the CEMP management actions in accordance with the actions recommended within this CEMP. Non-compliance will be identified as occurring if the requirements of the mitigation measures have **not** been implemented **and** suitable alternative actions have also not been implemented.

21.3.1 Management Actions

- The Environmental Supervisor is required to monitor, audit and conduct surveillance of the implementation and effectiveness of the mitigation measures identified in this CEMP and report their effectiveness using an Environmental Monitoring Checklist (Appendix C).
- The site personnel, contractor, SA Water or third parties (such as regulators, local government authorities and the public) may identify potential non-conformity with the objectives, criteria and management actions identified within this CEMP. All potential non-conformities will be reported to the Onsite Environmental Supervisor.
- The report will be investigated within 48 hours notification to confirm its validity.
- A Compliance Improvement Notice (to be completed by the contractor) will be issued if the report is confirmed as valid (i.e. there is a non-conformity with the CEMP). The Compliance Improvement Notice details:
 - The nature of the environmental impact.
 - An assessment of the environmental impact.
 - A decision on the corrective action(s) required. This may include revision of the management actions identified within the CEMP.
 - The timeframes allowed to implement the corrective action.
 - Any requirements to inform contracting staff of the corrective actions to prevent reoccurrence; and
 - Close-out of corrective actions.
- The corrective actions contained in the Compliance Improvement Notice will be implemented.
- The Onsite Environmental Supervisor will review the actions taken, will confirm that the corrective actions have been implemented and complete the close-out section of the Compliance Improvement Notice; and
- A copy of all completed Compliance Improvement Notices will be maintained at the Site Office.

21.4 CEMP Auditing

The contractor will undertake planned review and auditing of its Construction Environmental Management Plan. The contractor will report on CEMP reviews and the performance and effectiveness of the CEMP.

21.4.1 Management Actions

- The CEMP will be review and, where required, updated in accordance with the following:

- on a quarterly basis.
- where additional preliminary works are added to the scope; and
- following an incident or non-conformance with the CEMP.
- Actions to be undertaken during the audit will include:
 - check monitoring programme and reporting procedures.
 - undertake investigations where necessary.
 - review performance standards and criteria against results.
 - prepare audit reports over time (following an agreed schedule) and submit to SA Water; and
 - procedures for noncompliance and exceedances/investigation/intervention of indicators identification.

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22 Appendices

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A Native Vegetation Approved Clearance areas

To be prepared/provided once Native Vegetation Clearance Approval is submitted and approved.

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B SA Water's Phytophthora Management Guidelines

PDF of Guideline to be implemented

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C SA EPA Acid Sulfate Soil Material Guidelines, November 2019

Refer to link [here](#)

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Appendix Y Draft Dredge Management Plan



Eyre Peninsula Desalination Project

Draft Dredging Management Plan

Version: 0.1

Date: 29/05/2024

Status: Draft

Document ID: TBD

Confidentiality: OFFICIAL



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South Australia**

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Document Controls

Version History

Version	Date	Author	Comments
0.1	29/05/24	SA Water	First draft.

Template: Document - Long Version 6.0 09/06/23

Approvers

Approver Name	Approver Role	Signature	Date
	Role title		

Endorsers

Endorser Name	Endorser Role	Signature	Date

Reviewers

Name	Role	Version	Review Date
		0.1	29/04/2025

Document Location

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1 Introduction

SA Water is committed to minimising impacts on the environment and preventing environmental degradation wherever we have the power to do so. Whether working on land or in water environments, care needs to be taken to protect flora and fauna, heritage items, water and air quality and impacts on the community. It is the responsibility of all personnel involved in the work to adopt environmentally responsible work practices. The implementation of an environmental management process assists with these aspects of the work and demonstrates the commitment to the corporate goal.

1.1 Purpose

This Dredging Environmental Management Plan (DEMP) sets out the management processes, controls and activities that should be implemented to mitigate potential environment and heritage impacts arising from the proposed dredging works. The purpose this process is to:

- Produce a framework for control of operational impacts including practicable and achievable performance requirements and a system of inspecting, reporting, and implementing corrective action.
- Provide evidence of compliance with legislation, policies, guidelines, and requirements to Local, State and Commonwealth Authorities.
- Provide the community with the assurance that the work is being managed in an environmentally acceptable manner.

This Dredging Environmental Management Plan (DEMP) contains contractual requirements to be satisfied by the Contractor for the specified dredging and/or sand management. It includes:

- General project activities and associated impacts
- Legislative requirements
- Roles and responsibilities
- Site induction requirements
- Environmental objectives and management controls
- Monitoring/auditing requirements
- Incident management
- Record keeping and reporting

Having regard to the contents of this plan the Contractor is required to prepare, implement, and maintain an Environmental Management Implementation Plan (EMIP). All parties should note that compliance with this DEMP does not remove the responsibility to also comply with the law or other aspects of the Contract.

1.2 Glossary

The following glossary items are used in this document:

Term	Description
Australian Standards	Published documents setting out specifications and procedures designed to ensure products, services and systems are safe, reliable and consistently perform the way they were intended to
Ballast Water	Water used in the hull of a boat for added stability. Typically containing non-native nuisance and exotic species that can cause extensive ecological damage once released

Biodiversity	The variety of different species, the genetic variability of each species, and the variety of different ecosystems that they form
Biofouling	The overgrowth of algae, marine invertebrates, and other organisms on nets, intake pipes, and structures in the water
Bund	Means of embankment of earth or a wall constructed of brick, stone or concrete to form the perimeter of a compound that will prevent lateral movement of the material contained within the embankment or wall
Coastal Cliff Zone	The area extending vertically from the top of the cliff to the edge of the horizontal intertidal reef
Contractor	The successful proponent selected by SA Water to design, build, operate and/or maintain the Desalination Plant (components included dependent on contract award/s)
Desalination	The process of removing salts and other minerals from seawater so that it can be used for drinking water
Dewatering	The removal of water by pump or evaporation during site development due to a high water table.
Diffuser	An outlet designed to break up the flow of brine into small streams and 'jet' these streams into a large volume of surrounding seawater with sufficient velocity to mix and disperse the brine rapidly and effectively
Discharge	The waste stream that will be emitted from an outfall pipe. May be used in relation to saline discharge from the brine diffuser or stormwater discharge from a stormwater lagoon
Dissolved Oxygen	The amount of oxygen freely available in water and necessary for aquatic life and the oxidation of organic materials
Entrainment	The drawing of fish and other aquatic organisms into an intake system
Entrapment	When fish and other organisms get caught on screens or physical barriers of intake pipes
Environmental Incident	Any event or impact on the environment involving actions or assets associated with the project that is capable of: <ul style="list-style-type: none"> • coming to the attention of the public or an environmental regulatory agency. • causing harm to the environment or any person; and causing pollution.
Rock armour	Rock or other hard substrate used to armour shorelines, seabed or streambed against water erosion
Saline Concentrate	A liquid by-product of the desalination process that has a higher concentration of suspended and dissolved materials (particularly salt) than intake seawater due to the salt concentrating effects of the reverse osmosis system
SA Water	South Australian Water Corporation
Silt Fence	A temporary vertical sediment barrier designed to prevent fine debris carried by water from entering natural waterways and stormwater systems
Stockpile	A pile or storage location for bulk materials

1.2.1 List of Abbreviations

AHA	<i>Aboriginal Heritage Act 1988</i>
AQIS	Australian Quarantine and Inspection Service
CEMMP	Construction Environmental Management and Monitoring Plan
DCEEW	Department of Climate Change, Energy, the Environment and Water (Cwth)
DEW	Department for Environment and Water (SA)
DMP	Dredge Management Plan
DTI	Department for Infrastructure and Transport
DWTP	Desalinated water transfer pipeline
EDS	Ecological Sustainable Development
EMS	Environmental Management Systems
EMIP	Environmental Management Implementation Plan
EPA	Environment Protection Authority
EPDP	Eyre Peninsula Desalination Project
EPA (AQ)	Environment Protection (Air Quality) Policy 2016
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cwth)</i>
RO	Reverse Osmosis
TBM	Tunnel Boring Machine
WWTP	Wastewater Treatment Plant

1.3 References

The following table identifies the documents and/or articles that are referenced in this document:

Title/URL	Version	Date
		dd/mm/yy

2 Background

2.1 Project Understanding and description of works

In 2008, the South Australian Water Corporation (SA Water) released a Long Term Plan for the Eyre Region (2008) (the Long Term Plan) which sought to address drought conditions and climate change; a declining aquifer recharge and an envisaged water allocation reduction on the Lincoln Basin. The Long-Term Plan identified seawater desalination as the preferred future supply option to ensure future drinking water for approximately 35,000 SA Water customers living and working in the region.

