

Sepia Depression Ocean
Outlet Landline
2015–2016 Annual Report Card

This report has been prepared for Water Corporation by BMT Oceanica Pty Ltd, September 2016.

Document history

Distribution

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Review

Revision	Reviewer	Intent	Date
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C	C Byers B Coonan	Client review	18/10/16

Quality Assurance



BMT Oceanica Pty Ltd has prepared this report in accordance with our Health Safety Environment Quality Management System, certified to OHSAS 18001, AS/NZS 4801, ISO 14004 and ISO 9001: 2008.

Status

This report is 'Draft' until approved for final release, as indicated below by inclusion of signatures from: (i) the author and (ii) a Director of BMT Oceanica Pty Ltd or their authorised delegate. A Draft report may be issued for review with intent to generate a 'Final' version, but must not be used for any other purpose.

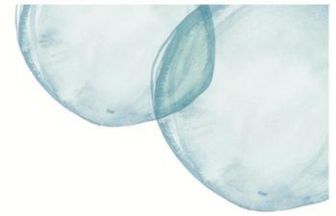
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Date: 4/11/16

Director (or delegate)

Date: 4/11/16



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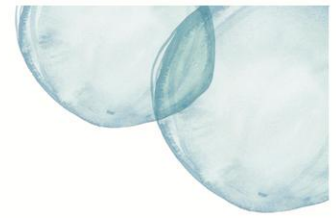
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- Appendix B – WET Testing Results
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1. Introduction

This annual report card documents the findings of the 2015–2016 Sepia Depression Ocean Outlet Landline (SDOOL) monitoring program. Protocols and analyses described herein are based on the methods outlined in the Sepia Depression Ocean Outlet Monitoring & Management Plan (BMT Oceanica 2014). Results are reported in the context of the Environmental Quality Management Framework (EQMF) described in EPA (2015). The results are summarised in Report Card format for each relevant Environmental Quality Objective (EQO) (EPA 2015). The report cards contain colour-coded results, with the individual colours representing the extent to which the Environmental Quality Criteria (EQC) were met (Table 1.1).

Table 1.1 Summary report card legend

Management response ¹	Colour
Monitor: EQG met (continue monitoring)	
Investigative: EQG not met (investigate against the EQS), EQS met (continue monitoring)	
Action: EQS not met (management response required)	

Note:



1. The required response following an exceedance of either the Environmental Quality Guideline (EQG) or Environmental Quality Standard (EQS) is shown in parentheses.




2. EQO 1 - Maintenance of Ecosystem Integrity

The EQO 'Maintenance of Ecosystem Integrity' aims to ensure the continued health and productivity of the coastal ecosystem (Table 2.1).

Table 2.1 Assessment Against Environmental Quality Guidelines for the Maintenance of Ecosystem integrity EQO1

Indicator	Environmental Quality Guideline	Results	Compliance																																				
Toxicants in treated wastewater—comprehensive treated wastewater characterisation																																							
Bioaccumulating toxicants	Concentrations of contaminants will not exceed the ANZECC & ARMCANZ (2000) 80% species protection guideline trigger levels for bioaccumulating toxicants at the diffuser.	Concentrations of cadmium and mercury in the undiluted SDOOL TWW stream were both below the limit of reporting and therefore below the ANZECC & ARMCANZ (2000) 80% species protection guidelines (36 and 1.4 µg/L for cadmium and mercury, respectively) prior to discharge (Appendix A).																																					
Non bioaccumulating toxicants	The ANZECC & ARMCANZ (2000) 99% species protection guideline trigger levels for non-bioaccumulating are met at the edge of the low ecological protection area (LEPA).	<p>Contaminant concentrations were lower than the ANZECC & ARMCANZ (2000) triggers for 99% species protection guidelines (95% for cobalt) after dilution equivalent to that expected at the LEPA boundary (1:310) (Table 2a and Appendix A).</p> <p>Table 2a Toxicants in the TWW compared to the relevant waste stream triggers</p> <table border="1"> <thead> <tr> <th>Toxicant¹</th> <th>Waste Stream Trigger²</th> <th>Sepia Depression TWW³</th> </tr> </thead> <tbody> <tr> <td colspan="3">Nutrients (µg/L)</td> </tr> <tr> <td>Ammonia-N</td> <td>154,537</td> <td>590</td> </tr> <tr> <td colspan="3">Dissolved metals (0.45 µm filtered) (µg/L)</td> </tr> <tr> <td>Chromium⁴</td> <td>43</td> <td><1.0</td> </tr> <tr> <td>Copper</td> <td>68</td> <td>7</td> </tr> <tr> <td>Lead</td> <td>679</td> <td><1.0</td> </tr> <tr> <td>Nickel</td> <td>2,016</td> <td>3</td> </tr> <tr> <td>Silver</td> <td>248</td> <td><0.8</td> </tr> <tr> <td>Zinc</td> <td>2124</td> <td>45</td> </tr> <tr> <td colspan="3">Organophosphate Pesticides (µg/L)</td> </tr> <tr> <td>Chlorpyrifos</td> <td>0.16</td> <td><0.1</td> </tr> </tbody> </table>	Toxicant ¹	Waste Stream Trigger ²	Sepia Depression TWW ³	Nutrients (µg/L)			Ammonia-N	154,537	590	Dissolved metals (0.45 µm filtered) (µg/L)			Chromium ⁴	43	<1.0	Copper	68	7	Lead	679	<1.0	Nickel	2,016	3	Silver	248	<0.8	Zinc	2124	45	Organophosphate Pesticides (µg/L)			Chlorpyrifos	0.16	<0.1	
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		<table border="1"> <thead> <tr> <th colspan="3" data-bbox="667 279 1854 308">Organochlorine pesticides (µg/L)</th> </tr> </thead> <tbody> <tr> <td data-bbox="667 311 1391 339">Endrin</td> <td data-bbox="1395 311 1626 339">1.24</td> <td data-bbox="1630 311 1854 339"><0.001</td> </tr> <tr> <td data-bbox="667 343 1391 371">Endosulfan sulfate⁵</td> <td data-bbox="1395 343 1626 371">1.55</td> <td data-bbox="1630 343 1854 371"><0.001</td> </tr> <tr> <th colspan="3" data-bbox="667 375 1854 403">Phenols (µg/L)</th> </tr> <tr> <td data-bbox="667 406 1391 435">Phenol</td> <td data-bbox="1395 406 1626 435">83,685</td> <td data-bbox="1630 406 1854 435">0.39</td> </tr> <tr> <td data-bbox="667 438 1391 467">Pentachlorophenol</td> <td data-bbox="1395 438 1626 467">3,379</td> <td data-bbox="1630 438 1854 467"><0.2</td> </tr> <tr> <th colspan="3" data-bbox="667 470 1854 499">Chlorinated hydrocarbons (µg/L)</th> </tr> <tr> <td data-bbox="667 502 1391 531">1,2,4-Trichlorobenzene</td> <td data-bbox="1395 502 1626 531">6,046</td> <td data-bbox="1630 502 1854 531"><20</td> </tr> <tr> <th colspan="3" data-bbox="667 534 1854 563">BTEX (µg/L)</th> </tr> <tr> <td data-bbox="667 566 1391 595">Benzene</td> <td data-bbox="1395 566 1626 595">110,890</td> <td data-bbox="1630 566 1854 595"><1.0</td> </tr> <tr> <th colspan="3" data-bbox="667 598 1854 627">Poly aromatic hydrocarbons (µg/L)</th> </tr> <tr> <td data-bbox="667 630 1391 659">Naphthalene</td> <td data-bbox="1395 630 1626 659">15,485</td> <td data-bbox="1630 630 1854 659"><0.01</td> </tr> <tr> <td data-bbox="667 662 1391 691">Benzo(g,h,i)perylene</td> <td data-bbox="1395 662 1626 691">15,485</td> <td data-bbox="1630 662 1854 691"><0.01</td> </tr> </tbody> </table> <p data-bbox="645 715 712 738">Notes:</p> <ol data-bbox="645 742 1814 906" style="list-style-type: none"> Assessment undertaken only for toxicants with ANZECC & ARM CANZ (2000) guideline values ANZECC & ARM CANZ (2000) scaled based on 5th percentile dilution at the LEPA boundary (1:310) TWW = treated wastewater. Measured values are total chromium (Cr) – while dissolved Cr in TWW is predominantly Cr III, a conservative approach was taken and assessment is against the Cr VI trigger. Trigger values for Endosulfan, not Endosulfan sulfate (Table 3.4.1; ANZECC & ARM CANZ 2000). 	Organochlorine pesticides (µg/L)			Endrin	1.24	<0.001	Endosulfan sulfate ⁵	1.55	<0.001	Phenols (µg/L)			Phenol	83,685	0.39	Pentachlorophenol	3,379	<0.2	Chlorinated hydrocarbons (µg/L)			1,2,4-Trichlorobenzene	6,046	<20	BTEX (µg/L)			Benzene	110,890	<1.0	Poly aromatic hydrocarbons (µg/L)			Naphthalene	15,485	<0.01	Benzo(g,h,i)perylene	15,485	<0.01	
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	<p data-bbox="342 1023 616 1238">The total toxicity of the mixture (TTM) for the additive effect of dissolved ammonia, copper and zinc (as per ANZECC & ARM CANZ (2000) guidelines) is less than 1.0.</p>	<p data-bbox="638 914 1877 995">The TTM for the additive effect of ammonia, copper and zinc after dilution equivalent (1:310) to that expected at the LEPA boundary was 0.39 and lower than the ANZECC & ARM CANZ (2000) guideline value of 1.0 (Table 2b and Appendix A).</p> <p data-bbox="638 1007 1254 1031">Table 2b Total toxicity of the TWW stream</p> <table border="1" data-bbox="660 1038 1854 1233"> <thead> <tr> <th data-bbox="667 1042 898 1129">Toxicant</th> <th data-bbox="902 1042 1133 1129">TWW concentration (µg/L)</th> <th data-bbox="1137 1042 1368 1129">Background concentration¹ (µg/L)</th> <th data-bbox="1373 1042 1603 1129">Dilution</th> <th data-bbox="1608 1042 1839 1129">Total toxicity of the mixture (TTM)²</th> </tr> </thead> <tbody> <tr> <td data-bbox="667 1133 898 1161">Ammonia</td> <td data-bbox="902 1133 1133 1161">590</td> <td data-bbox="1137 1133 1368 1161">1.5</td> <td data-bbox="1373 1133 1603 1161" rowspan="3">1:310</td> <td data-bbox="1608 1133 1839 1161" rowspan="3">0.39</td> </tr> <tr> <td data-bbox="667 1165 898 1193">Copper</td> <td data-bbox="902 1165 1133 1193">7</td> <td data-bbox="1137 1165 1368 1193">0.08</td> </tr> <tr> <td data-bbox="667 1197 898 1225">Zinc</td> <td data-bbox="902 1197 1133 1225">45</td> <td data-bbox="1137 1197 1368 1225">0.15</td> </tr> </tbody> </table> <p data-bbox="638 1238 712 1262">Notes:</p> <ol data-bbox="638 1265 1859 1347" style="list-style-type: none"> Background concentrations for copper and zinc from McAlpine et al. (2005); Perth marine waters (pp. 19; Table 12). Surface background concentration for ammonia calculated as median of reference site data from 2003–2016 (BMT Oceanica, unpublished data). 	Toxicant	TWW concentration (µg/L)	Background concentration ¹ (µg/L)	Dilution	Total toxicity of the mixture (TTM) ²	Ammonia	590	1.5	1:310	0.39	Copper	7	0.08	Zinc	45	0.15																								
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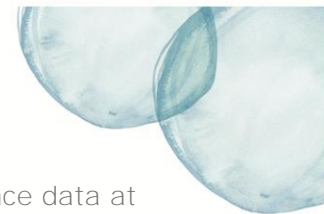