SA Water is now progressing the construction of a 5.3 gigalitre (GL) per annum (GL/annum) Reverse Osmosis (RO) seawater desalination plant, a 7 kilometre (km) desalinated water transfer pipeline, associated marine works and infrastructure including seawater intake and saline waste outfall pipelines, siteworks and laydown areas, fencing and directional signage, and a 3.5 km overhead electricity transmission line (the Project).

The marine works and infrastructure are expected to be constructed for an 8 GL/annum ultimate capacity including the intake and outfall pipes.

The project can be considered as 3 main elements:

- RO desalination plant and saline waste/seawater transfer pipelines,
- **Marine intake and outfall pump station and associated intake and outfall pipelines within the marine environment;** and
- Desalinated water transfer pipeline (DWTP) to North Side Hill tanks



Figure 1 Project Location Overview

**Updated figure to be added as a full page in final documentation

2.2 Summary description of existing site

The Project site is located at Billy Lights Point within Boston Bay. Boston Bay, and the adjoining Proper Bay, are coastal embayment's at the southwestern boundary of the Spencer Gulf. Boston Bay is a large and shallow natural harbour created by the presence of the five km long Boston Island which lies six km off Port Lincoln. Proper Bay opens to the southern end of Boston Bay and is relatively shallower.

The marine pipelines will be constructed and operated within the marine waters of Boston and Proper Bays. The marine intake and outfall pump station is located within an existing SA Water wastewater treatment plant (WWTP) approximately 600 m east of the RO desalination plant site over land. The area also hosts multiple industries including aquaculture, ship repair, , Port operations, recreational / pleasure craft and tourism.

2.2.1 Marine Environment

Habitat mapping has been completed by J Diversity Pty Ltd on behalf of SA Water using data collected via towed camera surveys. Habitat data was collected by a submersible camera towed along a set distance at each location. Earlier surveys in 2021 and 2022 covered 106 transect locations encompassing the wider Bay area, and more recent surveys in late 2023 and early 2024 focussed on the proposed intake and outfall locations Billy Lights Point area. The surveys included locations within the zone potentially impacted by the saline waste plume dispersion.

The analysis identified the following habitat features:

- Bare sand (substrate)
- Reef (substrate)
- Bivalve beds (substrate)
- Seagrass
 - *Posidonia* ("strapweed"), mainly *P. australis*, of varying densities and sometimes with dense epiphytes
 - *Halophila* ("paddleweed")
 - *Zostera* ("eelgrass")
- Macroalgae of varying densities
- Turf mats
- Mixed habitats with two or more of the above components.

The mapping (Figure 2) illustrates that *Posidonia* was generally restricted to the shallow areas (<12 m AHB). North of the WWTP site, the inshore (<10 m AHB) *Posidonia* beds were dense and free of epiphytes and west of the existing BHP jetty the beds were classed as sparse. Limited seagrass was recorded towards the tip of Billy Lights Point where small areas of reef were recorded likely contiguous with the intertidal calcrete geology. Sparse *Zostera* was recorded in association with *Posidonia* at the inshore sites east of Billy Lights Point. The deeper beds of *Posidonia* were generally covered with epiphytes and/or were interspersed with macroalgae. Beyond 12 metres AHD the dominant seagrass was *Halophila*.

These findings were consistent with the habitat mapping based on the earlier 2021 to 2022 transects which also found *Posidonia* the dominant habitat with areas of dense cover restricted to inshore sites and *Halophila* and *Zostera* in relatively deep areas.

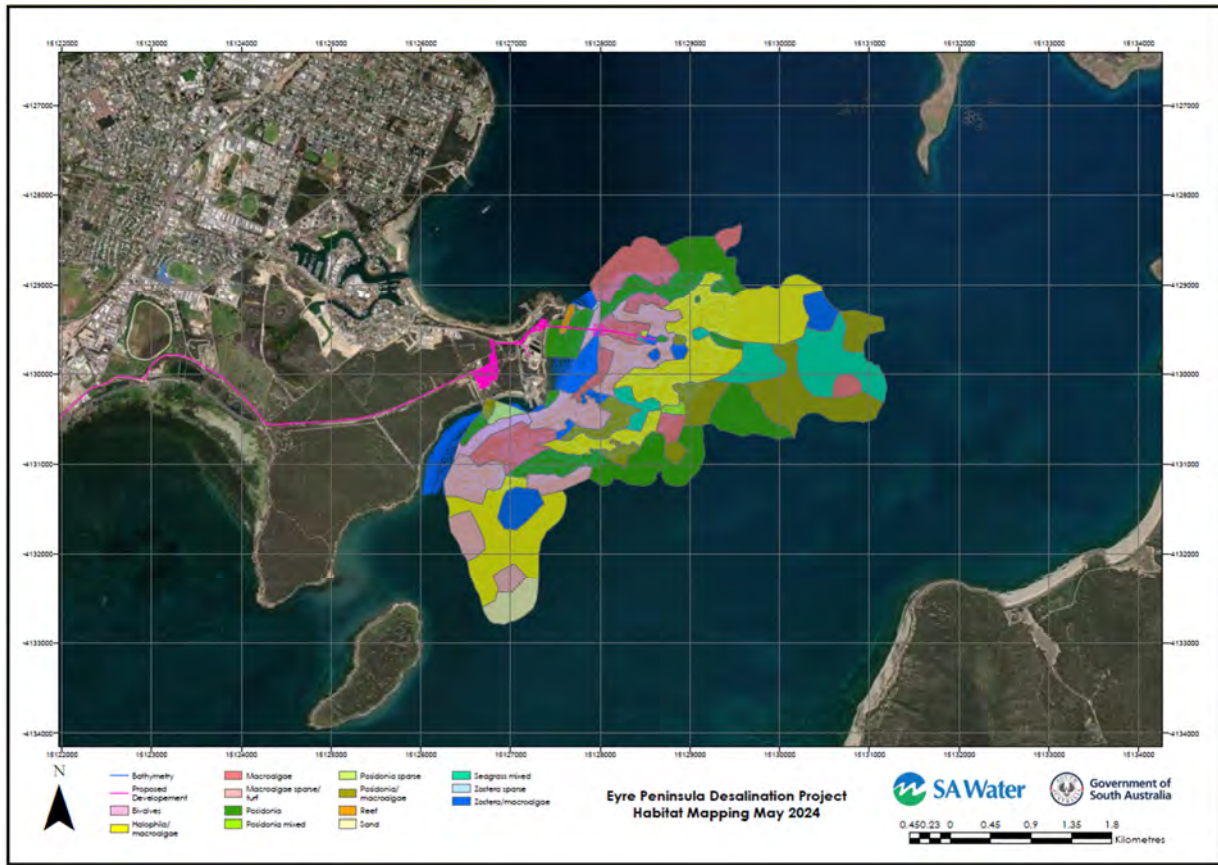


Figure 2 Marine Habitat Mapping

****Figure to be added as a full page in final documentation**

2.2.2 Planned Marine Works (Marine Intake and Outfall Pipelines)

Marine infrastructure is proposed to be constructed by micro tunnelling from obsolete lagoons within the Port Lincoln Wastewater treatment plant (WWTP), under the shore and into the marine environment. Tunnelling will be undertaken by a tunnel boring machine (TBM) from a depth of 12.9 m below sea level at the TBM launch shaft location within the lagoons. Upon completion of the tunnelling, this shaft will be converted into the wet well for the marine intake and outfall pump station.

The tunnel is expected to run 500 m from the wet well to the marine environment. Upon exiting the tunnel, marine intake and outfall pipelines will be laid on the seabed and anchored in place with concrete collars.

The proposed built form within the adjacent the coastal and marine environments will include the following:

- Two raw seawater intake pipelines (DN900 mm, exiting 600 m and 660 m offshore). Pipelines will be constructed of high-density polyethylene. It is intended that one intake will be for duty and one intake for standby.
- Two intake screens (copper-nickel) – one to be attached to each intake pipeline. Screens will have a 90 mm screening aperture and will support an intake velocity of 0.15 metres per second (m/s)
- Fouling control through chlorine or acid shock dosing at the beginning of each seawater intake pipeline

- One marine outfall pipeline (DN900 mm, 1,029m offshore). Pipeline will be constructed of high-density polyethylene.
- One outfall pipe with 16 duck bill diffuser ports at 6 m intervals for ultimate capacity with 12 ports to be used for 5.3 GL/annum operation.
- Pipeline mechanical cleaning (known as pigging) through a launching and retrieval mechanism.

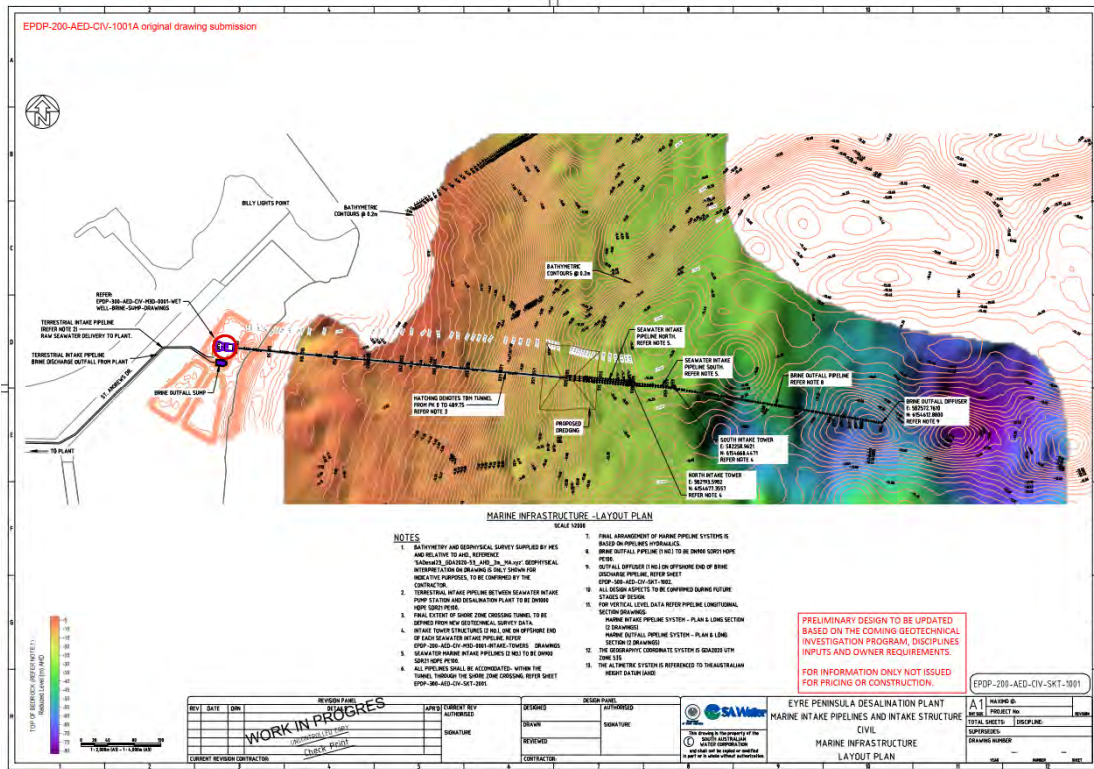
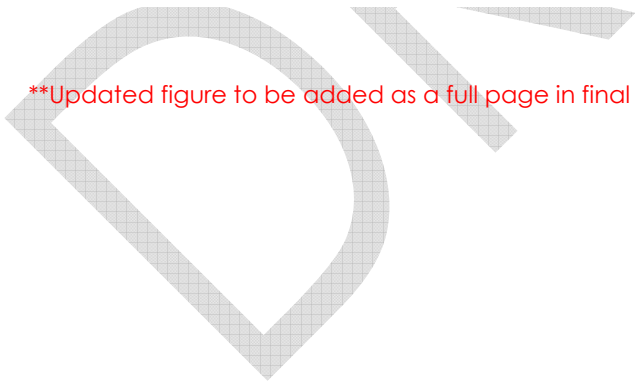


Figure 3 Preliminary Marine Infrastructure Layout



**Updated figure to be added as a full page in final documentation

3 Project environmental aspects and Impacts

Table 1 below provides a standard listing of potential environmental impacts. Table 2 sets out a list of construction activities that may form part of the works and their associated impacts.

Where the works include any of the activities listed in Table 2 there is a risk that the associated environmental impacts could result, as such management controls should be implemented. Suggested management controls are provided in Section 9.

The implementation of environmental controls should be reviewed and monitored during the life of the project to ensure their ongoing effectiveness (refer Section 7).

Table 1 Standard listing of Potential Environmental Impacts

Water quality impacts/pollution to water (surface water & groundwater)	Soil contamination	Air quality impacts - odours / dust/ emissions
Water management and flooding	Resource use	Energy use and Greenhouse Gas Emissions
Damage to vegetation and fauna	Aesthetics – visually intrusive structures, litter/debris, land use changes	Disturbance or damage to Aboriginal and non-Aboriginal Heritage
Introduction of weeds and diseases (phytosphthora)	Waste generation and disposal. Inappropriate waste disposal/landfill	Resource consumption
Nuisance from noise	Storage and Handling of Hazardous Substances	Fire
Damage from vibration	Erosion of stockpiles/exposed surfaces	Nuisance to neighbours – access, light spill

Table 2 Construction Activities and Associated Environmental Impacts

Activity	Potential Environmental Issues/Impact
Use of vehicles, equipment & plant	<ul style="list-style-type: none"> ➤ Noise creating nuisance ➤ Property damage from vibration ➤ Emissions to air from equipment ➤ Introduction/spread of weed seeds or plant pathogens ➤ Fire (hot works or use near vegetation) ➤ Nuisance to neighbours – access, light spill etc
Storage of materials, maintenance and refuelling of machinery and equipment	<ul style="list-style-type: none"> ➤ Spills leading to pollution and contamination of soil, water ➤ Damage to vegetation and fauna ➤ Emissions of noxious / toxic gases
Washdown of equipment/plant	<ul style="list-style-type: none"> ➤ Pollution to water (watercourses or stormwater) ➤ Introduction/spread of weed seeds or plant pathogens ➤ Damage to vegetation and fauna
Excavation and earthworks	<ul style="list-style-type: none"> ➤ Damage to vegetation and fauna ➤ Disturbance or damage to Aboriginal and non-Aboriginal Heritage ➤ Discovery/management of soil or groundwater contamination ➤ Dust ➤ Erosion of exposed surfaces ➤ Pollution to water (watercourses or stormwater)
Stockpiling / spoil management	<ul style="list-style-type: none"> ➤ Damage to vegetation and fauna ➤ Pollution to water bodies from poor location / erosion /runoff ➤ Water management and flooding ➤ Dust ➤ Inappropriate waste disposal/landfill ➤ Contamination ➤ Amenity / safety of the estuarine/beach environment for water/beach users
Waste Management and Disposal	<ul style="list-style-type: none"> ➤ Aesthetics – litter/ debris ➤ Inappropriate waste disposal/landfill ➤ Resource use
Dredging	<ul style="list-style-type: none"> ➤ Inappropriate waste disposal ➤ Pollution to water (watercourses) ➤ Damage to vegetation and fauna ➤ Impacts to recreational uses of area / nuisance
Import of fill material	<ul style="list-style-type: none"> ➤ Introduction of weeds and diseases (phytophthora) ➤ Contamination (imported)
Site / compound establishment	<ul style="list-style-type: none"> ➤ Aesthetics – visually intrusive structures ➤ Inappropriate waste management, litter ➤ Access impacts and nuisance to neighbours ➤ Noise creating nuisance
Dewatering or other discharges/ water released from site	<ul style="list-style-type: none"> ➤ Pollution ➤ Water management and flooding ➤ Contamination ➤ Damage to vegetation
Night works	<ul style="list-style-type: none"> ➤ Noise ➤ Light spill and nuisance to neighbours
Management of contaminated or hazardous materials	<ul style="list-style-type: none"> ➤ Pollution to soil or water ➤ Inappropriate waste disposal/landfill ➤ Emergency response to spillage in marine/estuarine environment

4 Legal and other requirements

4.1 Legislation

A key governing legal requirement is set out in the SA Environment Protection Act 1993, Section 25:

A person must not undertake an activity that pollutes, or might pollute, the environment unless the person takes all reasonable and practicable measures to prevent or minimise any resulting environmental harm.

In addition to the requirements under State and Commonwealth law, which have been used in the development of this DEMP, the works will be carried out in accordance with the environmental requirements detailed in the Contract documents. A summary of the environment and heritage approval / permits associated with the project is provided below, with the status and where relevant, conditions, for each.