Indicator	Environmental Quality Guideline	Results	Compliance																							
		2. $TTM = [ammonia]/guideline + [copper]/guideline + [zinc]/guideline.$																								
Whole of Effluent Toxicity (WET) testing	The EQG will be exceeded if following the 1 hour sea urchin test: $\frac{TDA}{DRNOEC} \leq 1.0$	The lowest NOEC recorded during the reporting period was 12.5% TWW. Only 8 dilutions are required to achieve this NOEC which is lower than the dilutions typically achieved at the LEPA boundary (at least 1:200) (Table 2c and Appendix B). Table 2c Whole of effluent toxicity test results																								
	Where TDA = Typical Dilutions Achieved (constant based on 200-fold dilution) DRNOEC = Number of dilutions required to achieve the No Observed Effects Concentration (NOEC).	<table border="1"> <thead> <tr> <th>Indicator</th> <th>July 2015</th> <th>October 2015</th> <th>January 2016</th> <th>April 2016</th> </tr> </thead> <tbody> <tr> <td>NOEC</td> <td>12.5%</td> <td>25%</td> <td>50%</td> <td>50%</td> </tr> <tr> <td>Dilutions required to meet the NOEC</td> <td>8</td> <td>4</td> <td>2</td> <td>2</td> </tr> <tr> <td>Dilutions require/dilutions achieved</td> <td>0.04</td> <td>0.02</td> <td>0.01</td> <td>0.01</td> </tr> <tr> <td>≤1</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> </tr> </tbody> </table> <p>Notes: 1. NOEC = no observed effect concentration.</p>		Indicator	July 2015	October 2015	January 2016	April 2016	NOEC	12.5%	25%	50%	50%	Dilutions required to meet the NOEC	8	4	2	2	Dilutions require/dilutions achieved	0.04	0.02	0.01	0.01	≤1	Yes	Yes
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≤1	Yes	Yes	Yes	Yes																						
Receiving water physico/chemical measures																										
Nutrient enrichment	Median chlorophyll-a concentration during non river-flow period not to exceed 80 th percentile of reference site data.	Median chlorophyll-a concentration within the high ecological protection area (HEPA) (0.2 µg/L) was lower than the 80 th percentile of historical reference site data (0.4 µg/L) (Appendix C)																								
	Median light attenuation (LAC) during non river-flow period not to exceed 80 th percentile of reference site data.	Median LAC within the HEPA (0.072 Log ₁₀ /m) was lower than the 80 th percentile of historical reference site data (0.077 Log ₁₀ /m) (Appendix C).																								
Organic enrichment	Median dissolved oxygen in bottom waters (0–0.5 m above the sediment surface) greater than 90% saturation at any site for a defined period of not	Dissolved oxygen saturation remained above 90% saturation at all times (Appendix C)																								




Indicator	Environmental Quality Guideline	Results	Compliance
	more than six weeks.		
Salinity	Median salinity (0.5 m below the water surface) at an individual site over any period not to deviate beyond the 20 th and 80 th percentile of natural salinity range over the same period.	Within the HEPA, median salinity was below the 20 th percentile of reference site data at 100, 350, 1000 and 1500 m down-current (Appendix C). Assessment proceeded against the EQS (see Table 2.2).	
Receiving water biological measures			
Phytoplankton blooms	Median phytoplankton biomass measured as chlorophyll-a not to exceed 3-times median chlorophyll-a concentration of reference sites, on any occasion during non river-flow period.	There were no instances where median chlorophyll-a concentrations in the HEPA exceeded 3-times the median of reference sites (Appendix C).	
	Phytoplankton biomass measured as chlorophyll-a at any site does not exceed 3 times median chlorophyll-a concentration of reference sites, on 25% or more occasions during the non river-flow period.	Chlorophyll-a did not exceed 3-times the median chlorophyll-a concentration of reference sites at any site on any occasion (Appendix C).	

The Environmental Quality Guidelines (EQG) for salinity which requires the median salinity (0–0.5 m below the water surface) at any individual site not to deviate beyond the 20th or 80th percentile of the natural salinity range (based on reference site data over the same



period) was not met. Within the High Ecological Protection Area (HEPA), median salinity was below the 20th percentile of reference data at all sites within the HEPA. The EQG was therefore not met (Table 2.1) and assessment proceeded against the EQS which requires that there are no deaths of marine organisms resulting from anthropogenic salinity stress. All salinity measurements within the HEPA were above 35, which is within the accepted tolerances of temperate marine organisms (ANZECC & ARMCANZ 2000). There were no observed (or reported) deaths of marine organisms over the monitoring period so the EQS was considered to be met (Table 2.2).

Table 2.2 Assessment Against Environmental Quality Standards for the Maintenance of Ecosystem Integrity EQ01

Indicator	Environmental Quality Standard	Results	Compliance
Receiving water physico/chemical measures			
Bioaccumulating toxicants	No deaths of marine organisms resulting from anthropogenically-sourced salinity stress.	Within the HEPA, there were no observed (or reported) deaths of marine organisms over the 2015–2016 monitoring period	

Notes:

1. Green (■) symbols indicate the Environmental Quality Criteria (EQC) were met; amber (■) and red (■) symbols represent an exceedance of the Environmental Quality Guideline (EQG) or Environmental Quality Standard (EQS), respectively.
2. NOEC = no observed effect concentration; the highest concentration of TWW at which there is no statistically significant observed effect on gamete fertilisation.