4.2 Legislative requirements

The following legislation is considered relevant to the project:

- Aboriginal and Torres Strait Islander Heritage Protection Act 1984;
- Aboriginal Heritage Act 1988
- Climate Change and Greenhouse Emissions Reduction Act 2007;
- Coast Protection Act 1972;
- Dangerous Substances Act 1979;
- Dangerous Substances Regulations 2002;
- Environment Protection (Commercial and Industrial Noise) Policy 2023
- Environment Protection Act 1993;
- Environment Protection and Biodiversity Conservation Act 1999 (cth);
- Environmental Protection (Air Quality) Policy 2016;
- Environmental Protection (Burning) Policy 1994;
- Environmental Protection (Waste Management) Policy 1994;
- Environmental Protection (Water Quality) Policy 2015.
- Explosives Act 1936;
- Fisheries Management Act 2007;
- Heritage Act 1993;
- Land Acquisition Act 1969;
- Landscape South Australia Act 2019;
- Local Government Act 1999;
- Local Nuisance and Litter Control Act 2016
- National Greenhouse and Energy Reporting Act 2007;
- National Parks & Wildlife Act 1972;
- Native Vegetation Act 1991;

- Petroleum Products Regulations Act 1995;
- Planning, Development, and Infrastructure Act 2016
- Road Traffic Act 1961;
- South Australian Public Health Act 2011;
- Water Industry Act 2013
- Work Health and Safety Act 2012 (and associated regulations);

A summary of the likely approvals required for the EPDP are provided in Table 3

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4.3 Relevant Legislation

Table 3 Summary of Likely Approvals Required for Eyre Peninsula Desalination Project

Act	Description	Tick if relevant to project	Status/Assessment outcome/ comments	Summary of approval/ assessment conditions (if relevant)
<i>Aboriginal Heritage Act 1988</i>	Authorisation from the Minister for Aboriginal Affairs is required to interfere, damage or disturb Aboriginal heritage sites, objects or remains.	<input checked="" type="checkbox"/>	SA Water has taken steps to assess cultural heritage risks associated with the project area, including obtaining an independent desktop assessment and conducting a search of the AAR database. SA Water has also sought, unsuccessfully, to conduct a heritage survey of the project area with BDAC and to seek feedback from BDAC on cultural heritage sites and values within and around the project area to assist in informing project design and construction methodology. (Refer to section 6.11)	Due to the critical nature of the project, SA Water has lodged a Section 21 and Section 23 Authorisation request under the Aboriginal Heritage Act 1988 seeking authorisation of the Minister to damage, disturb or interfere with any Aboriginal site or object, where this cannot be avoided by project design or construction methodology. (Refer to section 6.11)
<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>	Approval from the Commonwealth Environment Minister is required for actions that have or are likely to have a significant impact on matters of national environmental significance (MNES). If project triggers above, referral under EPBC Act required.	<input checked="" type="checkbox"/>	An EBPC self-assessment was undertaken. Results indicate that the Project is not expected to impact upon Matters of National Environmental Significance.	Out of an abundance of caution a self-referral under the EPBC Act will be prepared for the Project and submitted for the Department of Climate Change, Energy, the Environment and Water
<i>Planning, Development, and Infrastructure Act 2016</i>	Works that constitute Development require approval. Development includes (not limited to): <ul style="list-style-type: none"> • Change of land use 	<input checked="" type="checkbox"/>	A Crown Development Application has been submitted for this project. This application consists of both Marine and Terrestrial Environment Impact Assessments.	Conditions of Development Approval if application is granted will need to be addressed and implemented.

Act	Description	Tick if relevant to project	Status/Assessment outcome/ comments	Summary of approval/ assessment conditions (if relevant)
	<ul style="list-style-type: none"> • Building works • Prescribed earthworks • Impacts to Significant/Regulated Trees 			
<i>Landscape South Australia Act 2019 (Section 102 — Water affecting activities)</i>	Works in creek beds and floodplains and/or discharges of water may require a Water Affecting Activities Permit.	☑		Internal SA Water approval may be required for discharges from the pipeline as part of re-commissioning or operation (e.g. if pipeline requires flushing to minimise risk to vegetation etc).
<i>Environment Protection Act 1993</i> (Section 10 & 25) General Environmental Duty & Standard for the Production and Use of Waste Derived Fill (WDF)	Excavation of borrow pits, diversion channels and construction of temporary roads, blocking banks etc. where materials are planned for re-use off site, or materials are imported from off-site.	☑	No approval required.	Need to ensure spoil management is undertaken in accordance with the EPA's Waste Derived Filled requirements.
<i>Environment Protection Act 1993</i> (Section 36 – Requirement for licence)	Prescribed activities of Environmental Significance require an EPA licence. (e.g. dredging/earthworks drainage/abrasive blasting, transport of contaminated soil, sewage treatment, desalination, etc.).	☑	EPA approval required.	An EPA licence will be required for dredging and subsequent movement/disposal of dredge spoil
<i>Environment Protection (Water Quality) Policy 2015</i>	Construction activities must ensure that contaminated run-off does not enter surface water or groundwater systems.	☑	To be managed through implementation of control measures outlined in this DEMP.	
<i>Environment Protection (Commercial and Industrial Noise) Policy 2023</i>	Noise emissions from the desalination plant must meet the requirements of the policy.	☑	To be managed through implementation of control measures outlined in this DEMP.	

Act	Description	Tick if relevant to project	Status/Assessment outcome/ comments	Summary of approval/ assessment conditions (if relevant)
<i>Harbours and Navigation Act 1993</i>	A permit is required for works which involve a change to navigation of waters. Aquatic Activity Licence is required for activities which involve a change to navigation of waters.	<input checked="" type="checkbox"/>	An Aquatic Activity Licence will be required	Application to be lodged by Contractor
<i>Heritage Places Act 1993</i>	Works that impact on State heritage require development authorisation.	<input checked="" type="checkbox"/>	<p>The Project site does not directly impact any registered local, State, National, Commonwealth or World heritage places or items.</p> <p>Within 2 km of the Project site, 6 terrestrial State heritage places are registered; the nearest being the State heritage listed dwelling 'Ravendale House' located adjacent to the proposed overhead transmission line on Windsor Avenue. No local, National, Commonwealth or World heritage places or items were identified within 2 km of the Project site.</p>	The Project will be assessed under a Crown Development Approval. Refer to Section 6.12 for mitigation measures
<i>Historic Shipwrecks Act 1981</i>	Pursuant to Section 13: Except in accordance with a permit, a person must not damage, destroy, interfere with, remove or dispose of an historic shipwreck or relic from State Waters.	<input checked="" type="checkbox"/>	One shipwreck is recorded within 2 km of the proposed marine components of the Project. The expected location of this shipwreck is recorded at approximately 1 km from the intake and outfall pipelines; however it should be noted that the location of this shipwreck is not verified, and the location of shipwrecks and related relics may shift due to coastal processes	The Project will be assessed under a Crown Development Approval. Refer to Section 6.12 for mitigation measures
<i>Fisheries Management Act 2000</i>	Section 71 Taking, injuring etc. aquatic mammals and protected species prohibited:	<input checked="" type="checkbox"/>	Works will be assessed to determine impacts to aquatic mammals or aquatic resources of protected species.	

Act	Description	Tick if relevant to project	Status/Assessment outcome/ comments	Summary of approval/ assessment conditions (if relevant)
	A person must not - take an aquatic mammal or aquatic resource of a protected species or injure, damage or otherwise harm an aquatic mammal or aquatic resource of a protected species.			
<i>Marine Parks Act 2007</i>	A permit or conditions apply for certain activities within a Marine Park.	<input type="checkbox"/>	Works are not within a Marine Park	
<i>National Parks and Wildlife Act 1972</i>	Under the Marine Parks Act, formal approval to undertake dredging works, including locating dredging and associated equipment Marine Park is required.	<input checked="" type="checkbox"/>	The works are (likely) permitted subject to license conditions.	
<i>Native Title Act 1993 (Cth)</i>	Notice to be issued if works affect Native Title.	<input checked="" type="checkbox"/>	Refer to Section 6.11	Refer to Section 6.11
<i>Native Vegetation Act 1991</i>	Approval for clearance of native vegetation is required under the Act. Native vegetation includes marine plants, trees, shrubs, groundcovers and grasses.	<input checked="" type="checkbox"/>	Approval is required for clearance of native vegetation under <i>Regulation 12 (34) – Infrastructure</i> .	Native vegetation clearance approval is to be obtained.
<i>Coast Protection Act 1972</i>	Section 24 requires approval for the temporary occupation of land.	<input checked="" type="checkbox"/>		Dredging approach to be undertaken in accordance with this DEMP
<i>Crown Land Management Act 2009 SA</i>	The Department of Environment and Water is responsible for ensuring Crown land is managed effectively and equitably for the benefit of the	<input checked="" type="checkbox"/>	This is currently under assessment to determine if approvals under this act is required	Approval under section 61 if required

Act	Description	Tick if relevant to project	Status/Assessment outcome/ comments	Summary of approval/ assessment conditions (if relevant)
	<p>public. This means that some activities require special permission or access rights, or tenure over the land.</p> <p>Approval under section 61 of the Crown Lands Management Act required to undertake works on Crown Land.</p>			

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4.4 Standards & Codes of Practice

Relevant current Australian Standards, Codes of Practice and EPA Guidelines and Information Sheets will apply to this work. Key guidelines and standards that may apply to the works are listed below. This is not considered an exhaustive list of all guideline documents that may apply.

Given the nature of the works to be undertaken particular reference should be made to EPA Dredge Guideline (August 2020)
https://www.epa.sa.gov.au/files/14712_dredge_guideline_2020.pdf).

Reference should also be made EPA website (<http://www.epa.sa.gov.au>) for a listing of relevant EPA documents.