3. EQO 2 - Maintenance of Aquatic Life for Human Consumption

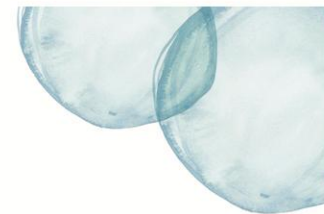
The EQO 'Maintenance of Aquatic Life for Human Consumption' aims to ensure there is low risk to the health of human consumers of seafood, which may be exposed to toxicants within the TWW stream (Table 3.1).

Table 3.1 Assessment Against Environmental Quality Guidelines for Maintenance of Aquatic Life for Human Consumption EQO2

Indicator	Environmental Quality Guideline	Results	Compliance
Thermo-tolerant Coliforms (TTC)	Median TTC counts at sites at the boundary of the Shellfish Harvesting Exclusion Zone (SHEZ) are not to exceed 14 CFU 100 mL ⁻¹ .	The median value for TTC derived from 120 samples collected over the 2013–2014, 2014–2015 and 2015–2016 sampling seasons was at the limit of detection (<10 CFU/100 mL) and below the EQG (14 CFU/100 ml)	■
	No more than 10% of the samples exceeding 21 CFU 100 mL ⁻¹ as measured using the membrane filtration method.	Less than 10% (6.7%) of TTC samples (8/120) that exceeded 21 CFU/100 mL over the 3-season pooled dataset.	■





Indicator	Environmental Quality Guideline	Results	Compliance
Algal Biotoxins	<p>Concentrations of potentially toxic algae at sites at the boundary of the SHEZ not to exceed the WASQAP trigger concentrations for any of the following:</p> <ul style="list-style-type: none"> • <i>Alexandrium</i> spp. (100 cells/L); • <i>Gymnodinium</i> spp. (1000 cells/L); • <i>Karenia</i> spp. (1000 cells/L); • <i>Dinophysis</i> spp. (500 cells/L); • <i>Dinophysis acuminata</i> (3000 cells/L); • <i>Prorocentrum</i> spp. (500 cells/L); • <i>Pseudo-nitzschia</i> spp. (250000 cells/L); • <i>Gonyaulax</i> cf. <i>spinifera</i> (100 cells/L); and • <i>Protoceratium reticulatum</i> (<i>Gonyaulax grindleyi</i>) (500 cells/L). 	<p>There were no instances where toxic phytoplankton species were recorded in excess of WASQAP guideline values (DoF 2007).</p>	



4. EQO 3 - Maintenance of Primary Contact Recreation

The EQO 'Maintenance of Primary Contact Recreation' aims to ensure that waters are safe for swimmers (Table 4.1).


Table 4.1 Assessment Against Environmental Quality Guidelines for Maintenance off Primary Contact Recreation EQO3

Indicator	Environmental Quality Guideline	Results	Compliance
Faecal pathogens	The 95 th percentile value of <i>Enterococci</i> spp. calculated over the bathing season not to exceed 200 MPN/100 mL, outside the post-upgrade boundary.	The 95 th percentile of <i>Enterococci</i> spp. concentrations was 722 MPN/100 mL and exceeded the EQG for primary contact recreation (200 MPN/100 mL) (see Table 4.2)	
Algal biotoxins	Median total phytoplankton cell count for the area of concern (either from one sampling run or from a single site over agreed period of time) should not exceed 15,000 cells/mL.	The median total phytoplankton cell concentration was 11.3 cells/mL ($\leq 15,000$ cells/mL)	

The EQG and EQS for primary contract recreation require the 95th percentile concentrations of *Enterococci* spp. does not exceed 200 MPN/100 mL and 500 MPN/100 mL, respectively, at the post upgrade boundary. The 95th percentile *Enterococci* spp. concentration assessed based on three sampling seasons of pooled data (to achieve a sufficient sample size of n=115) was 722 MPN/100 mL, exceeding both the EQG and EQS (Table 4.1 and Table 4.2). The exceedance is due to a change from the ANZECC & ARMCANZ (2000) limit that applied when the post-upgrade boundary was defined to the more conservative 95th percentile guideline for *Enterococci* spp. preferred by the EPA (2015). Water Corporation is completing modelling to better define risk and/or determine the appropriate management area for the revised assessment criteria in association with the DoH as a management response.



Table 4.2 Assessment Against Environmental Quality Standards for Maintenance of Primary Contact Recreation EQ03


Indicator	Environmental Quality Standard	Results	Compliance
Faecal pathogens	The 95 th percentile value of <i>Enterococci</i> spp. calculated over the bathing season not to exceed 500 MPN/100 mL, outside the post-upgrade boundary.	The 95 th percentile of <i>Enterococci</i> spp. concentrations was 722 MPN/100 mL and exceeded the EQS for primary contact recreation (500 MPN/100 mL)	



5. EQO 4 - Maintenance of Secondary Contact Recreation

The EQO 'Maintenance of Secondary Contact Recreation' aims to ensure that waters are safe for recreational water users (Table 5.1).

Table 5.1 Assessment against Environmental Quality Guidelines for Maintenance of Secondary Contact Recreation EQO







Indicator	Environmental Quality Guideline	Results	Compliance
Faecal pathogens	The 95 th percentile value of <i>Enterococci</i> spp. calculated over the bathing season not to exceed 2000 MPN/100 mL, outside the post-upgrade boundary.	The 95 th percentile of <i>Enterococci</i> spp. concentrations was 722 MPN/100 mL and met the EQG for secondary contact recreation (2000 MPN/100 mL)	





6. EQO 5 - Maintenance of Aesthetic Values

The EQO 'Maintenance of Aesthetic Values' aims to ensure that waters are aesthetic appeal (Table 6.1).

Table 6.1 Assessment Against Environmental Quality Guidelines for Maintenance of Aesthetic values EQO 5

Indicator	Environmental Quality Guideline	Results	Compliance
Nuisance organisms	Macrophytes, phytoplankton scums, filamentous algal mats, blue-green algae and sewage fungus should not be present in excessive amounts.	Nuisance organisms were not present in excessive amounts	
Faunal deaths	There should be no reported incidents of large-scale deaths of marine organisms relating from unnatural causes.	There were no instances of dead marine organisms observed	
Water clarity	The natural visual clarity of the water should not be reduced by more than 20%.	Measurements of light attenuation confirmed that the natural visual clarity of the water was not reduced by more than 20%.	
Colour	The natural hue of the water should not be changed by more than ten points on the Munsell scale.	There were no instances of noticeable colour variation	
Surface films	Oil and petrochemicals should not be noticeable as a visible film on the water or detectable by odour.	There were no occasions where oil was observed as a visible film on the surface of the water	
Surface debris	Water surfaces should be free of floating debris, dust and other objectionable matter, including substances that cause foaming.	There were no instances of floating surface debris	



Indicator	Environmental Quality Guideline	Results	Compliance
Odour	There should be no objectionable odours.	A noticeable odour was recorded on one sampling occasions (11 March 2016), coinciding with a dam flushing event	
Fish tainting substances	Concentrations of contaminants will not exceed the Aesthetics guidelines for fish tainting substances at the Shellfish Harvesting Safety Zone boundary.	Concentrations of contaminants did not exceed the aesthetics guidelines for fish tainting substances at the Shellfish Harvesting Safety Zone boundary	



7. References

- ANZECC, ARMCANZ (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Volume 1: The Guidelines. Australian and New Zealand Environment and Conservation Council, Agriculture and Resource Management Council of Australia and New Zealand, Canberra, ACT, October 2000
- BMT Oceanica (2014) Sepia Depression Ocean Outlet – Monitoring and Management Plan. Prepared for Water Corporation by BMT Oceanica Pty Ltd, Report No. 821_001/1_Rev5, Perth, Western Australia, April 2014
- DoF (2007) Western Australian Shellfish Quality Assurance Program (WASQAP) Operations Manual. Department of Fisheries, Perth, Western Australia
- EPA (2015) Environmental Quality Criteria Reference Document for Cockburn Sound – A Supporting Document to the State Environmental (Cockburn Sound) Policy 2005. Environmental Protection Authority, Perth, Western Australia, March 2015
- McAlpine KW, Wenziker KJ, Apte SC, Masini RJ (2005) Background Quality for Coastal Marine Waters of Perth, Western Australia. Department of Environment, Report No. 117, Perth, Western Australia



Appendix A – Concentrations of Contaminants in TWW prior to Dilution Compared to ANZECC & ARMCANZ (2000) Species Levels of Protection