Refer to the Safework SA information for guidance on chemicals and hazardous substances:

http://www.safework.sa.gov.au/show_page.jsp?id=110213#.UtMsGmfxsdk

5 Environmental Management Requirements

5.1 Environmental Management Strategy

The works include a number of activities that have the potential to cause environmental impact and/or are subject to environmental approval processes. The purpose of this DEMP is to focus on the activities associated particularly with the dredging works and transport/disposal of the dredged material.

Key risks include:

The key environmental issues associated with this work are:

- The effect of the work on amenity of the coastal and marine environment for the public.
- Noise of plant and equipment, particularly when dredges are operated at night and potential to result in community complaints.
- Community liaison and public relations
- Managing the use on site of substances such as fuels, lubricants, and dangerous substances, including emergency responses should spillage into the marine environment occur.
- Potential to cause water quality impacts as a result of dredging.

5.1.1 The Environmental Management Implementation Plan

The dredging Contractor will be required to produce an Environmental Management Implementation Plan (EMIP) which will address the methodology for achieving DEMP performance criteria. In preparing the EMIP the Contractor should have regard to the contents of this DEMP as well as other relevant documents including but not limited to:

- Conditions attached to EPA Licence
- Any conditions attached to approvals, such as the following:
 - National Parks and Wildlife Act 1972

- Aboriginal Heritage Act 1988
- Native Vegetation Act 1991
- Relevant EPA documentation such as the EPA Dredge Guideline (August 2020) https://www.epa.sa.gov.au/files/14712_dredge_guideline_2020.pdf.

The EMIP should include details on the strategy and system for environmental management and protection as part of conduct of the contract. As a minimum this should include the procedures and processes, controls and activities by which the contractor will ensure that the works meet all relevant environmental requirements, including SA Water's requirements and those which are detailed in Management System documents and all applicable legislation. This should include but not be limited to:

- A brief description of the project, the Contractor's environmental objectives and how the EMIP will be used to achieve those objectives.
- Copy of the Contractor's Environment Policy.
- Organisation structure and responsibilities, including details of nominated environmental representative, off-site personnel, and sub-contractors.
- Training, awareness, and competency procedures, including site inductions.
- Hazards/Risk Assessment
- Outline of Potential Hazards and how they will be managed (either by methods outlined in the DEMP or a satisfactory alternative)
- Outline of Environmental Impacts and how they are going to be managed (either by methods outlined in the DEMP or a satisfactory alternative)
- Environmental performance measures and targets including KPI to measure successful implementation.
- Records keeping and management to demonstrate compliance with the Plan and other relevant requirements.
- 'Unexpected Events' Contingency Plans
- Non-conformance and corrective action processes
- Incident Reporting and Investigation including details of personnel and agencies to be contacted.
- Environmental incident management and reporting procedures (including incident reporting form/documentation)
- An audit/inspection and monitoring program, with objectives and measurable targets where practicable related to the minimisation of the potential impacts to ensure compliance with DEMP.
- Emergency response plans, including relevant contact details
- Review, monitoring and continuous improvement processes

Environmental management will be deemed a "Special Process" under the Contractor's Systems for Process Control. This will ensure the requirements of the DEMP are complied with, verified, and audited in accordance with accepted procedures applying to the Contractor's overall works. This mechanism also facilitates the Contractors having obligations under the contracts to fulfil the requirements of the DEMP.

Dredging contractors shall demonstrate applicable expert input, e.g. appropriately experienced and qualified individuals or organisations, for the development of an EMIP.

5.2 Management Structure and Responsibilities – operational phase

5.2.1 SA Water

- Preparation and updates to the Dredging Environmental Management plan
- Review of DEMP and recommendations of modifications and additions
- Community Liaison for matters not related to the EPA dredging licence.

SA Water's Superintendent's Representative

- Monitoring of the environmental performance of the work

- Monitoring of the performance of the Contractor's EMIP
- Review of the DEMP and recommendations of modifications and additions
- Reporting of environmental impacts and mitigation measures to the Project Manager and SA Water's Environmental Services team as required or at monthly intervals
- Reporting of environmental impacts and mitigation measures to the EPA for information purposes as required

5.2.2 Contractor (including any subcontractors)

- Preparation of the EMIP and associated documents
- Selection/design of mitigation measures for incorporation into the EMIP
- Preparation of procedures for monitoring and reporting
- Implementing the control measures in the EMIP and associated procedures such as establishing site controls
- Implementation/coordination of monitoring requirements
- Inducting site personnel into the requirements of the EMIP and ensuring staff adequately trained
- Undertake site inspections and monitoring the effectiveness of onsite controls, instigating improvements where necessary
- Undertaking monitoring and audits in accordance with plans
- Maintaining site records such as site inspections/monitoring reports, induction records, NCRs or incident reports, audit reports
- Reporting to EMIP activities to the Superintendent's Representative monthly (or as specified in the EMIP)
- Liaising with the Project Manager where environmental issues or concerns are raised that require further attention
- Implementation of mitigation measures in the event of non-conformances
- Enforcing work practices that minimise adverse environmental impacts through due diligence
- Ensuring all employees report any environmental risks or hazards
- Implementing additional mitigation measures in the event of non-conformances or emergencies
- Community Liaison relating to all aspects of the EPA licence.

5.3 Training and inductions

Dredging Contractors will have full responsibility for informing their employees and subcontractors of their environmental obligations, and for ensuring that employees are adequately experienced and properly trained to carry out work potentially affecting the environment.

Contractors will be required to provide environmental inductions (including the DEMP & EMIP and any associated procedures) to all employees and subcontractors prior to commencing the work. Where necessary the dredging Contractor shall use suitably qualified and experienced individuals or organisations for training purposes.

The dredging Contractor shall adopt procedures to ensure that all employees and subcontractors are adequately inducted.

Records of all training sessions and inductions should be maintained and provided to the Superintendent's Representative on request.

5.4 Review of DEMP

The DEMP will be periodically reviewed and updated (if required) by SA Water. This will allow for the incorporation of any conditions attached to environmental approvals still to be gained, and results of further environmental monitoring, auditing and changes to relevant legislation, policies and guidelines (if any).

To facilitate this process, copies of any environmental approvals obtained by the Contractor should be provided to SA Water as soon as possible after their issue. Any changes to this DEMP should be reflected in the contractors EMIP.

5.5 Monitoring of Environmental Performance

Monitoring of the environmental performance of the work during its operational phase will take the following forms:

- Monitoring and reporting by the Contractor as specified in the DEMP
- Monitoring and reporting by SA Water's Superintendent's Representative during periods of dredging. The reporting and monitoring requirements will be developed in conjunction with SA Water prior to the dredging being undertaken.
- Any observations on the performance of the work by relevant Government Agencies
- Any complaints made by members of the public or relevant stakeholders

The contractors EMIP should include how the environmental performance of the contract will be monitored.

5.6 Non-Conformances and Environmental Incidents

The contractors EMIP should include specific procedures for the reporting and management of non-conformances and environmental incidents. In the event of monitoring activities detecting a non-conformance with the requirements of the DEMP and/or EMIP, the following activities will be undertaken:

- Inspection of the non-conformance on site
- Reporting of the non-conformance by the Contractor to SA Water's Superintendent's Representative
- Immediate implementation of appropriate action by the Contractor to ameliorate the effect of the non-conformance, i.e. disposition
- Preparation of a non-conformance report for the non-conformance register which shall be kept by the Contractor
- Investigation into reasons for non-conformance and implementation of corrective action by responsible parties to prevent recurrence
- Adjustment of DEMP and EMIP to reflect corrective actions

Where either through a non-conformance causes or as a result of an incident environmental harm is caused or threatened to be caused, an Environmental Incident Reporting shall be completed and provided to the Superintendent within 24 hours. The contractors EMIP should include specific procedures for the reporting and management of environmental incidents.

If the incident causes or threatens to cause serious or material environmental harm (e.g. is of a nature serious enough to compromise legislative requirements, is widespread etc.) then as per Section 82 of the Environment Protection Act 1993, an immediate notification to SA Water's Superintendent's Representative and the EPA should be made. A Hold Point will apply to those items causing the non-conformance/incident. This will be released only when appropriate corrective action measures are implemented to ensure that similar non-conformances are not repeated

5.7 EMIP Reporting

The Contractor will be required to provide the SA Water's Contract Manager with monthly status reports on implementation of the EMIP. Monthly reports will constitute a register of all environmental data, observations, monitoring, analysis and comments and will address all environmental issues identified in Section 5 of this document. This document will be available

for future assessments and is a quality record demonstrating that the DEMP, EMIP, the Contract and relevant regulatory requirements were complied with.

The monthly report should be made available to regulatory authorities.