Parameter	SDOOL TWW	ANZECC/ARMCANZ (2000) guidelines (µg/L) ¹					Low reliability value (LRV)
		Level of protection					
		2 Feb 2016	99%	95%	90%	80%	
Microbiological							
Confirmed Enterococci (MPN/100 mL) ²	>24,000	n/a ³	n/a	n/a	n/a	n/a	n/a
Presumptive thermotolerant coliforms (TTC; CFU/100 mL) ⁴	est. > 1,000,000	n/a	n/a	n/a	n/a	n/a	n/a
Confirmed TTC (CFU/100 mL) ⁴	est. > 1,000,000	n/a	n/a	n/a	n/a	n/a	n/a
Escherichia coli (CFU/100 mL)	est. > 1,000,000	n/a	n/a	n/a	n/a	n/a	n/a
Nutrients (µg/L)							
Ammonia-N	590	500	910	1 200	1 700	-	
Nitrate-N+Nitrite-N	3000	ID ⁵	ID	ID	ID	13 000	
Nitrogen-Total N	20,000	n/a	n/a	n/a	n/a	n/a	n/a
Phosphate-Ortho as P	4700	n/a	n/a	n/a	n/a	n/a	n/a
Phosphorous-Total P	5900	n/a	n/a	n/a	n/a	n/a	n/a
"Dissolved" metals (0.45 µm filtered) (µg/L)							
Arsenic (As)	1	ID	ID	ID	ID	2.3 (As III) 4.5 (As V)	
Cadmium (Cd)	<0.1	0.7	5.5	14	36	-	
Chromium (Cr)	<1.0	7.7 (Cr III) 0.14 (Cr VI)	27.4 (Cr III) 4.4 (Cr VI)	48.6 (Cr III) 20 (Cr VI)	90.6 (Cr III) 85 (Cr VI)	-	
Copper (Cu)	7	0.3	1.3	3	8	-	
Lead (Pb)	<1.0	2.2	4.4	6.6	12	-	
Mercury (Hg)	<0.1	0.1	0.4	0.7	1.4	-	
Nickel (Ni)	3	7	70	200	560	-	
Selenium (Se)	<1.0	ID	ID	ID	ID	3	
Silver (Ag)	<0.8	0.8	1.4	1.8	2.6	-	
Zinc (Zn)	45	7	15	23	43	-	
Total metals (acid extractable; unfiltered) (µg/L)							
Arsenic (As)	1	ID	ID	ID	ID	2.3 (As III) 4.5 (AsV)	
Cadmium (Cd)	<0.1	0.7	5.5	14	36	-	
Chromium (Cr)	3	7.7 (Cr III) 0.14 (Cr VI)	27.4 (Cr III) 4.4 (Cr VI)	48.6 (Cr III) 20 (Cr VI)	90.6 (Cr III) 85 (Cr VI)	-	
Copper (Cu)	27	0.3	1.3	3	8	-	
Lead (Pb)	<1	2.2	4.4	6.6	12	-	
Mercury (Hg)	<0.1	0.1	0.4	0.7	1.4	-	
Nickel (Ni)	4	7	70	200	560	-	
Selenium (Se)	<1	ID	ID	ID	ID	3	
Silver (Ag)	<0.8	0.8	1.4	1.8	2.6	-	
Zinc (Zn)	86	7	15	23	43	-	
Triazine herbicides (µg/L)							
Atrazine	<0.1	ID	ID	ID	ID	13	
Hexazinone	<0.1	ID	ID	ID	ID	75	
Metribuzine	<0.1	n/a	n/a	n/a	n/a	n/a	
Prometryne	<0.1	n/a	n/a	n/a	n/a	n/a	
Simazine	<0.1	ID	ID	ID	ID	3.2	
Phenoxy acid herbicides (µg/L)							
Dicamba ⁶	<1	n/a	n/a	n/a	n/a	n/a	
MCPA	<1	ID	ID	ID	ID	1.4	
Dichlorprop	<1	n/a	n/a	n/a	n/a	n/a	
2,4-D	4.2	ID	ID	ID	ID	280	



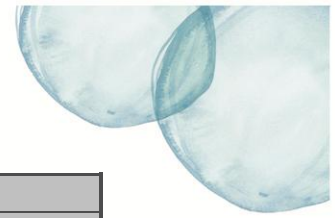
Parameter	SDOOL TWW	ANZECC/ARMCANZ (2000) guidelines (µg/L) ¹					Low reliability value (LRV)
		Level of protection					
		2 Feb 2016	99%	95%	90%	80%	
2,4,5-T	<1	n/a	n/a	n/a	n/a	n/a	
2,4,5-TP	<1	n/a	n/a	n/a	n/a	n/a	
2,4-DB	<1	n/a	n/a	n/a	n/a	n/a	
MCCP	<1	n/a	n/a	n/a	n/a	n/a	
Triclopyr7	<1	n/a	n/a	n/a	n/a	n/a	
Organophosphate pesticides (µg/L)							
Azinphos-Methyl	<0.1	ID	ID	ID	ID	0.01	
Azinphos-Ethyl	<0.1	n/a	n/a	n/a	n/a	n/a	
Chlorpyrifos	<0.1	0.0005	0.009	0.04	0.3	-	
Chlorfenvinphos (E)	<0.1	n/a	n/a	n/a	n/a	n/a	
Chlorfenvinphos (Z)	<0.1	n/a	n/a	n/a	n/a	n/a	
Demeton-S-Methyl	<0.1	ID	ID	ID	ID	4	
Dichlorvos	<0.1	n/a	n/a	n/a	n/a	n/a	
Diazinon	<0.1	ID	ID	ID	ID	0.01	
Dimethoate	<0.1	ID	ID	ID	ID	0.15	
Ethion	<0.1	n/a	n/a	n/a	n/a	n/a	
Fenthion	<0.1	n/a	n/a	n/a	n/a	n/a	
Fenitrothion	<0.1	ID	ID	ID	ID	0.001	
Malathion	<0.1	ID	ID	ID	ID	0.05	
Parathion (Ethyl)	<0.1	ID	ID	ID	ID	0.004	
Parathion Methyl	<0.1	n/a	n/a	n/a	n/a	n/a	
Pirimiphos-Ethyl8	<0.1	n/a	n/a	n/a	n/a	n/a	
Pirimiphos-Methyl9	<0.1	n/a	n/a	n/a	n/a	n/a	
Organochlorine pesticides (µg/L)							
Aldrin	<0.001	ID	ID	ID	ID	0.003	
Trans-Chlordane10	<0.001	ID	ID	ID	ID	0.001	
Cis-Chlordane10	<0.001	ID	ID	ID	ID	0.001	
Oxychlordane10	<0.001	ID	ID	ID	ID	0.001	
Gamma-BHC (Lindane)	<0.001	ID	ID	ID	ID	0.007	
alpha-BHC	<0.001	n/a	n/a	n/a	n/a	n/a	
beta-BHC	<0.001	n/a	n/a	n/a	n/a	n/a	
delta-BHC	<0.001	n/a	n/a	n/a	n/a	n/a	
p,p-DDD	<0.001	n/a	n/a	n/a	n/a	n/a	
p,p-DDE	<0.001	ID	ID	ID	ID	0.0005	
p,p-DDT	<0.001	ID	ID	ID	ID	0.0004	
Dieldrin	<0.001	ID	ID	ID	ID	0.01	
Endrin	<0.001	0.004	0.008	0.01	0.02	-	
Endrin aldehyde	<0.001	n/a	n/a	n/a	n/a	n/a	
Endrin ketone	<0.001	n/a	n/a	n/a	n/a	n/a	
alpha-Endosulfan	<0.001	ID	ID	ID	ID	0.0002	
beta-Endosulfan	<0.001	ID	ID	ID	ID	0.007	
Endosulfan sulfate11	<0.001	0.005	0.01	0.02	0.05	-	
HCB (Hexachlorobenzene)	<0.001	ID	ID	ID	ID	0.05	
Heptachlor	<0.001	ID	ID	ID	ID	0.0004	
Heptachlor epoxide	<0.001	n/a	n/a	n/a	n/a	n/a	
Methoxychlor	<0.001	ID	ID	ID	ID	0.004	
Phenol (µg/L)							
Phenol	0.39	270	400	520	720	-	
Nonylphenol	<1	ID	ID	ID	ID	1	