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6 Environmental Management Controls

The general objectives of this Environmental Management Plan are to:

- Identify the key potential environmental issues of concern
- Identify mitigation and control measures to minimise impacts associated with the environmental issues of concern
- Achieve the project objectives in relation environmental management
- Continually improve site practices for the mitigation and management of impacts
- Ensure compliance with all statutory and regulatory requirements.
- Specific management objectives for this project are:

6.1 Management of Water Quality

Table 4 Water Quality Management Controls

Objective:	To minimise the effects of the maintenance dredging operation on water quality in the areas affected by the work.	
Strategy:	Development and compliance with EPA Dredge Guidelines	
Commitments:	Applicable Technical Standards/Notes:	
Storage, handling and disposal of hazardous wastes in accordance with EPA requirements	EPA Guideline – Bunding & Spill Management (http://www.epa.sa.gov.au/pdfs/guide_bunding.pdf)	
Development, and if necessary, implementation of emergency procedures to contain spills of hazardous substances and dispose of the substances including cleaning materials, absorbents and contaminated soils.		
Development and implementation of a Soil, Erosion Drainage Management Plan as part of EMIP		

6.2 Noise

Table 5 Noise Management Controls

Objective:	Minimisation of noise emissions that result in during dredging	
Strategy:	Design and implementation of noise control measures for the work.	
Commitments:	Applicable Technical Standards/Notes:	
Inspections and monitoring of noise emissions as necessary throughout the work to determine whether decibel levels measured at night exceed EPA requirements of 40 dB(A) and during the day of 47 dB(A) in accordance with Sections 4.1 and 4.2.	Environment Protection (Commercial and Industrial Noise) Policy 2023	
Select plant and equipment that generates low noise and ensure that all mechanical plant is kept in good mechanical condition.		
Use of appropriately silenced machinery and equipment during the work.		

Location of stationary constant noise sources as far as practicable away from residences. Provision of noise attenuation enclosures when necessary.	
Investigate alternative processes/methods that will reduce noise	
Where practicable restrict working hours whilst using noisy machinery and plan noisy activities to avoid impacts to sensitive receptors Where feasible Restrict working hours to Monday – Saturday 07:00 – 19:00. Sunday/public holidays (only if essential) 09:00 – 18:00	EPA Information Sheet 425/10- Construction Noise http://www.epa.sa.gov.au/pdfs/info_construction.pdf

6.3 Air Quality (including dust, emissions, and odours)

Table 6 Air Quality Controls

Objective:	Ensure that particulate and gaseous emissions do not cause environmental nuisance or harm to surrounding community and environment.
Strategy:	Implementation of air quality control measures for the work.
Commitments:	Applicable Technical Standards/Notes:
Use of vehicles and machinery with emission control equipment where this is available and practicable.	
Regular maintenance and servicing of vehicles and machinery.	
Monitoring and inspection of air quality measures during the work in accordance with section 4.1 and 4.2.	Environment Protection (Air Quality) Policy 2016
Ensure dredging in accordance with dredge plan to minimise risk of encountering odorous materials.	

6.4 Community Liaison and Public Relations

Table 7 Community & Public Relation Controls

Objective:	To keep the local community and other relevant stakeholders informed of ongoing dredging/sand management activities.
Strategy:	Implement stakeholder engagement plan in conjunction with SA Water and Department of Environment and Water
Commitments:	Applicable Technical Standards/Notes:
Provide warning signage at locations where activities may place the public at risk.	Harbours and Navigation Act 1993
Notify stakeholders by letter drop or other appropriate means of commencement of dredging activities at the various locations.	

Notify boating organisations and marina facility operators of restrictions to navigation to the boating public.	
As directed by SA Water receive, register, and act on complaints received through both SA Water and external sources.	
Maintain a register of complaints received and notify SA Water of any such complaints.	

6.5 Maintenance of Coastal Zone Amenity

Table 8 Coastal Zone Amenity Controls

Objective:	To reduce the loss of amenity of the coastal zone to users and local community as a result of dredging operations
Strategy:	Implement appropriate site management controls to ensure that the impact on the appearance and amenity of the beach and coastal zone is minimised
Commitments:	Applicable Technical Standards/Notes:
Safe pedestrian access through all areas of the worksite	Applicable Australian Standard relating to warning signage on construction sites
Dredging plant and vessels kept in good order and appearance.	
Ensuring that dredging operations are managed such that water quality issues do not reduce the amenity of areas to the public.	Environment Protection (Water Quality) Policy, 2015.

6.6 Storage and Handling of Dangerous Substances

Table 9 Storage and Handling of Dangerous Substances Controls

Objective:	Management of dangerous and hazardous substances on-site to avoid pollution of the environment or harm to persons.
Strategy:	Implementation of environmentally appropriate measures for the storage and handling of dangerous and hazardous substances during the work.
Commitments:	Applicable Technical Standards/Notes:
Storage and handling of dangerous substances in covered areas on bunded impervious floors in areas not subject to flooding and in accordance with relevant codes of practice	Relevant Australian Standards applying to dangerous and hazardous substances. EPA Guidelines – Bunding & Spill Management (http://www.epa.sa.gov.au/pdfs/guide_bunding.pdf)
Storage, handling and disposal of hazardous wastes in accordance with EPA requirements	Australian Code for the Transport of Dangerous Goods by Road and Rail", National Advisory Committee on the Transport of Dangerous Goods.

	EPA Guideline – Bunding & Spill Management (http://www.epa.sa.gov.au/pdfs/guide_bunding.pdf)
The decanting, mixing, application of chemicals or the refuelling of vehicles or equipment should be within bunded /impervious areas	
Spill kit available on site and personnel trained in the efficient use spill kits	
Minimise quantities of dangerous and hazardous substances stored on site and ensure MSDS available at all times for all substances used or stored.	
Development, and if necessary, implementation of emergency procedures to contain spills of hazardous substances and dispose of the substances including cleaning materials, absorbents and contaminated soils.	
Inspection and monitoring of the storage, handling and transport of dangerous and hazardous substances in accordance with Sections 4.1 and 4.2	
All waste oil to be collected and disposed of at an EPA Licensed Recycling Depot.	

6.7 Storage, Maintenance and Refuelling of Machinery and Equipment on Site

Table 10 Storage, Maintenance and Refuelling Controls

Objective:	Avoidance of pollution of the environment through activities associated with the storage, maintenance and refuelling of machinery and equipment.
Strategy:	Implementation of measures for the non-polluting storage, maintenance and refuelling of on-site machinery and equipment.
Commitments:	Applicable Technical Standards/Notes:
Minimise the storage of fuel on-site.	“Environmental Guidelines for Major Construction Site” (Publication 480 December 1995, EPA Victoria).
Storage of fuels and lubricants in bunded areas, under cover, and in areas not subject to flooding.	Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry EPA March 1999 EPA Guidelines – Bunding & Spill Management (http://www.epa.sa.gov.au/pdfs/guide_bunding.pdf)
Off-site maintenance and repairs of machinery and equipment when practicable.	

Ensure that all mechanical plant is kept in good mechanical condition.	
Minimise quantities of fuels stored on site	
Ensure that no fuel is spilled and that spill containment apparatus is on-hand during refuelling operations.	
Inspection and monitoring of storage, maintenance and refuelling of on-site machinery and equipment in accordance with Sections 4.1 and 4.2.	

6.8 Waste Minimisation

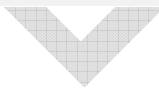
Table 11 Waste Minimisation Controls

Objective:	Minimisation of waste generated during maintenance activities. Avoidance of contamination of soil and groundwater.
Strategy:	Implementations of measures to minimise waste generation and avoid soil contamination throughout the work.
Commitments:	Applicable Technical Standards/Notes:
Design of work activities to minimise wastage of materials and energy where practicable.	
Collection of surplus materials and used lubricants for recycling or disposal at licensed facilities.	
Provision of waste and recycling bins on site for the collection and storage of wastes.	
Removal of waste from the worksite in compliance with EPA requirements for the transportation of waste.	EPA Information Sheet – Waste Tracking Form (http://www.epa.sa.gov.au/pdfs/guide_wastetracking.pdf) EPA Information Sheet – Waste Transport Certificate (http://www.epa.sa.gov.au/pdfs/guide_wastetransport.pdf)
Implementation of practices to ensure that spills of wastes or hazardous materials are avoided or contained, and that no contamination of soil or water occurs as a result of work activities.	
Inspection and monitoring of waste materials and their management during the work in accordance with Sections 4.1 and 4.2.	
Washing down of plant in areas designated and approved for that purpose	

6.9 Emergency Response and Incident Management Plan

Table 12 Emergency Response and Incident Management Controls

Objective:	Provide immediate emergency response with clear areas of responsibility, enabling effective response with minimal environmental harm or disruption.
Strategy:	Implementation of measures to be followed in the event of an Environmental Incident.
Commitments:	Applicable Technical Standards/Notes:
Identification of activities that pose a high risk to the physical and social environment associated with the work.	
Environmental Incident Response Procedures are to be prepared by the contractor and forwarded to relevant authorities, such as State Emergency Services, Police, Ambulance, Fire Brigades, for review/information to ensure relevant authorities are aware of the procedures. Inclusion of the Environmental Incident Response Procedures in the EMIP.	Fire and Emergency Services Act 2005. Aboriginal Heritage Act (SA) 1988 Environmental Protection Act 1993 Dangerous Substances Act 1979
Key site personnel to be made aware of their responsibilities in the Environmental Incident Response Procedures.	
Emergency response and incident procedures should be in place and on display at the worksite/site office	
Reporting and recording of incidents to identify areas in need for attention and possible procedural changes.	
Immediate reporting of all major polluting incidents to the Superintendent and the EPA. Other environmental incidents to be reported to the Superintendent within 24 hours.	
Provision of appropriate emergency equipment for the containment of spills on land or in the water.	
Provision of specialist equipment for the safe clean-up of spills of hazardous materials.	EPA Guideline - Disposal of used Hydrocarbon Absorbent Materials (http://www.epa.sa.gov.au/pdfs/guide_hydrocarbon.pdf)
Ongoing monitoring of high risk activities.	