Parameter	SDOOL TWW	ANZECC/ARMCANZ (2000) guidelines (µg/L) ¹					Low reliability value (LRV)
		Level of protection					
		2 Feb 2016	99%	95%	90%	80%	
2-Chlorophenol	<0.1	ID	ID	ID	ID	340	
2-Methylphenol	<0.1	n/a	n/a	n/a	n/a	n/a	
2,4-Dichlorophenol	0.11	ID	ID	ID	ID	120	
2-Nitrophenol	<0.1	n/a	n/a	n/a	n/a	n/a	
4-Chloro-3-methylphenol	<0.2	n/a	n/a	n/a	n/a	2	
2,4,6-Trichlorophenol	<0.2	ID	ID	ID	ID	34	
4-Nitrophenol	<0.1	ID	ID	ID	ID	2	
2,4,5-Trichlorophenol	<0.2	n/a	n/a	n/a	n/a	n/a	
2,3,4,6-Trichlorophenol	<0.2	ID	ID	ID	ID	10	
Pentachlorophenol (PCP)	<0.2	11	22	33	55	-	
Phthalates (µg/L)							
Dimethyl phthalate	<10	ID	ID	ID	ID	3700	
Diethyl phthalate	<10	ID	ID	ID	ID	900	
Di-n-butyl phthalate	<10	ID	ID	ID	ID	25	
Butyl benzyl phthalate	<10	n/a	n/a	n/a	n/a	n/a	
Bis(2-ethylhexyl) phthalate	<20	ID	ID	ID	ID	1	
PCB aroclors							
Aroclor 1016	<0.1	ID	ID	ID	ID	0.009	
Aroclor 1221	<0.1	ID	ID	ID	ID	1	
Aroclor 1232	<0.1	ID	ID	ID	ID	0.3	
Aroclor 1242	<0.1	ID	ID	ID	ID	0.3	
Aroclor 1248	<0.1	ID	ID	ID	ID	0.03	
Aroclor 1254	<0.1	ID	ID	ID	ID	0.01	
Aroclor 1260	<0.1	ID	ID	ID	ID	n/a	
Total PCBs (as above) ¹²	<0.1	ID	ID	ID	ID	n/a	
Chlorinated hydrocarbons (µg/L)							
2-Chloronaphthalene	<20	n/a	n/a	n/a	n/a	n/a	
1,4-Dichlorobenzene	<20	ID	ID	ID	ID	60	
1,2-Dichlorobenzene	<20	ID	ID	ID	ID	160	
1,3-Dichlorobenzene	<20	ID	ID	ID	ID	260	
Hexachlorobenzene	<20	ID	ID	ID	ID	0.05	
1,2,4-Trichlorobenzene	<20	20	80	140	240	-	
Hexachloroethane	<20	ID	ID	ID	ID	290	
Hexachlorocyclopentadiene	<20	ID	ID	ID	ID	0.05	
Hexachloro-1,3-butadiene ¹³	<20	ID	ID	ID	ID	0.03	
Ethers (µg/L)							
4-Bromophenyl phenyl ether ¹⁴	<20	n/a	n/a	n/a	n/a	n/a	
4-Chlorophenyl phenyl ether	<20	n/a	n/a	n/a	n/a	n/a	
Bis(2-chloroethyl)ether	<20	n/a	n/a	n/a	n/a	n/a	
Bis(2-chloroethoxy)methane	<20	n/a	n/a	n/a	n/a	n/a	
Bis(2-chloroisopropyl)ether	<20	n/a	n/a	n/a	n/a	n/a	
Amines, nitroaromatics nitrosamines (µg/L)							
Azobenzene	<20	n/a	n/a	n/a	n/a	n/a	
2,4-Dinitrotoluene	<20	ID	ID	ID	ID	16	
2,6-Dinitrotoluene	<20	n/a	n/a	n/a	n/a	0.3	
Nitrobenzene	<20	ID	ID	ID	ID	550	
N-Nitrosodimethylamine	<20	n/a	n/a	n/a	n/a	n/a	
N-Nitrosodiphenylamine	<20	ID	ID	ID	ID	6	



Parameter	SDOOL TWW	ANZECC/ARMCANZ (2000) guidelines (µg/L) ¹					Low reliability value (LRV)
		Level of protection					
		2 Feb 2016	99%	95%	90%	80%	
N-Nitrosodi-n-propylamine	<20	n/a	n/a	n/a	n/a	n/a	
Aniline	<20	ID	ID	ID	ID	8	
4-Chloroaniline	<20	n/a	n/a	n/a	n/a	n/a	
2-Nitroaniline	<20	n/a	n/a	n/a	n/a	n/a	
3-Nitroaniline	<20	n/a	n/a	n/a	n/a	n/a	
4-Nitroaniline	<20	n/a	n/a	n/a	n/a	n/a	
Other organics (µg/L)							
Dichlorobenzidine ¹⁵	<20	ID	ID	ID	ID	0.5	
2-Methylnaphthalene	<10	n/a	n/a	n/a	n/a	n/a	
Isophorone	<20	ID	ID	ID	ID	130	
Benzyl alcohol	<20	n/a	n/a	n/a	n/a	n/a	
Carbazole	<20	n/a	n/a	n/a	n/a	n/a	
Dibenzofuran	<20	n/a	n/a	n/a	n/a	n/a	
BTEX (µg/L)							
Benzene	<1.0	500	700	900	1300	500	
Toluene	<1.0	ID	ID	ID	ID	180	
Ethylbenzene	<1.0	ID	ID	ID	ID	5	
Xylene ¹⁶	<2.0	ID	ID	ID	ID	75	
Total BTEX ¹²	<5.0	n/a	n/a	n/a	n/a	n/a	
Total petroleum hydrocarbons (TPH) (µg/L)							
TPH C6 - C9 ¹⁷	<25	ID	ID	ID	ID	n/a	
TPH C10 - C14 ¹⁷	<25	ID	ID	ID	ID	n/a	
TPH C15 - C28 ¹⁷	<100	ID	ID	ID	ID	n/a	
TPH C29 - C36 ¹⁷	120	ID	ID	ID	ID	n/a	
Total TPH ^{17,18}	<250	ID	ID	ID	ID	n/a	
Poly aromatic hydrocarbons (PAHs) (µg/L)							
Naphthalene	<0.01	50	70	90	120	-	
Acenaphthylene	<0.01	n/a	n/a	n/a	n/a	n/a	
Acenaphthene	<0.01	n/a	n/a	n/a	n/a	n/a	
Fluorene	<0.01	n/a	n/a	n/a	n/a	n/a	
Phenanthrene	<0.01	ID	ID	ID	ID	2	
Anthracene	<0.01	ID	ID	ID	ID	0.4	
Fluoranthene	<0.01	ID	ID	ID	ID	1.4	
Pyrene	<0.01	n/a	n/a	n/a	n/a	n/a	
Benz(a)anthracene	<0.01	n/a	n/a	n/a	n/a	n/a	
Chrysene	<0.01	n/a	n/a	n/a	n/a	n/a	
Benzo(b,k)fluoranthene	<0.02	n/a	n/a	n/a	n/a	n/a	
Benzo(a)pyrene	<0.01	n/a	n/a	n/a	n/a	n/a	
Indeno(1,2,3-cd)pyrene	<0.01	n/a	n/a	n/a	n/a	n/a	
Dibenz(a,h)anthracene	<0.01	n/a	n/a	n/a	n/a	n/a	
Benzo(g,h,i)perylene	<0.01	50	70	90	120	-	
Surfactants (mg/L)							
Methylene blue active substances (MBAS) ¹⁹	0.60	n/a	n/a	n/a	n/a	n/a	
Miscellaneous other (mg/L unless indicated)							
Chlorine-Free	<0.01	ID	ID	ID	ID	3	
Chlorine-Total	<0.01	ID	ID	ID	ID	3	
Dissolved Organic Carbon (DOC)	15	n/a	n/a	n/a	n/a	n/a	
Total organic carbon (TOC)	30	n/a	n/a	n/a	n/a	n/a	



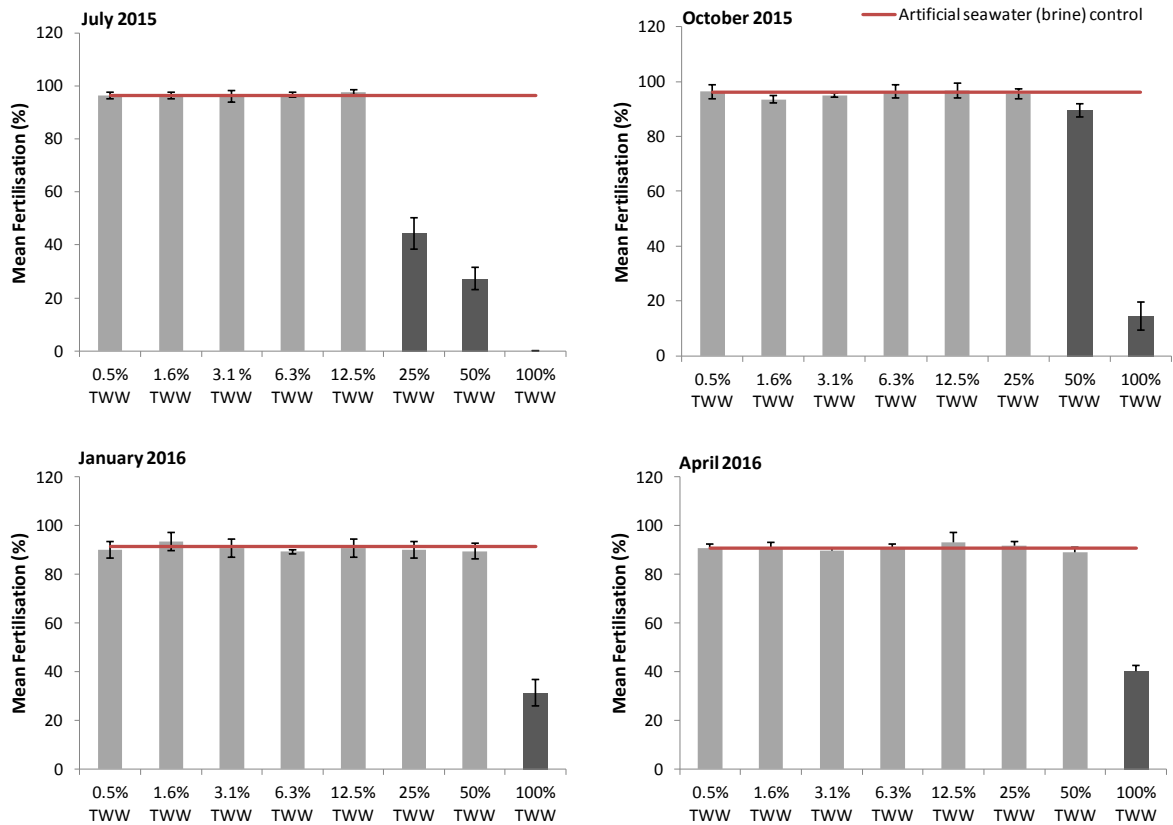
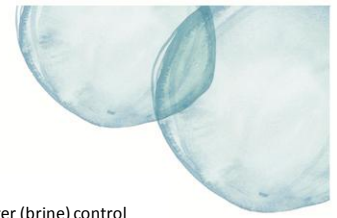
Parameter	SDOOL TWW	ANZECC/ARMCANZ (2000) guidelines (µg/L) ¹					Low reliability value (LRV)
		Level of protection					
		2 Feb 2016	99%	95%	90%	80%	
Total suspended solids (TSS) ₂₀	66	n/a	n/a	n/a	n/a	n/a	
Biological oxygen demand (BOD)	28	n/a	n/a	n/a	n/a	n/a	
pH ₂₁	7.5	n/a	n/a	n/a	n/a	n/a	

Notes:

- The trigger values for marine waters are from Table 3.4.1 in ANZECC/ARMCANZ (2000a). The EPA has provided advice that in WA waters where a high level of protection applies, that the 99% species protection levels should be used, with the exception of cobalt, where the 95% species protection levels is used. Grey bold text represents the relevant ANZECC/ARMCANZ (2000a) guideline values and amber bold text represents an exceedance of guideline values prior to initial dilution.
- Primary and secondary contact guideline for recreational marine waters are 35 and 230 Enterococci organisms/100 mL, respectively (ANZECC/ARMCANZ 2000a).
- n/a = ANZECC/ARMCANZ (2000a) guideline or LRV not available for this parameter.
- Primary and secondary contact guidelines for recreational marine waters 150 and 1 000 faecal coliforms/100 mL (ANZECC/ARMCANZ 2000a), respectively.
- ID = insufficient data to derive a reliable national trigger value.
- Recreational guideline for Dicamba = 300 µg/L (Table 5.2.4; ANZECC/ARMCANZ 2000a).
- Recreational guideline for Triclopyr = 20 µg/L (Table 5.2.4; ANZECC/ARMCANZ 2000a).
- Recreational guideline for Pirimiphos-ethyl = 1 µg/L (Table 5.2.4; ANZECC/ARMCANZ 2000a).
- Recreational guideline for Pirimiphos-methyl = 60 µg/L (Table 5.2.4; ANZECC/ARMCANZ 2000a).
- Guideline values are for total chlordane though cis-chlordane is ~7 times more toxic than transchlordane (ANZECC/ARMCANZ 2000a).
- Guideline values are for Endosulphan, not Endosulphan sulfate (Table 3.4.1; ANZECC/ARMCANZ 2000a).
- ANZECC/ARMCANZ (2000b) recommends using a formula to calculate total toxicity of the mixture if using total PCBs and BTEX (page 8.3-65; ANZECC/ARMCANZ 2000b).
- Environmental Concern Level (ECL) for Hexachloro-1,3-butadiene (not LRV) (definition of ECL on page 8.3-35; page 8.3-231; ANZECC/ARMCANZ 2000b).
- Recommended ECL for 4-Bromophenyl phenyl ether = 12 µg/L (page 8.3-232; ANZECC/ARMCANZ 2000b).
- ECL for Dichlorobenzidine (not LRV) (page 8.3-187; ANZECC/ARMCANZ 2000b).
- Guideline for o-xylene = 350 µg/L, for m-xylene = 75 µg/L and for p-xylene = 200 µg/L (ANZECC/ARMCANZ 2000a).
- Guideline values are for generic oils and petroleum hydrocarbons (Table 3.4.1; ANZECC/ARMCANZ 2000a).
- A generic estimate of 7 µg/L for a total petroleum hydrocarbon chronic value has been estimated using USEPA methods (page 8.3-297; ANZECC/ARMCANZ 2000b).
- Recreational guideline for MBAS = 0.2 mg/L (ANZECC/ARMCANZ 2000a).
- Suspended solids guidelines for the protection of saltwater aquaculture species = <10 mg/L (Table 4.4.2; ANZECC/ARMCANZ 2000a).
- pH guideline range for slightly disturbed inshore marine ecosystems in southwest Australia = 8.0 to 8.4 (Table 3.3.6; ANZECC/ARMCANZ 2000a).



Appendix B – WET Testing Results



Notes:

1. Error bars represent ± 1 standard deviation.
2. TWW = treated wastewater.
3. Light grey bars represent concentrations of treated wastewater (TWW) at which there is no observed significant effect on fertilisation. Dark grey bars represent concentrations of TWW that acted to significantly reduce the success of sea urchin fertilisation.
4. Percent fertilisation value for EC50 (black bars) was estimated by halving the number of gametes fertilised in the control sample; i.e. the artificial seawater control.

Figure B.1 Comparison of whole effluent toxicity TWW dilution results to artificial seawater control

Table B.1 Calculated parameters from whole of effluent toxicity tests

Indicator	July 2015	October 2015	January 2016	April 2016
NOEC	12.5%	25%	50%	50%
Dilutions required to meet the NOEC	8	4	2	2
Dilutions require/dilutions achieved	0.04	0.02	0.01	0.01
≤ 1	Yes	Yes	Yes	Yes

Notes:

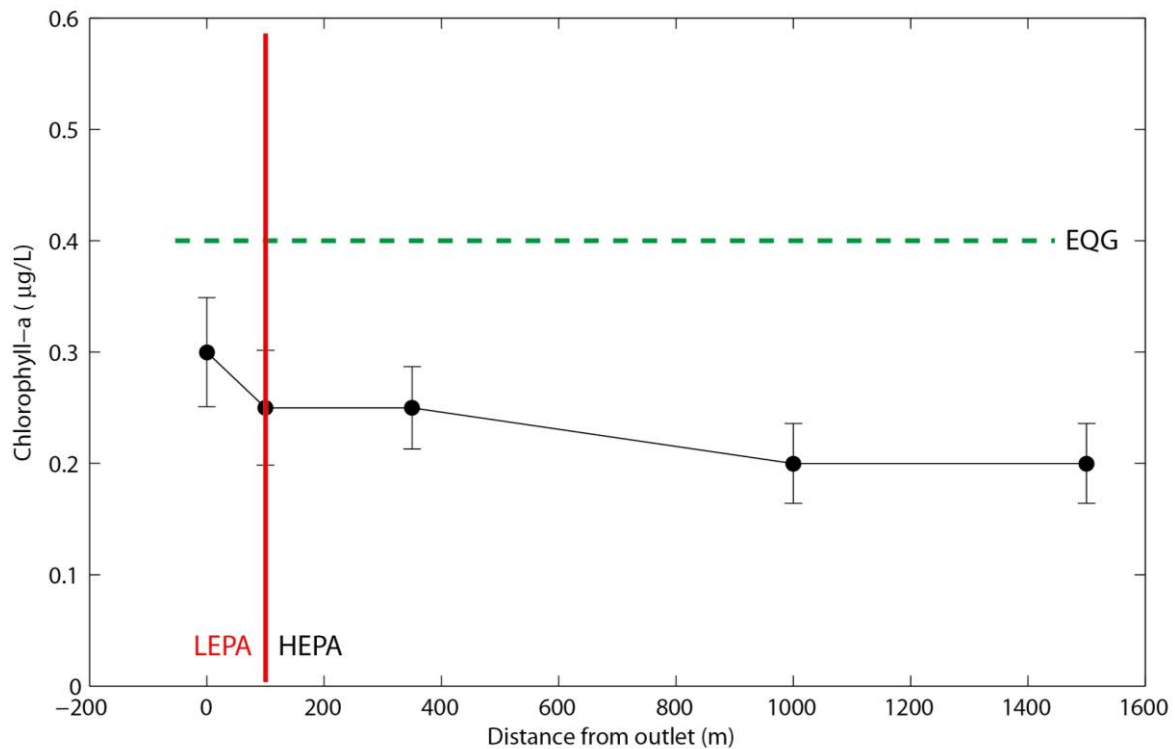
1. NOEC = no observed effect concentration.