6.10 Flora and Fauna

Table 13 Flora and Fauna Controls

Objective:	Minimisation of disturbance of flora and fauna. Prevention of introduction and spreading of weeds and pests (including marine pests)	
Strategy:	Implementation of flora and fauna management measures for the work.	
Commitments:	Applicable Technical Standards/Notes:	
No impacts to vegetation unless approved	Native Vegetation Act 1991	
Establishment of bunting around areas of vegetation adjacent to any land based work areas to protect them from work related activities.	National Parks & Wildlife Act 1972 Environment protection & Biodiversity Protection Act 1999	
Restriction of work related traffic to existing roads and designated access tracks.		
Park vehicles and store any equipment in areas that are designated as laydown areas or already clear of vegetation (e.g. access tracks) to avoid smothering or damaging native vegetation.		
Ensure stockpiling of materials occurs only in areas where native vegetation will not be damaged or nesting birds are not disturbed.		
Appropriate hygiene measures (e.g. washdown) of equipment if sourced from weed or disease risk areas		
Ensure appropriate measures implemented to minimise the risk of any vessel or equipment assisting in the translocation or potential incursion of marine pest species.	National Biofouling Guidelines for non-trading vessels (www.marinepest.gov.au)	
Any injury or death of native wildlife caused by the construction activity to be reported to the SA Water Superintendent		

6.10.1 Raptor Management

The project area is within an area previously utilised by Raptor species which is within the advised 3km buffer zone by the Department of Environment and Water (DEW).

Disturbance of this protected species is an offence. Activities onsite and particularly at areas of the site such as the spit and coastal areas with 'line of site' to nests / observation areas are considered particularly high risk as disturbance may result in nesting failure and abandonment of the nest.

In consultation with DEW, SAW partnered with a raptor specialist in developing a Raptor Management Plan to minimise potential impacts on raptor species.

Table 14 Raptor Management Controls

Objective:	Minimisation of disturbance of fauna (Raptor Species).	
Strategy:	Implementation of fauna (Raptor) management measures for the work at the plant site/within 500m of the spit	
Commitments:	Applicable Technical Standards/Notes:	
Key approved personnel to observe the site and monitor raptor activity/movement (if any) for at least 60mins before arrival.	National Parks & Wildlife Act 1972 Environment protection & Biodiversity Protection Act 1999	
All personnel are to remove high visibility clothing (where safe to do so) when entering coastal /line-of-site areas at Plant site (not WWTP)		
Smaller groups are to visit the spit for a limited time with only necessary personnel to visit this area.		
Care should be made not to stare / engage with wildlife if observed.		
No photos of the jetty structure are to be taken.		
All visits and works to the plant site should start at the spit and continue to move further away from the spit to reduce the perceived threat to the birds.		
A Stop! Think! Then Act!' protocol needs to be enacted if eagles exhibit behavioural responses.		

***The current Raptor management plan will be reviewed, adapted, and re-issued to take into account final designs and construction methodologies.

6.11 Cultural Heritage and Native Title Values

6.11.1 Background

The project area is within the Barnjarla Determination Area.¹ Under the Determination, which took effect on 6 April 2018, native title is recognised as existing in large parts of the Eyre Peninsula, including lands and waters adjacent to the project area. Native title was found not to exist on the basis of extinguishment in most of the project area. The Barnjarla Determination Aboriginal Corporation RNTBC (BDAC) is the registered Native Title body corporate appointed to manage the Barnjarla Determination. Even though native title is extinguished over much of the project area, SA Water acknowledges that Barnjarla people maintain a connection to that area under their traditional laws and customs and acknowledges them as Traditional Owners for the project area.

SA Water also acknowledges that the Traditional Owners of the western Eyre Peninsula region; the Nauo (Tribunal file no. SCD2023/003; Federal Court Number SAD65/2022, SAD185/2021), also maintain connections to the project area.

Native Title and Aboriginal cultural heritage are key considerations in the planning, design and construction of this project.

¹ Croft on behalf of the Barnjarla Native Title Claim Group v State of South Australia (No 2) [2016] FCA 724; Croft on behalf of the Barnjarla Native Title Claim Group v State of South Australia (No 3) [2018] FCA 552

SA Water has engaged with BDAC over a number of years in relation to potential locations for a desalination plant on Eyre Peninsula.

SA Water has taken steps to assess cultural heritage risks associated with the project area, including obtaining an independent desktop assessment and conducting a search of the AAR database. SA Water has also sought, unsuccessfully, to conduct a heritage survey of the project area with BDAC and to seek feedback from BDAC on cultural heritage sites and values within and around the project area to assist in informing project design and construction methodology.

Although no assessment of cultural heritage through a survey with the Barngarla people has yet been carried out, sites of cultural heritage significance identified through desktop assessments have been considered in the current design and construction methodology.

SA Water acknowledges the publicly stated heritage significance of Billy Lights Point to the Barngarla People including statements that the construction of a desalination plant at Billy Lights Point risks damage to Aboriginal heritage.

SA Water continues to seek constructive engagement with BDAC regarding measures to minimise any damage to their cultural heritage as a consequence of the project.

However, due to the critical nature of the project, SA Water has lodged a Section 21 and Section 23 Authorisation request under the *Aboriginal Heritage Act 1988* seeking authorisation of the Minister to damage, disturb or interfere with any Aboriginal site or object, where this cannot be avoided by project design or construction methodology. Details of the results of site specific heritage investigations and engagement with the Traditional Owners have been provided to the Minister of Aboriginal Affairs and Reconciliation in support of that application.

SA Water will ensure compliance with Native Title and Aboriginal Heritage laws in relation to this project and acknowledges that an authorisation under the *Aboriginal Heritage Act 1998* (SA) will be required in relation to this project.

6.11.2 Mitigation Measures and Controls

Table 15 Cultural Heritage Controls

Objective:	Protection of Aboriginal Heritage sites
Strategy:	Implementation of measures for the isolation and protection of items of archaeological or heritage value identified prior to or during the work.
Commitments:	Applicable Technical Standards/Notes:
Significant Aboriginal sites are located within the project footprint, these will be fenced off and protected, where practicable, to ensure that ground disturbing works take place well away from such sites;	Aboriginal Heritage Act 1988. SA Water's Standard Operating Procedure for Heritage
Where feasible, Barngarla Cultural Monitors will be employed to monitor ground disturbing activities where justified and reasonable (based on independent heritage advice);	
If at any time during the works, a suspected Aboriginal site, objects or Ancestral remains is encountered, work must stop immediately and the Environmental Supervisor and SA Water must be notified immediately with the details of the nature and location of the site, objects or Ancestral remains.	

Work must not recommence in the affected area until the conditions of any approved section 21 & 23 Authorisation are fully satisfied.	
Educate site personnel of their responsibilities under the <i>Aboriginal Heritage Act 1988 (SA)</i> , and the terms of any Section 21 & 23 Authorisation.	

6.12 Non-Aboriginal Heritage

Table 16 Non-Aboriginal Heritage Controls

Objective:	Protection of Non-Aboriginal Heritage sites	
Strategy:	Implementation of measures for the isolation and protection of items of archaeological or heritage value identified prior to or during the work.	
Commitments:	Applicable Technical Standards/Notes:	
Implement the recommendations of the visual impact assessment to mitigate any potential visual impacts of the Project to the 'setting' of any heritage places in the wider area; in particular, the State heritage listed dwelling 'Ravendale House'.	Heritage Places Act 1993 Historic Shipwrecks Act 1981 Commonwealth Underwater Cultural Heritage Act 2018 Planning Development & Infrastructure Act 2016	
Assess any heritage listed structures within 10 m of the preferred construction traffic route could be for vibration damage.		
Undertake earthworks with care, particularly when working in close proximity to heritage places.		
Have contingency in place for any unexpected discovery of non-Aboriginal heritage items during works in both the marine and terrestrial environment; including an unexpected finds protocol and stop work procedure, until items are assessed.		