Appendix C – Physical Properties



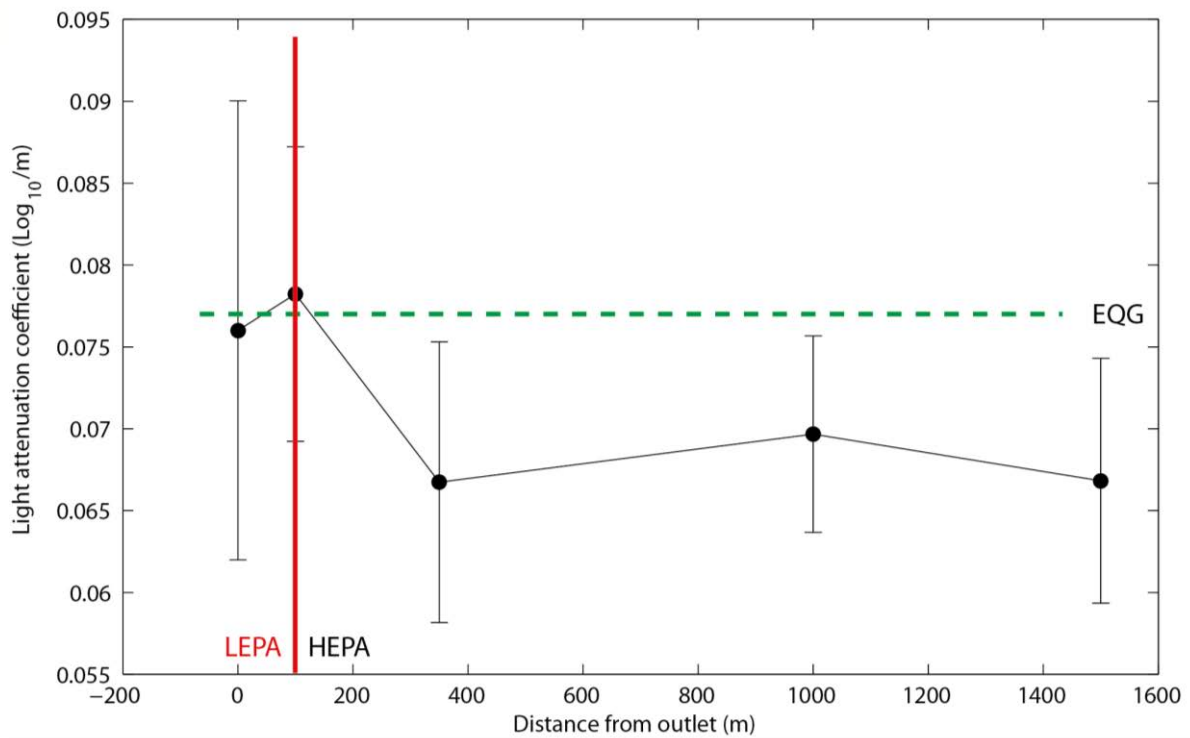
Nutrient enrichment



Notes:

1. Error bars represent $\pm 95\%$ confidence intervals.
2. Environmental Quality Guideline (EQG) is the 80th percentile of historical reference site data (0.4 $\mu\text{g/L}$ chlorophyll-a).
3. LEPA = notional low ecological protection area; HEPA = high ecological protection area.
4. Data were pooled across eight sampling days ($n=8$) over December 2015–March 2016

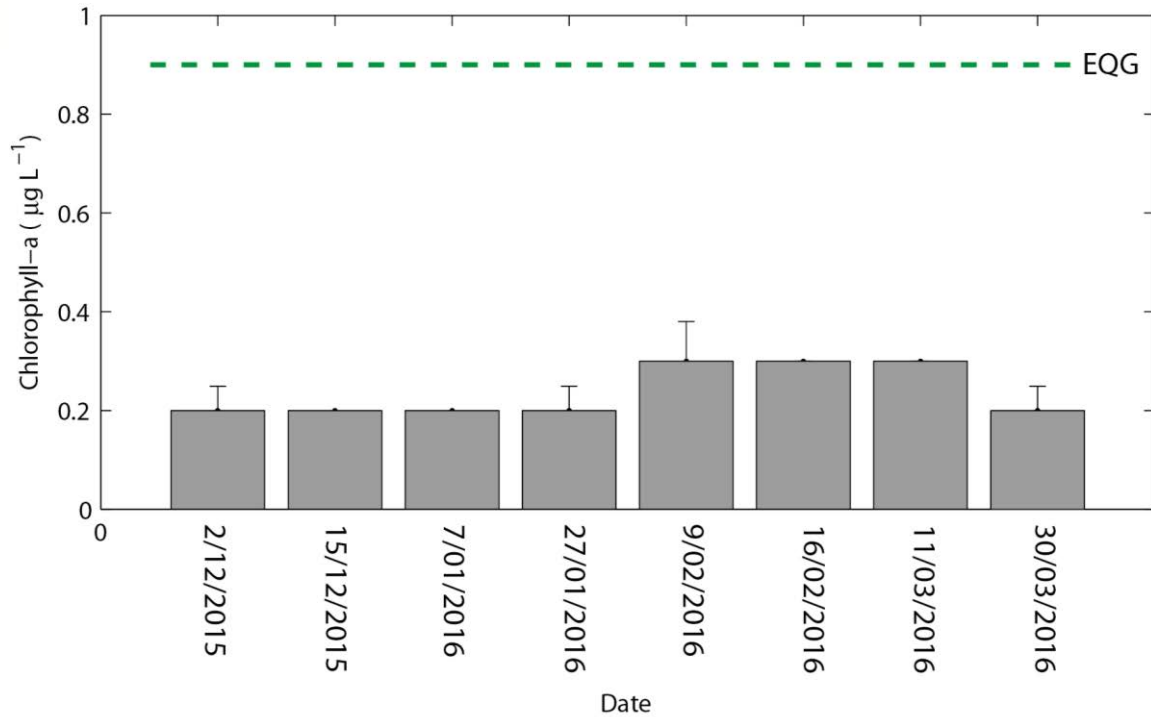
Figure C.1 Median chlorophyll-a concentrations obtained at fixed monitoring sites above and down-current of the Sepia Depression outlet during the summer monitoring period



Notes:

1. Error bars represent $\pm 95\%$ confidence intervals.
2. Environmental Quality Guideline (EQG) is the 80th percentile of historical reference site data (0.077 Log₁₀/m).
3. LEPA = notional low ecological protection area; HEPA = high ecological protection area.
4. Data for each distance was pooled across eight sampling occasions (n=8) over December 2015-March 2016.