6.13 Marine Management

6.13.1.1 Marine Pest Risk Assessment and Monitoring Plan

Table 17 Marine Pest Controls

Objective:	Avoid the introduction, spread and establishment of marine pests
Strategy:	Complete a Marine Pest Risk Assessment and Monitoring Plan, including quarantine and cleaning protocols for all marine vessels and equipment used
Commitments:	Applicable Technical Standards/Notes:
Follow quarantine protocol for all barges, tugs and other vessels used on the EPDP. Marine vessels arriving from outside Australian waters will be inspected for biofouling and sediments.	Australian Quarantine and Inspection Service (AQIS) requirements and the Quarantine Act 1908;
Ensure that vessels have a Ballast Water Management Plan to provide detailed instructions for ships personnel on how to manage ballast water on board;	National Biofouling Guidelines for non-trading vessels (www.marinepest.gov.au)
<p>Precautionary measures to prevent the translocation of pests in biofouling or entrained in seawater may include (depending on the origin of the vessel):</p> <ul style="list-style-type: none"> o Slipping or dry docking and removal of all biofouling growth for the hull and hull niches (propellers, propeller shafts, sea chests, intakes and discharges, cathodic protection anodes etc.) and ally, renew or repair the antifouling system using a system appropriate to the vessels intended operation, with particular attention to the surface preparation standards and paint application in accordance with the manufacturers specifications; o Ensure all wetter areas and hull recesses (eg sea chests, anchor lockets, deck wells, and internal pipework) are drained, any sediments and biological material removal, and the areas allowed to dry out; o Diver inspection and cleaning – if a maintenance slipping/dry docking has been recently undertaken (less than 12 months ago), and the vessel cannot be easily reslipped for inspection and cleaning, undertake a diver inspection prior to relocating the vessel to ensure the hull and hull niches are free of biofouling. If secondary biofouling growth is detected (visible animal or plant growth), the vessel will be slipped and biofouling removed; o Cleaning and sterilising techniques applied to equipment – before departure, and routinely during operations, inspect and clean all 	

<p>berthing lines, anchors, anchor chains, cables and other submersible equipment to ensure they are free of attached or entangled marine growth; and</p> <ul style="list-style-type: none"> o Manage ballast water – on arrival at a South Australian port, discharge any seawater carried into the state into a land-based waste system (e.g. sewer or waste contractor) that does not discharge into the marine environment. 	
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6.13.1.2 Marine Habitat and Species Removal, Damage and Disturbance

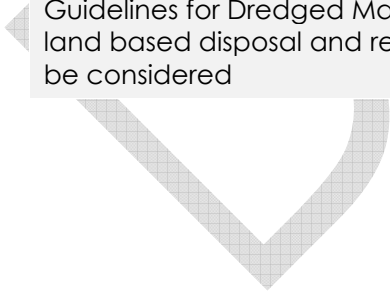
Table 18 Marine Habitat and Species Controls

Objective:	Minimisation of disturbance of marine flora and fauna. Prevention of introduction and spreading of marine weeds and pests	
Strategy:	Implementation of marine flora and fauna management measures for the work.	
Commitments:	Applicable Technical Standards/Notes:	
Offshore construction works will be contained within the Marine Exclusion Area and construction footprint will be reduced as far as practicable;		
Reduce blasting to the minimal level and reduce impact by using a number of smaller rather than larger charges for the blasting event and in accordance with EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales;	Environment Protection and Biodiversity Conservation Act 1999	
No blasting activities should occur within the marine mammal migration season (approximately May to November);		
Marine mammal spotters should be utilised during construction and an exclusion zone established whereby blasting and/or dredging stops if a marine mammal is spotted within 500m of the work area;		
Use of rock armour to protect pipe will 'reconnect' and encourage recovery of subtidal reef system;		
Offshore construction works will be contained within the Marine Exclusion Area and construction footprint will be reduced as far as practicable;		

6.13.2 Marine Dredging

Table 19 Marine Dredging Controls

Objective:	Minimisation of disturbance marine environment and its users	
Strategy:	Implementation of Dredge Management Plan and Management Measures.	
Commitments:	Applicable Technical Standards/Notes:	
Dredging will take place to coincide with suitable local currents and swell patterns;	Environment Protection Act 1993	
Depth and width of dredge channels will be planned and completed to reduce the footprint of impact (and the need for future dredging);		
A water quality monitoring program will be implemented to ensure that turbidity levels do not have the potential to impact on marine flora and fauna, particularly seagrass beds and subtidal reefs;		
Bund walls and sediment traps will be designed and constructed in accordance with relevant standards. This should limit the movement of contaminants and risk of erosion/breaching;		
Sediment containment structures will be appropriately maintained and where containment screens are used, joints should be over-lapping and be appropriately secured;		
Sediment containment screens should be made of puncture and tear resistant material, hessian is not recommended. Selection should consider fire retardancy, burst strength and ultra-violet resistance. Shade cloth will not prevent the escape of fine dust and should not be used for temporary enclosures if work generates silica, lead or other toxic dusts;		
Spoil to be disposed of in accordance with EPA licence requirements and national Ocean Disposal Guidelines for Dredged Material. Where feasible land based disposal and reuse of material should be considered		



6.13.3 Underwater Noise and Vibration Management

Table 20 Underwater Noise and Vibration Controls

Objective:	Minimisation of underwater noise and vibration disturbance marine environment and its users	
Strategy:	Implementation of Dredge Management Plan and Management Measures.	
Commitments:	Applicable Technical Standards/Notes:	
Explosive works should only be conducted during periods when fish and/or marine mammal activity or sensitivity is lowest such as outside of the known migratory months for whales (approximately June to late November);	Environment Protection Act 1993	
Marine mammal spotters should be employed during the dredging and entrenching campaign and an exclusion zone established whereby dredging stops if a marine mammal is spotted within 500 metres of the dredging vessel;		
In the event of injured marine mammals or birds call FISHWATCH (1800 065 522		

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7 Inspections, Monitoring and Audits

Inspections of the work area should be carried out by the Contractor to ensure the environmental management controls are effective. Monitoring of the environmental controls should consider the performance indicators each of the environmental issues provided in Section 6.

7.1 Inspections

The frequency of inspections will depend on the risks posed to the environment of each activity undertaken by the Contractor and shall be addressed by the Contractor in the EMIP unless specified elsewhere in the documents. All inspections shall be documented.

Table 21 Inspection Criteria and Requirements

Issue	Potential problems	Frequency of inspection	Potential Improvements
Vehicles and machinery	Noise pollution Exhaust gases/ emissions	Weekly	Additional controls
Chemical storage areas	Inappropriate storage, chemical spills.	Daily	
Waste management and storage	Inappropriate management and storage of waste	Daily	
Waste and litter controls	Waste and litter on and off-site	Daily	
Vegetated areas	Accidental clearance or damage	Daily when working in the vicinity of vegetation	Revegetation Review of procedures to ensure no recurrence
Condition of buoys (if used)	Damage or vandalism	Daily	Develop a procedure for employees to check the condition of buoys
Signs	Vandalism or removal	Daily	

7.2 Monitoring

Regular monitoring of water quality, air quality (odours) and noise is required. This is to commence prior to site activities to provide a baseline against which data collected during and after completion of the work can be compared.

Chemical measurements will be conducted by laboratories registered by the National Association of Testing Laboratories (NATA). Site measurements and observations will be made by suitably qualified and experienced individuals or organisations.

Monitoring will provide information on whether standards are being complied with. The following recommendations should be treated as a guide only. The Contractor shall specify proposed monitoring activities in the EMIP. Monitoring should ensure that it meets the requirements of the EPA licence.

Table 22 Monitoring Requirements

Area of Risk	Purpose	Monitoring Requirements	Performance Standards	Remedial action
Noise	Determination of the existence of noise nuisance	As required by complaints from residents Regular noise monitoring at representative residences near site activities.	Refer to Environment Protection (Commercial and Industrial Noise) Policy 2023 and EPA Information Sheet- Construction Noise	Review and improvement of noise control measures.
Air quality (odours)	Determination of the existence of an odour problem.	As required by complaints Regular monitoring of odours from discharge sites.	Refer to Environment Protection (Air Quality) Policy 2016.	Review location of dredge, consider ceasing activities until appropriate weather conditions
Flora and fauna	Determination of any damage to native vegetation and/or habitat` Protection of nesting birds		No unauthorised impacts/clearance.	

7.2.1 Audits

The Contractors EMIP should set out auditing requirements of the EMIP and broader system of management.

Records of all audits (completed checklists and reports) must be kept and made available to the Superintendents Representative.

Other than the monthly reports from the Contractor to the Superintendent's Representative, the SA Water may conduct audits of the performance of the Contractor's EMIP at least twice annually.