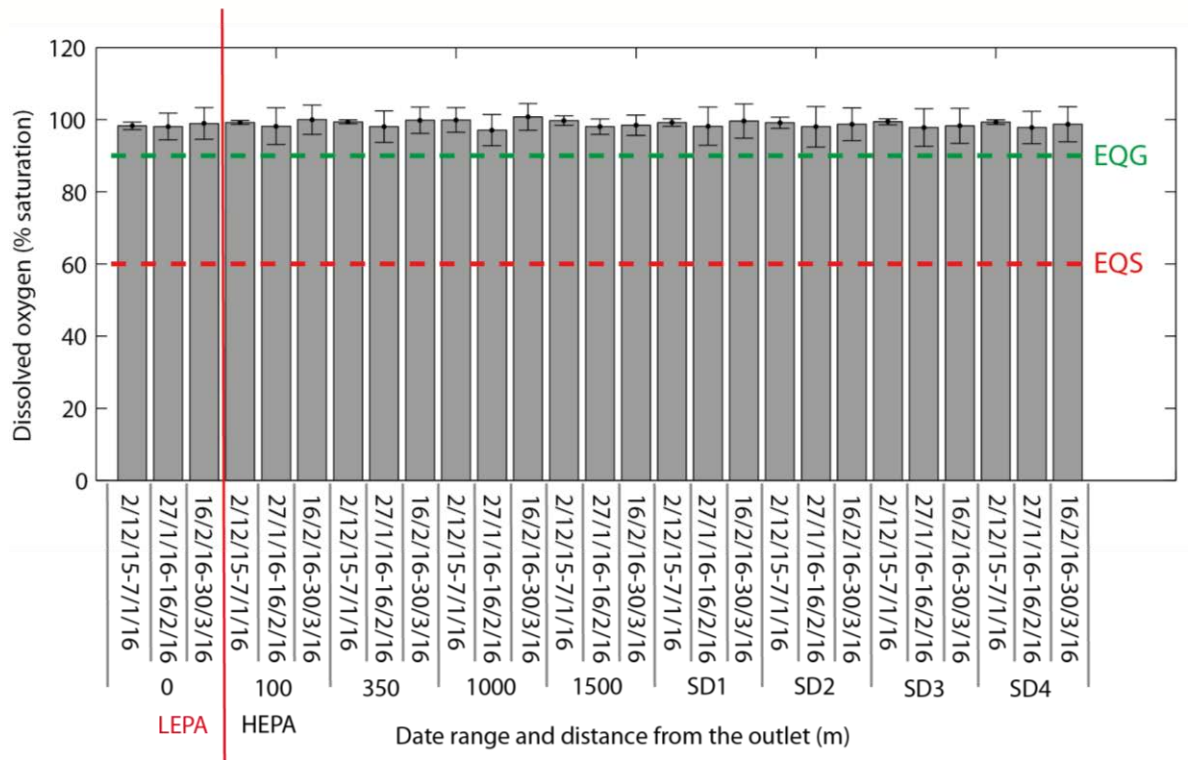
Figure C.2 Median light attenuation coefficient obtained at fixed distances down-current of the Sepia Depression outlet during the summer monitoring period



Notes:

1. Error bars represent $\pm 95\%$ confidence intervals.
2. Environmental Quality Guideline (EQG) is 3-times the median chlorophyll-a concentration of reference site data.
3. Values measured at 0 m are not included in the figure or EQG assessment, as the 0 m site is situated directly above the outlet within the notional low ecological protection area (LEPA).
4. Data were pooled across four sites within the high ecological protection area (HEPA) (n=4).

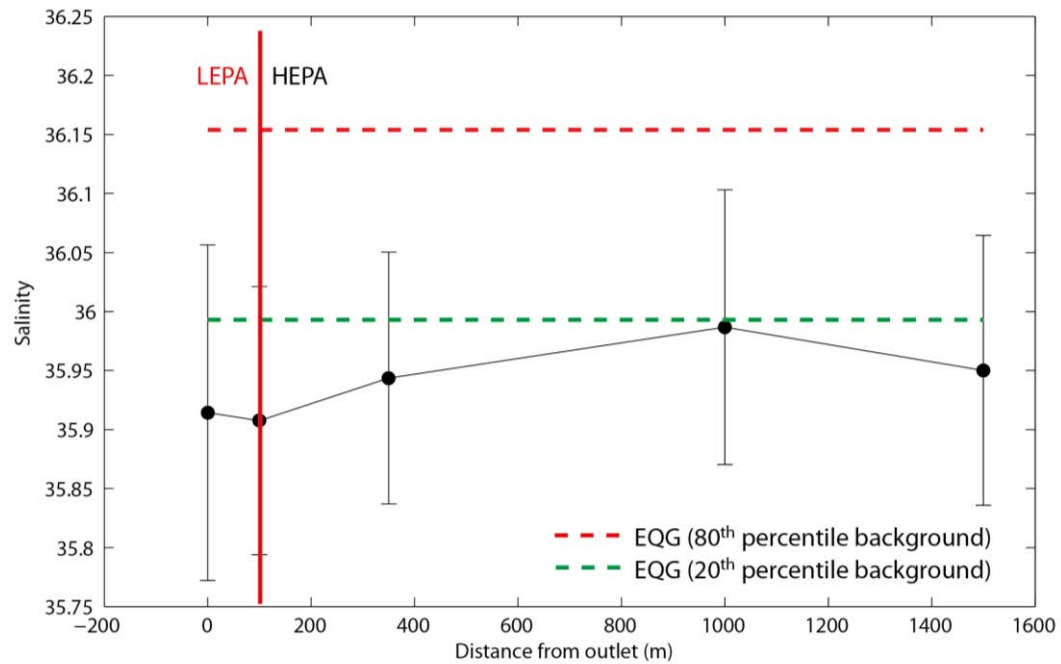
Figure C.3 Median phytoplankton biomass during the summer monitoring period, pooling data from fixed sites ≥ 100 m down-current of the Sepia Depression ocean outlet



Notes:

1. Error bars represent $\pm 95\%$ confidence intervals.
2. Dissolved oxygen (DO) measured 0–0.5 m above the seabed.
3. Environmental Quality Guideline (EQG) = 90% DO saturation; Environmental Quality Standard (EQS) = 60% DO saturation.
4. LEPA = notional low ecological protection area; HEPA = high ecological protection area.
5. Reference site data (SD1–SD4) are compared against EQG and EQS for contextual purposes only.

Figure C.4 Median dissolved oxygen for defined periods of ≤ 6 weeks during the summer monitoring period



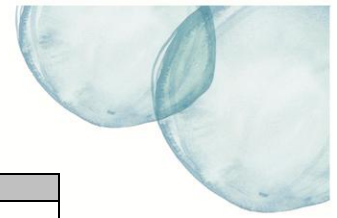
Notes:

1. Error bars represent $\pm 95\%$ confidence intervals.
2. Salinity measured 0–0.5 m below the sea surface.
3. LEPA = notional low ecological protection area; HEPA = high ecological protection area.
4. Data for each distance were pooled across eight sampling occasions ($n=8$) over December 2015 to March 2016.

Figure C.5 Median salinity compared to the 20th and 80th percentile of reference site data during the summer monitoring period



Appendix D – Sepia Depression Microbial Sample Data



Date	Site	Enterococci spp.	Site	TTC
2-Dec-15	SD9	73	SD26	<10
2-Dec-15	SD10	<10	SD27	<10
2-Dec-15	SD11	<10	SD28	<10
2-Dec-15	SD12	<10	SD29	<10
2-Dec-15	SD13	<10	SD30	<10
15-Dec-15	SD5	<10	SD20	<10
15-Dec-15	SD6	810	SD21	<10
15-Dec-15	SD7	710	SD22	10
15-Dec-15	SD8	430	SD23	27
15-Dec-15	SD9	<10	SD24	<10
7-Jan-16	SD1	230	SD28	<10
7-Jan-16	SD13	<10	SD29	<10
7-Jan-16	SD14	63	SD30	10
7-Jan-16	SD15	580	SD31	36
7-Jan-16	SD16	910	SD32	<10
27-Jan-16	SD7	580	SD24	170
27-Jan-16	SD8	580	SD25	<10
27-Jan-16	SD9	210	SD26	<10
27-Jan-16	SD10	10	SD27	<10
27-Jan-16	SD11	<10	SD28	<10
9-Feb-16	SD1	310	SD17	<10
9-Feb-16	SD2	760	SD29	<10
9-Feb-16	SD3	<10	SD30	10
9-Feb-16	SD15	<10	SD31	<10
9-Feb-16	SD16	400	SD32	<10
16-Feb-16	SD11	<10	SD27	<10
16-Feb-16	SD12	<10	SD28	<10
16-Feb-16	SD13	<10	SD29	<10
16-Feb-16	SD14	41	SD30	<10
16-Feb-16	SD15	97	SD31	<10
11-Mar-16	SD5	<10	SD20	<10
11-Mar-16	SD6	<10	SD21	<10
11-Mar-16	SD7	320	SD22	10
11-Mar-16	SD8	<10	SD23	370
11-Mar-16	SD9	<10	SD24	<10
30-Mar-16	SD3	<10	SD24	<10
30-Mar-16	SD4	<10	SD25	<10
30-Mar-16	SD5	<10	SD26	<10
30-Mar-16	SD6	570	SD27	<10
30-Mar-16	SD7	720	SD28	<10



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